

MANUFACTURER DOCUMENT PACKAGE

# Manufacturer's Manual

Reference package for procurement and maintenance review

ALLEN-BRADLEY

## 2080-L50E-24QBB

24-POINT PROGRAMMABLE CONTROLLER

Used with the applicable Micro850 programmable controllers configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Allen-Bradley Micro850 programmable controllers official technical documentation



# Micro800 Programmable Controllers

Micro810 Controller Catalog Numbers 2080-LC10-12AWA, 2080-LC10-12QWB, 2080-LC10-12DWD, 2080-LC10-12QBB

Micro820 Controller Catalog Numbers 2080-LC20-20AWB, 2080-L20E-20AWB, 2080-LC20-20AWBR, 2080-L20E-20AWBR, 2080-LC20-20QWB, 2080-L20E-20QWB, 2080-LC20-20QWBR, 2080-L20E-20QWBR, 2080-LC20-20QBB, 2080-L20E-20QBB, 2080-LC20-20QBBK, 2080-L20E-20QBBK, 2080-LC20-20QBBR, 2080-L20E-20QBBR

Micro850 Controller Catalog Numbers 2080-L50E-24AWB, 2080-L50E-24QWB, 2080-L50E-24QVB, 2080-L50E-24QBB, 2080-L50E-48AWB, 2080-L50E-48QWB, 2080-L50E-48QWBK, 2080-L50E-48QVB, 2080-L50E-48QBB

Micro870 Controller Catalog Numbers 2080-L70E-24AWB, 2080-L70E-24QWB, 2080-L70E-24QWBK, 2080-L70E-24QWBN, 2080-L70E-24QWBNK, 2080-L70E-24QBB, 2080-L70E-24QBBK, 2080-L70E-24QBBN

Expansion I/O Modules Catalog Numbers 2085-IQ16, 2085-IQ16K, 2085-IQ32T, 2085-OV16, 2085-OB16, 2085-IA8, 2085-IM8, 2085-OA8, 2085-OW8, 2085-OW16, 2085-OW16K, 2085-IF4, 2085-IF8, 2085-IF8K, 2085-OF4, 2085-OF4K, 2085-IRT4, 2085-EP24VDC, 2085-ECR, 2085-ECRK

Plug-in Modules Catalog Numbers 2080-IQ4, 2080-OB4, 2080-OV4, 2080-IQ4OB4, 2080-IQ4OV4, 2080-OW4I, 2080-IF2, 2080-IF2K, 2080-IF4, 2080-OF2, 2080-RTD2, 2080-TC2, 2080-MEMBAK-RTC, 2080-MEMBAK-RTC2, 2080-TRIMPOT6, 2080-MOT-HSC, 2080-DNET20, 2080-SERIALISOL, 2080-SERIALISOLK

Accessories Catalog Numbers 2080-LCD, 2080-USBADAPTER, 2080-REMLCD, 2080-PS120-240VAC, 2080-PSAC-12W, 2080-SD-2GB

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## Micro800 Controller Overview



**Micro800™** controllers are designed for low-cost, standalone machines. These small-size programmable logic controllers (PLCs) are available in different form factors based on the number of I/O points that are embedded in the base, with a range of features that are intended to address different requirements. The Micro800 family shares programming environment, accessories, and plug-ins that allow machine builders to personalize the controller for specific capabilities.

**Micro810®** controllers function as a smart relay with high current relay outputs with the programming capabilities of a micro PLC. The Micro810 controllers come in a 12-point form factor.

**Micro820®** controllers are designed for smaller standalone machines and remote automation projects. They have embedded Ethernet and serial ports and a microSD™ card slot for data logging and recipe management. These controllers come as 20-point form factors that can accommodate up to two plug-in modules. They also support the Micro800 Remote LCD (2080-REMLCD) module for easier configuration of such settings as IP address and functions as a simple IP65 text display. 2080-L20E-xxx controllers have an embedded USB-C port for programming.

With firmware revision 23.011 or later, Micro820 (2080-L20E) controllers support Class 1 EtherNet/IP™ connection to Kinetix® 5100, PowerFlex® 520-series drives with pre-defined tags and generic profile tags for all other EtherNet/IP devices.

**Micro850®** expandable controllers are designed for applications that require more digital and analog I/O or higher performance analog I/O. They can support up to four expansion I/O modules. Micro850 controllers include additional communication connection options through an embedded 10/100 Base-T Ethernet port. 2080-L50E-xxx controllers also support additional DF1 protocol modes.

**Micro870®** controllers offer a higher level of scalability, flexibility, and customization. Designed for large standalone machine applications, the Micro870 controller comes with large memory capacity to enable more modular programs and use of user-defined function blocks. 2080-L70E-xxx controllers also support additional DF1 protocol modes and DNP3 protocol is supported in 2080-L70E-xxxN controllers.

Several Micro850 and Micro870 controllers support basic positioning through embedded pulse train outputs (PTO). These controllers also allow you to configure up to six high-speed counters (HSC), and choose from nine HSC operation modes. HSC is supported on all Micro850 and Micro870 controller catalogs (except 2080-Lxxx-xxAWB). PTO is only supported on Micro850 and Micro870 controller catalog numbers that end in BB or VB.

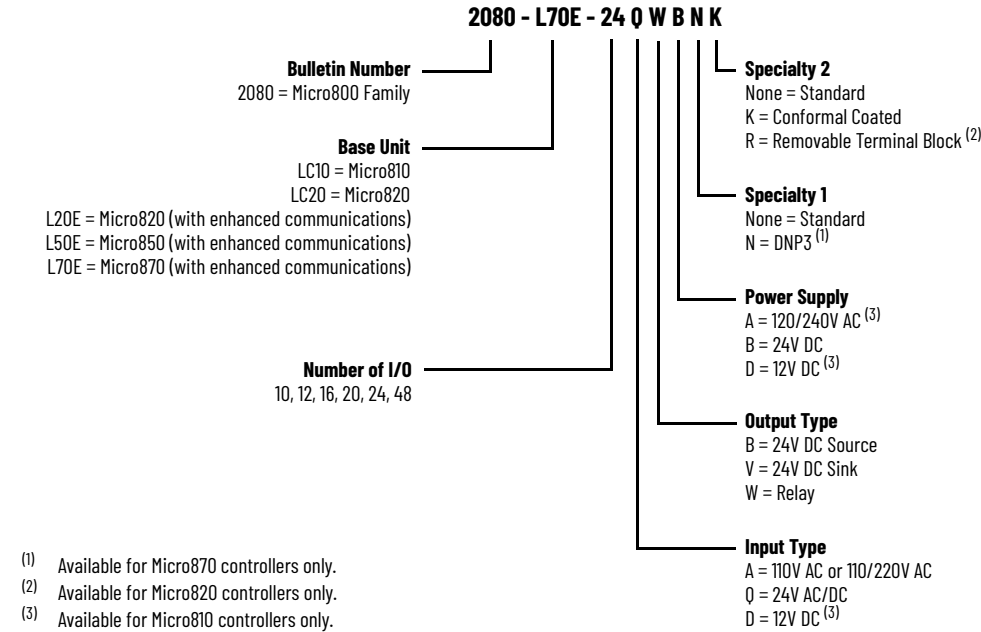
With firmware revision 21.011 or later, Micro850 (2080-L50E) and Micro870 (2080-L70E) controllers support Kinetix 5100 and PowerFlex 520-series drives that are connected using a Class 1 EtherNet/IP connection with predefined instructions and tags, and generic profile tags for all other EtherNet/IP devices.

Micro870 (2080-L70E) controllers with firmware revision 22.011 or later and Micro850 (2080-L50E) controllers with firmware revision 23.011 or later support the PCCC command format, which allows these controllers to communicate using the legacy commands in MicroLogix™ controllers.

With firmware revision 23.011 or later, Micro850 (2080-L50E) and Micro870 (2080-L70E) controllers support the Micro800 Remote LCD (2080-REMLCD) module for easier configuration of such settings as IP address and functions as a simple IP65 text display.

This technical data serves to help you identify the right controller, plug-ins, expansion I/O, and accessories, based on your requirements.

## Micro800 Catalog Number Details



## Micro800 Controller Comparison

### Feature Comparison

| Attribute                                  | Micro810                                                                              | Micro820                                                                                                                                          | Micro850                                                                                                       |          | Micro870 |
|--------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------|----------|
|                                            | 12-point                                                                              | 20-point                                                                                                                                          | 24-point                                                                                                       | 48-point | 24-point |
| Communication ports, embedded              | USB 2.0<br>(with USB adapter)                                                         | USB 2.0 (USB-C, non-isolated) <sup>(1)</sup><br>10/100 Base-T Ethernet port (RJ45)<br>RS-232/RS-485 non-isolated combo serial                     | USB 2.0 (USB-B, non-isolated)<br>10/100 Base-T Ethernet port (RJ45)<br>RS-232/RS-485 non-isolated combo serial |          |          |
| Embedded digital I/O points <sup>(2)</sup> | 12                                                                                    | 19                                                                                                                                                | 24                                                                                                             | 48       | 24       |
| Base analog I/O channels                   | Four 24V DC digital inputs are shared as 0...10V analog inputs (DC input models only) | One 0...10V analog output<br>Four 24V DC digital inputs can be configured as 0...10V analog inputs (DC input models only) and via plug-in modules | Via expansion I/O and plug-in modules (see page <a href="#">24</a> and <a href="#">36</a> )                    |          |          |
| Number of plug-in modules                  | 0                                                                                     | 2                                                                                                                                                 | 3                                                                                                              | 5        | 3        |
| Maximum digital I/O <sup>(3)</sup>         | 12                                                                                    | 35                                                                                                                                                | 132                                                                                                            | 192      | 304      |
| Expansion I/O supported                    | —                                                                                     | —                                                                                                                                                 | All expansion I/O modules (see page <a href="#">24</a> )                                                       |          |          |
| Ethernet node supported <sup>(4)</sup>     | —                                                                                     | 4                                                                                                                                                 | 8                                                                                                              |          |          |
| Types of accessories or plug-ins supported | LCD display with backup memory module<br>USB adapter                                  | Most plug-in modules (see page <a href="#">36</a> for selection and exceptions)                                                                   |                                                                                                                |          |          |
| Power supply                               | Embedded 120/240V AC and 12/24V DC options                                            | Base unit has embedded 24V DC power supply, optional external 120/240V AC power supply available                                                  |                                                                                                                |          |          |

## Feature Comparison (Continued)

| Attribute                              | Micro810                                       | Micro820                               | Micro850 |          | Micro870 |
|----------------------------------------|------------------------------------------------|----------------------------------------|----------|----------|----------|
|                                        | 12-point                                       | 20-point                               | 24-point | 48-point | 24-point |
| Basic instruction speed                | 2.5 μs per basic instruction                   | 0.30 μs per basic instruction          |          |          |          |
| Minimum scan/cycle time <sup>(5)</sup> | <0.25 ms                                       | <2 ms - 2080-L20E<br><4 ms - 2080-LC20 | <0.25 ms |          |          |
| Software                               | Connected Components Workbench™ <sup>(6)</sup> |                                        |          |          |          |

(1) Available on 2080-L20E controllers only.

(2) See the individual Micro800 controller sections for more information.

(3) For Micro820 controllers, the number of maximum digital I/O assumes 8-point digital I/O plug-ins (for example, 2080-IQ40B4) are used on all available plug-in slots. For Micro850 and Micro870 controllers, the maximum number of digital I/O supported includes the base, plug-ins, and expansion I/O.

(4) Ethernet nodes are supported on Micro850 (2080-L50E) and Micro870 (2080-L70E) controllers from version 21 onwards.

Ethernet nodes are supported on Micro820 (2080-L20E) controllers from version 23 onwards.

(5) Includes reading and writing I/O, program execution, and communications overhead.

(6) 2080-L50E and 2080-L70E controllers are supported from Connected Components Workbench software version 20 onwards.

2080-L20E controllers are supported from Connected Components Workbench software version 23 onwards.

## Micro800 Controllers Programming Comparison (with Connected Components Workbench software)

| Attribute                    | Micro810<br>12-point                                    | Micro820<br>20-point | Micro850<br>24-point | Micro850<br>48-point | Micro870<br>24-point |
|------------------------------|---------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|
| Program steps <sup>(1)</sup> | 2 K                                                     | 10 K                 | 10 K                 | 10 K                 | 20 K                 |
| Data bytes                   | 2 KB                                                    | 20 KB                | 20 KB                | 20 KB                | 40 KB                |
| IEC 61131-3 languages        | Ladder diagram, function block diagram, structured text |                      |                      |                      |                      |
| User-defined function blocks | Yes                                                     |                      |                      |                      |                      |
| Floating point               | 32-bit and 64-bit                                       |                      |                      |                      |                      |
| PID Loop Control             | Yes (number limited only by memory)                     |                      |                      |                      |                      |

(1) Estimated Program and Data size are "typical" – program steps and variables are created dynamically. 1 Program Step = 12 data bytes. The number of bytes per instruction can vary greatly from program to program and from programming language to programming language.

## Micro800 Controllers Communication Options

| Controller | USB Programming Port                                        | Embedded Serial Port, Serial Port Plug-in |              |              |                    | Embedded Ethernet |            |                       |
|------------|-------------------------------------------------------------|-------------------------------------------|--------------|--------------|--------------------|-------------------|------------|-----------------------|
|            |                                                             | CIP Serial/DF1 <sup>(1)</sup>             | Modbus RTU   | ASCII/Binary | DNP3               | EtherNet/IP       | Modbus TCP | DNP3                  |
| Micro810   | Yes (with adapter)                                          | No                                        |              |              |                    |                   |            |                       |
| Micro820   | Yes (with 2080-REMLCD)<br>Yes (embedded USB) <sup>(2)</sup> | Yes                                       | Master/Slave | Yes          | No                 | Yes               | Yes        | No                    |
| Micro850   | Yes                                                         | Yes <sup>(3)</sup>                        | Master/Slave | Yes          | No                 | Yes               | Yes        | No                    |
| Micro870   | Yes                                                         | Yes <sup>(3)</sup>                        | Master/Slave | Yes          | Yes <sup>(4)</sup> | Yes               | Yes        | Yes <sup>(3)(4)</sup> |

(1) 2080-LxxE controllers support CIP™ Serial/DF1 Full-Duplex, Half-Duplex, and Radio Modem. All other controllers (except Micro810) support CIP Serial/DF1 Full-Duplex only.

(2) Available on 2080-L20E controllers only.

(3) The 2080-L70E controller supports PCCC format in DF1 modes from Connected Components Workbench software version 22 onwards.

The 2080-L50E controller supports PCCC format in DF1 modes from Connected Components Workbench software version 23 onwards.

(4) Applies to 2080-L70E-xxxN controllers only.

## Micro800 Controllers Analog I/O and TC/RTD Comparison

| Attribute                                                | Micro810                                                      | Micro820 | Micro850<br>(with expansion I/O)                                                                                                                                                                                                | Micro870<br>(with expansion I/O) |
|----------------------------------------------------------|---------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Performance level                                        | Low                                                           |          | High                                                                                                                                                                                                                            |                                  |
| Isolation to controller<br>(increased noise immunity)    | None                                                          |          | Yes                                                                                                                                                                                                                             |                                  |
| Resolution and nominal accuracy                          | Analog Input: 10-bit, 5% (2% with calibration)                |          | Analog Input: 14-bit input, $\pm 0.1\%$<br>Analog Output: 12-bit output, 0.133%, current, 0.425% voltage<br>TC: $\pm 0.5... \pm 3.0$ °C ( $\pm 0.9... \pm 5.4$ °F)<br>RTD: $\pm 0.2... \pm 0.6$ °C ( $\pm 0.36... \pm 1.08$ °F) |                                  |
| Input update rate and filtering                          | Update rate only dependent on program scan, limited filtering |          | 8 ms all channels with or without 50/60 Hz filtering                                                                                                                                                                            |                                  |
| Recommended maximum shielded cable length <sup>(1)</sup> | 10 m                                                          |          | 100 m                                                                                                                                                                                                                           |                                  |

(1) These numbers are guidelines only. Maximum cable length is dependent on the application and other factors such as cable type, installation, required accuracy, sensor, and so on.

## Relay Contacts Ratings - Micro820 Controllers

| Maximum Volts | Amperes |        | Amperes Continuous | Voltamperes |       |
|---------------|---------|--------|--------------------|-------------|-------|
|               | Make    | Break  |                    | Make        | Break |
| 120V AC       | 15 A    | 1.5 A  | 2.0 A              | 1800VA      | 180VA |
| 240V AC       | 7.5 A   | 0.75 A |                    |             |       |
| 24V DC        | 1.0 A   |        | 1.0 A              | 28VA        |       |
| 125V DC       | 0.22 A  |        | 0.22 A             |             |       |

## Auxiliary Power Supply for Thermistor Applications

| Attribute               | Value  |
|-------------------------|--------|
| Output voltage, min     | 9.5V   |
| Output voltage, typical | 10.04V |
| Output voltage, max     | 10.5V  |
| Output current, typical | 10 mA  |
| Output current, max     | 20 mA  |

## Embedded RTC

| Attribute         | Value                                                                                                              |
|-------------------|--------------------------------------------------------------------------------------------------------------------|
| Resolution        | 1 sec                                                                                                              |
| Accuracy, typical | ±60 sec/month @ 25 °C (77 °F)                                                                                      |
| Power off         | Supercap - 4 days @ 25 °C (77 °F)<br>Supercap life, typical - 5 years @ 40 °C (104 °F), 14.5 years @ 25 °C (77 °F) |

## Micro850 Controllers

Micro850 controllers are suitable for applications that require more digital and analog I/O or higher performance analog I/O. These controllers can support up to four expansion I/O and come in 24-point and 48-point form factors with an embedded Ethernet port.

### Number and Types of Inputs/Outputs for Micro850 Catalogs

| Catalogs         | Inputs     |                 |                 |           | Outputs |                  |                | Analog Out<br>0...10V DC | Analog In<br>0...10V<br>(shared with DC In) | PTO/PWM<br>Support | Embedded<br>HSC<br>Support <sup>(1)</sup> | Ethernet<br>Nodes <sup>(2)</sup> | REMLCD<br>Support <sup>(3)</sup> |
|------------------|------------|-----------------|-----------------|-----------|---------|------------------|----------------|--------------------------|---------------------------------------------|--------------------|-------------------------------------------|----------------------------------|----------------------------------|
|                  | 120V<br>AC | 120/240<br>V AC | 24V DC/<br>V AC | 12V<br>DC | Relay   | 24V DC<br>Source | 24V DC<br>Sink |                          |                                             |                    |                                           |                                  |                                  |
| 2080-L50E-24AWB  | 14         | —               | —               | —         | 10      | —                | —              | —                        | —                                           | —                  | —                                         | 8                                | Y                                |
| 2080-L50E-24QWB  | —          | —               | 14              | —         | 10      | —                | —              | —                        | —                                           | —                  | 4                                         | 8                                | Y                                |
| 2080-L50E-24QVB  | —          | —               | 14              | —         | —       | —                | 10             | —                        | —                                           | 2 (PTO/PWM)        | 4                                         | 8                                | Y                                |
| 2080-L50E-24QBB  | —          | —               | 14              | —         | —       | 10               | —              | —                        | —                                           | 2 (PTO/PWM)        | 4                                         | 8                                | Y                                |
| 2080-L50E-48AWB  | 28         | —               | —               | —         | 20      | —                | —              | —                        | —                                           | —                  | —                                         | 8                                | Y                                |
| 2080-L50E-48QWB  | —          | —               | 28              | —         | 20      | —                | —              | —                        | —                                           | —                  | 6                                         | 8                                | Y                                |
| 2080-L50E-48QWBK | —          | —               | 28              | —         | 20      | —                | —              | —                        | —                                           | —                  | 6                                         | 8                                | Y                                |
| 2080-L50E-48QVB  | —          | —               | 28              | —         | —       | —                | 20             | —                        | —                                           | 3 (PTO/PWM)        | 6                                         | 8                                | Y                                |
| 2080-L50E-48QBB  | —          | —               | 28              | —         | —       | 20               | —              | —                        | —                                           | 3 (PTO/PWM)        | 6                                         | 8                                | Y                                |

(1) Maximum number of embedded HSC supported

(2) For Micro850 (2080-L50E) controllers with firmware revision 21.011 or later

(3) 2080-REMLCD is supported on Micro850 (2080-L50E) controllers with firmware revision 23.011 or later.

## General Specifications - Micro850 24-point Controllers

| Attribute                | 2080-L50E-24AWB                           | 2080-L50E-24QWB               | 2080-L50E-24QVB              | 2080-L50E-24QBB                       |
|--------------------------|-------------------------------------------|-------------------------------|------------------------------|---------------------------------------|
| Number of I/O            | 24 (14 inputs, 10 outputs)                |                               |                              |                                       |
| Dimensions (HxWxD)       | 90 x 158 x 80 mm (3.54 x 6.22 x 3.15 in.) |                               |                              |                                       |
| Shipping weight, approx. | 0.423 kg (0.933 lb)                       |                               |                              |                                       |
| Wire size                | Wire Type                                 | Min                           | Max                          | Description                           |
|                          | Solid and Stranded                        | 0.14 mm <sup>2</sup> (26 AWG) | 2.5 mm <sup>2</sup> (14 AWG) | Rated @ 90 °C (194 °F) insulation max |

## General Specifications - Micro850 24-point Controllers (Continued)

| Attribute                      | 2080-L50E-24AWB                                                                                                                                                                                                                                                                                                        | 2080-L50E-24QWB                                                                                                                                                                                                                                                                                                    | 2080-L50E-24QVB                                                                                                                                                        | 2080-L50E-24QBB                            |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Wiring category <sup>(1)</sup> | 2 – on signal ports<br>2 – on power ports<br>2 – on communication ports                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |                                            |
| Wire type                      | Use copper conductors only                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |                                            |
| Terminal screw torque          | 0.4...0.5 N•m (3.5...4.4 lb•in) using a 0.6 x 3.5 mm screwdriver.<br>Note: Use a handheld screwdriver to hold down the screws at the side.                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |                                            |
| Input circuit type             | 120V AC                                                                                                                                                                                                                                                                                                                | 12/24V sink/source (standard)<br>24V sink/source (high-speed)                                                                                                                                                                                                                                                      |                                                                                                                                                                        |                                            |
| Output circuit type            | Relay                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                    | 24V DC sink<br>(standard and high-speed)                                                                                                                               | 24V DC source<br>(standard and high-speed) |
| Power consumption, max         | 8 W – Without plug-in modules and expansion I/O modules<br>28 W – With plug-in modules and expansion I/O modules                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |                                            |
| Power supply voltage range     | 21.4...26.4V DC Class 2                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |                                            |
| I/O rating, input              | 120V AC 16 mA                                                                                                                                                                                                                                                                                                          | 24V, 8.8 mA                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                        |                                            |
| I/O rating, output             | 2 A, 240V AC,<br>1 A, 24V DC                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                    | 24V DC, Class 2, 1 A per point<br>(Surrounding air temperature 30 °C (86 °F))<br>24V DC, Class 2, 0.3 A per point<br>(Surrounding air temperature 65 °C (149 °F))      |                                            |
| Isolation voltage              | 250V (continuous), Reinforced Insulation Type, Output to Aux and Network, Inputs to Outputs.<br>Type tested for 60 s @ 3250V DC Output to Aux and Network, Inputs to Outputs.<br>150V (continuous), Reinforced Insulation Type, Input to Aux and Network.<br>Type tested for 60 s @ 1950V DC Input to Aux and Network. | 250V (continuous), Reinforced Insulation Type, Output to Aux and Network, Inputs to Outputs.<br>Type tested for 60 s @ 3250V DC Output to Aux and Network, Inputs to Outputs.<br>50V (continuous), Reinforced Insulation Type, Input to Aux and Network Type tested for 60 s @ 720V DC, Inputs to Aux and Network. | 50V (continuous), Reinforced Insulation Type, I/O to Aux and Network, Inputs to Outputs.<br>Type tested for 60 s @ 720V DC, I/O to Aux and Network, Inputs to Outputs. |                                            |
| Pilot duty rating              | C300, R150                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                    | —                                                                                                                                                                      |                                            |
| Insulation-stripping length    | 7 mm (0.28 in.)                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |                                            |
| Enclosure type rating          | None (open-style)                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |                                            |
| North American temp code       | T4                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |                                            |

(1) Use this Conductor Category information for planning conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication [I770-4.1](#).

## General Specifications - Micro850 48-point Controllers

| Attribute                      | 2080-L50E-48AWB                                                                                                                      | 2080-L50E-48QWB,<br>2080-L50E-48QWBK,        | 2080-L50E-48QVB                                                                                                                           | 2080-L50E-48QBB                            |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Number of I/O                  | 48 (28 inputs, 20 outputs)                                                                                                           |                                              |                                                                                                                                           |                                            |
| Dimensions (HxWxD)             | 90 x 238 x 80 mm (3.54 x 9.37 x 3.15 in.)                                                                                            |                                              |                                                                                                                                           |                                            |
| Shipping weight, approx.       | 0.725 kg (1.60 lb)                                                                                                                   |                                              |                                                                                                                                           |                                            |
| Wire size                      | <b>Wire Type</b>                                                                                                                     | <b>Min</b>                                   | <b>Max</b>                                                                                                                                | <b>Description</b>                         |
|                                | Solid and Stranded                                                                                                                   | 0.2 mm <sup>2</sup> (24 AWG)                 | 2.5 mm <sup>2</sup> (14 AWG)                                                                                                              | Rated @ 90 °C (194 °F) insulation max      |
| Wiring category <sup>(1)</sup> | 2 - on signal ports<br>2 - on power ports<br>2 - on communication ports                                                              |                                              |                                                                                                                                           |                                            |
| Wire type                      | Use copper conductors only                                                                                                           |                                              |                                                                                                                                           |                                            |
| Terminal screw torque          | 0.4...0.5 N•m (3.5...4.4 lb•in) using a 0.6 x 3.5 mm screwdriver.<br>Use a handheld screwdriver to hold down the screws at the side. |                                              |                                                                                                                                           |                                            |
| Input circuit type             | 120V AC                                                                                                                              | 24V DC sink/source (standard and high-speed) |                                                                                                                                           |                                            |
| Output circuit type            | Relay                                                                                                                                |                                              | 24V DC sink<br>(standard and high-speed)                                                                                                  | 24V DC source<br>(standard and high-speed) |
| Power consumption, max         | 11 W - Without plug-in modules and expansion I/O modules<br>33 W - With plug-in modules and expansion I/O modules                    |                                              |                                                                                                                                           |                                            |
| Power supply voltage range     | 21.4...26.4V DC Class 2                                                                                                              |                                              |                                                                                                                                           |                                            |
| I/O rating, input              | 120V AC, 16 mA                                                                                                                       | 24V DC, 8.8 mA                               |                                                                                                                                           |                                            |
| I/O rating, output             | 2 A, 240V AC<br>1 A, 24V DC                                                                                                          |                                              | 24V DC, 1 A per point (Surrounding air temperature 30 °C (86 °F))<br>24V DC, 0.3 A per point (Surrounding air temperature 65 °C (149 °F)) |                                            |

### Output Specifications – Micro850 Controllers

| Attribute                | 2080-L50E-24QVB, 2080-L50E-24QBB, 2080-L50E-48QVB, 2080-L50E-48QBB         |                                                                                                       |
|--------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
|                          | Standard Output                                                            | High-speed Output                                                                                     |
| Output voltage, min      | 10V DC                                                                     | 10.8V DC                                                                                              |
| Output voltage, max      | 26.4V DC                                                                   |                                                                                                       |
| On-state voltage drop    | 1V @ max load current<br>2.5V @ max surge current                          | 1.5V @ max load current                                                                               |
| Load current, min        | 10 mA                                                                      |                                                                                                       |
| Load current, max        | 1.0 A @ 30 °C (86 °F)<br>0.3 A @ 65 °C (149 °F) (standard operation)       | 100 mA (high-speed operation)<br>1.0 A @ 30 °C (86 °F)<br>0.3 A @ 65 °C (149 °F) (standard operation) |
| Surge current, per point | 4.0 A every 1 s @ 30 °C (86 °F); every 2 s @ 65 °C (149 °F) <sup>(1)</sup> |                                                                                                       |
| Current, per common, max | —                                                                          |                                                                                                       |
| Turn-on time, max        | 0.1 ms                                                                     | 2.5 µs                                                                                                |
| Turn-off time, max       | 1.0 ms                                                                     | 2.5 µs                                                                                                |
| Response time, max       | 10 ms                                                                      | —                                                                                                     |
| Frequency, rate          | —                                                                          | 2%                                                                                                    |

(1) Applies for general-purpose operation only. Does not apply for high-speed operation.

### Relay Output Specifications – Micro850 Controllers

| Attribute                | 2080-L50E-24AWB, 2080-L50E-24QWB, 2080-L50E-48AWB, 2080-L50E-48QWB, 2080-L50E-48QWBK |
|--------------------------|--------------------------------------------------------------------------------------|
| Voltage, min             | 5V DC, 5V AC                                                                         |
| Voltage, max             | 125V DC, 265V AC                                                                     |
| Load current, min        | 10 mA                                                                                |
| Load current, max        | 2.0 A                                                                                |
| Surge current, per point | See <a href="#">Relay Contacts Ratings – Micro850 Controllers on page 16</a>         |
| Current, per common, max | 5 A                                                                                  |
| Turn-on time             | 10 ms                                                                                |
| Turn-off time            | 10 ms                                                                                |

### Relay Contacts Ratings – Micro850 Controllers

| Maximum Volts | Amperes |        | Amperes Continuous | Voltamperes |       |
|---------------|---------|--------|--------------------|-------------|-------|
|               | Make    | Break  |                    | Make        | Break |
| 120V AC       | 15 A    | 1.5 A  | 2.0 A              | 1800VA      | 180VA |
| 240V AC       | 7.5 A   | 0.75 A |                    |             |       |
| 24V DC        | 1.0 A   |        | 1.0 A              | 28VA        |       |
| 125V DC       | 0.22 A  |        | 0.22 A             |             |       |