

## Available Modules



### 1762 Expansion I/O Modules

| Cat. No.         | Description                                                                    |
|------------------|--------------------------------------------------------------------------------|
| <b>Digital</b>   |                                                                                |
| 1762-IA8         | 8-Point 120V AC Input Module                                                   |
| 1762-IQ8         | 8-Point Sink/Source 24V DC Input Module                                        |
| 1762-IQ8OW6      | 8 Point Sink/Source 24V DC Input/6-Point AC/DC Relay Output Combination Module |
| 1762-IQ16        | 16-Point Sink/Source 24V DC Input Module                                       |
| 1762-OA8         | 8-Point 120/240V AC Triac Output Module                                        |
| 1762-OB8         | 8-Point Sourcing 24V DC Output Module                                          |
| 1762-OB16        | 16-Point Sourcing 24V DC Output Module                                         |
| 1762-OW8         | 8-Point AC/DC Relay Output Module                                              |
| 1762-OW16        | 16-Point AC/DC Relay Output Module                                             |
| 1762-OX6I        | 6-Point Isolated AC/DC Relay Output Module                                     |
| 1762-OV32T       | 32-Point Solid State 24V DC Sink Output Module                                 |
| 1762-OB32T       | 32-Point Solid State 24V DC Source Output Module                               |
| 1762-IQ32T       | 32-Point DC Input Module                                                       |
| <b>Analog</b>    |                                                                                |
| 1762-IF4         | 4-Channel Voltage/Current Analog Input Module                                  |
| 1762-OF4         | 4-Channel Voltage/Current Analog Output Module                                 |
| 1762-IF2OF2      | Combination 2-Channel Input 2-Channel Output Voltage/Current Analog Module     |
| <b>Specialty</b> |                                                                                |
| 1762-IR4         | 4-Channel RTD/Resistance Input Module                                          |
| 1762-IT4         | 4-Channel Thermocouple/mV Input Module                                         |

### 1762 Digital Expansion Relay Output Modules Specifications

| Attribute                          | 1762-IQ80W6 (outputs)                                                                         | 1762-OW8                                          | 1762-OW16                                                          | 1762-0X6I                                                                                   |
|------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Voltage Category                   | AC/DC normally open relay                                                                     | AC/DC normally open relay                         | AC/DC normally open relay                                          | AC/DC Type C Relay                                                                          |
| Operating Voltage Range            | 5...265V AC<br>5...125V DC                                                                    | 5...265V AC<br>5...125V DC                        | 5...265V AC<br>5...125V DC                                         | 5...265V AC<br>5...125V DC                                                                  |
| Number of Outputs                  | 6                                                                                             | 8                                                 | 16                                                                 | 6 (N.C., N.O.)                                                                              |
| Number of Commons                  | inputs: 2<br>outputs: 1                                                                       | 2                                                 | 2                                                                  | 6                                                                                           |
| Bus Current Draw, max              | 110 mA @ 5V DC (0.55 W)<br>80 mA @ 24V DC (1.92 W)                                            | 80 mA @ 5V DC (0.40 W)<br>90 mA @ 24V DC (2.16 W) | 140 mA @ 5V DC (0.70 W)<br>180 mA @ 24V DC (4.32 W) <sup>(1)</sup> | 110 mA @ 5V DC (0.55 W)<br>110 mA @ 24V DC (2.64 W)                                         |
| Heat Dissipation, max              | 5.0 Total Watts @ 30V<br>4.4 Total Watts @ 26.4V                                              | 2.9 Total Watts                                   | 6.1 Watts <sup>(1)</sup>                                           | 2.8 Watts                                                                                   |
| Signal Delay, max - resistive load | On Delay: 10 ms<br>Off Delay: 10 ms                                                           | On Delay: 10 ms<br>Off Delay: 10 ms               | On Delay: 10 ms<br>Off Delay: 10 ms                                | On Delay: 10 ms<br>Off Delay: 20 ms                                                         |
| Off-state Leakage, max             | 0 mA                                                                                          | 0 mA                                              | 0 mA                                                               | 0 mA                                                                                        |
| On-state Current, min              | 10 mA @ 5V DC                                                                                 | 10 mA @ 5V DC                                     | 10 mA                                                              | 100 mA                                                                                      |
| On-state Voltage Drop, max         | N/A                                                                                           | N/A                                               | N/A                                                                | N/A                                                                                         |
| Continuous Current per Point, max  | 2.5 A (Also see <a href="#">MicroLogix 1500 Controller Relay Contact Rating on page 72.</a> ) |                                                   |                                                                    | 7 A (Also see <a href="#">MicroLogix 1500 Controller Relay Contact Rating on page 72.</a> ) |
| Continuous Current per Common, max | 8 A                                                                                           | 8 A                                               | 8 A                                                                | 7 A (Also see <a href="#">MicroLogix 1500 Controller Relay Contact Rating on page 72.</a> ) |
| Continuous Current per Module, max | 8 A                                                                                           | 16 A                                              | 16 A                                                               | 30 A                                                                                        |
| Surge Current, max                 | See <a href="#">MicroLogix 1500 Controller Relay Contact Rating on page 72.</a>               |                                                   |                                                                    |                                                                                             |

(1) Only applicable to Series B I/O modules

### 1762 Analog Modules

#### 1762 Analog Expansion Modules Common Specifications

| Attribute                                  | 1762-IF4                                                                                                                                                             | 1762-IF20F2                                | 1762-OF4                                                                                                                 |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Bus Current Draw, max                      | 40 mA @ 5V DC<br>50 mA @ 24V DC                                                                                                                                      | 40 mA @ 5V DC<br>105 mA @ 24V DC           | 40 mA @ 5V DC<br>165 mA @ 24V DC                                                                                         |
| Analog Normal Operating Range              | Voltage: -10...10V DC<br>Current: 4...20 mA                                                                                                                          | Voltage: 0...10V DC<br>Current: 4...20 mA  | Voltage: 0...0V DC<br>Current: 4...20 mA                                                                                 |
| Full Scale <sup>(1)</sup> Analog Ranges    | Voltage: -10.5...10.5V DC<br>Current: -21...21 mA                                                                                                                    | Voltage: 0...0.5V DC<br>Current: 0...21 mA | Voltage: 0...0.5V DC<br>Current: 0...21 mA                                                                               |
| Resolution                                 | 15 bits (bipolar) <sup>(2)</sup>                                                                                                                                     | 12 bits (unipolar)                         | 12 bits (unipolar)                                                                                                       |
| Repeatability <sup>(3)</sup>               | ±0.12% <sup>(2)</sup>                                                                                                                                                | ±0.12% <sup>(2)</sup>                      | ±0.12% <sup>(2)</sup>                                                                                                    |
| Input and Output Group to System Isolation | 30V AC/30V DC rated working voltage <sup>(4)</sup><br>(N.E.C. Class 2 required)<br>(IEC Class 2 reinforced insulation)<br>type test: 500V AC or 707V DC for 1 minute |                                            | 30V AC/30V DC rated working voltage<br>(IEC Class 2 reinforced insulation)<br>type test: 500V AC or 707V DC for 1 minute |

(1) The over- or under-range flag is set when the normal operating range is exceeded. The module continues to convert the analog input up to the maximum full scale range.

(2) Only applicable to Series B I/O modules.

(3) Repeatability is the ability of the input module to register the same reading in successive measurements for the same input signal.

(4) Rated working voltage is the maximum continuous voltage that can be applied at the terminals with respect to Earth ground.

### 1762 Analog Expansion Input Modules Specifications

| Attribute                                | 1762-IF4                                                                                          | 1762-IF20F2                                                                                      |
|------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Number of Inputs                         | 4 differential (bipolar)                                                                          | 2 differential (unipolar)                                                                        |
| Update Time (typical)                    | 130, 250, 290, 450, 530 ms (selectable)                                                           | 2.5 ms                                                                                           |
| A/D Converter Type                       | Successive approximation                                                                          | Successive approximation                                                                         |
| Common Mode Voltage Range <sup>(1)</sup> | ±27V                                                                                              | ±27V                                                                                             |
| Common Mode Rejection <sup>(2)</sup>     | > 55 dB @ 50 and 60 Hz                                                                            | > 55 dB @ 50 and 60 Hz                                                                           |
| Non-linearity (in percent full scale)    | ±0.12% <sup>(2)</sup>                                                                             | ±0.12% <sup>(2)</sup>                                                                            |
| Typical Overall Accuracy <sup>(3)</sup>  | ±0.32% full scale @ -20...65 °C (-4...149 °F) <sup>(4)</sup><br>±0.24% full scale @ 25 °C (77 °F) | ±0.55% full scale @ -20...65 °C (-4...149 °F) <sup>(4)</sup><br>±0.3% full scale @ 25 °C (77 °F) |
| Input Impedance                          | Voltage Terminal: 200 k $\Omega$ , Current Terminal: 275 $\Omega$                                 | Voltage Terminal: 200 k $\Omega$ , Current Terminal: 250 $\Omega$                                |
| Current Input Protection                 | ±32 mA                                                                                            | ±32 mA                                                                                           |
| Voltage Input Protection                 | ±30V                                                                                              | ±30V                                                                                             |
| Channel Diagnostics                      | Over or under range or open circuit condition by bit reporting for analog inputs.                 |                                                                                                  |

(1) For proper operation, both the plus and minus input terminals must be within ±27V of analog common.

(2)  $V_{cm} = 1 V_{pk-pk}$  AC.

(3)  $V_{cm} = 0$  (includes offset, gain, non-linearity and repeatability error terms).

(4) Only applicable to Series B I/O modules

### 1762 Analog Expansion Output Modules Specifications

| Attribute                                                  | 1762-IF20F2                                                                                        | 1762-OF4                                                                                   |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Number of Outputs                                          | 2 single-ended (unipolar)                                                                          | 4 single-ended (unipolar) <sup>(2)</sup>                                                   |
| Update Time (typical)                                      | 4.5 ms                                                                                             | 2.5 ms                                                                                     |
| D/A Converter Type                                         | Resistor string                                                                                    | R-2R Ladder Voltage Switching                                                              |
| Resistive Load on Current Output                           | 0...500 $\Omega$ (includes wire resistance)                                                        | 0...500 $\Omega$ (includes wire resistance)                                                |
| Load Range on Voltage Output                               | > 1 k $\Omega$                                                                                     | > 1 k $\Omega$                                                                             |
| Reactive Load, Current Output                              | < 0.1 mH                                                                                           | < 0.1 mH                                                                                   |
| Reactive Load, Voltage Output                              | < 1 $\mu$ F                                                                                        | < 1 $\mu$ F                                                                                |
| Typical Overall Accuracy <sup>(1)</sup>                    | ±1.17% full scale @ -20...65 °C (-4...149 °F) <sup>(2)</sup> ,<br>±0.5% full scale @ 25 °C (77 °F) | ±1.17% full scale @ -20...65 °C (-4...149 °F) <sup>(2)</sup> ,<br>±0.5% full scale @ 25 °C |
| Output Ripple, range 0...500 Hz (referred to output range) | < ±0.1%                                                                                            | < ±0.1%                                                                                    |
| Non-linearity (in percent full scale)                      | < ±0.59% <sup>(2)</sup>                                                                            | < ±0.59% <sup>(2)</sup>                                                                    |
| Open and Short-circuit Protection                          | Continuous                                                                                         | Continuous                                                                                 |
| Output Protection                                          | ±32 mA                                                                                             | ±32 mA                                                                                     |

(1) Includes offset, gain, non-linearity and repeatability error terms.

(2) Only applicable to Series B I/O modules.

## Perform MicroLogix 1200 Controller System Expansion Calculations

A download is also available for system validation. On the Internet, go to <http://www.ab.com/micrologix>.

To have a valid system, both current and power requirements must be satisfied. Use the following worksheets to make your calculations.

Follow these steps to verify the controller power supply loading.

1. Use the following table to select the components for your system. Do not exceed the MAXIMUM LIMIT for the number of I/O modules.
2. Fill in the current amounts and add up the TOTAL CALCULATED CURRENT.

### MicroLogix 1200 Controller Power Supply Loading - Calculate System Current

| Cat. No.                                                                                                     |                                  | Bus Current Draw Attribute |                    | Calculated Current for System |                |
|--------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------|--------------------|-------------------------------|----------------|
|                                                                                                              |                                  | at 5V DC (mA)              | at 24V DC (mA)     | at 5V DC (mA)                 | at 24V DC (mA) |
| 1761-NET-AIC <sup>(1)(2)</sup>                                                                               |                                  | 0                          | 120 <sup>(2)</sup> |                               |                |
| 1761-NET-ENI, 1761-NET-ENIW <sup>(1)(2)</sup>                                                                |                                  | 0                          | 100 <sup>(2)</sup> |                               |                |
| 2707-MVH232 or 2707-MVP232 <sup>(1)(2)</sup>                                                                 |                                  | 0                          | 80 <sup>(2)</sup>  |                               |                |
| Cat. No.                                                                                                     | n = Number of Modules<br>(6 max) | A                          | B                  | n x A                         | n x B          |
| 1762-IA8                                                                                                     |                                  | 50                         | 0                  |                               |                |
| 1762-IQ8                                                                                                     |                                  | 50                         | 0                  |                               |                |
| 1762-IQ8OW6                                                                                                  |                                  | 110                        | 80                 |                               |                |
| 1762-IQ16 (Series A)                                                                                         |                                  | 60                         | 0                  |                               |                |
| 1762-OA8                                                                                                     |                                  | 115                        | 0                  |                               |                |
| 1762-OB8                                                                                                     |                                  | 115                        | 0                  |                               |                |
| 1762-OB16                                                                                                    |                                  | 175                        | 0                  |                               |                |
| 1762-OW8                                                                                                     |                                  | 80                         | 90                 |                               |                |
| 1762-OW16 (Series A)                                                                                         |                                  | 120                        | 140                |                               |                |
| 1762-OX6I                                                                                                    |                                  | 110                        | 110                |                               |                |
| 1762-IF2OF2                                                                                                  |                                  | 40                         | 105                |                               |                |
| 1762-IF4                                                                                                     |                                  | 40                         | 50                 |                               |                |
| 1762-OF4                                                                                                     |                                  | 40                         | 165                |                               |                |
| 1762-IR4                                                                                                     |                                  | 40                         | 50                 |                               |                |
| 1762-IT4                                                                                                     |                                  | 40                         | 50                 |                               |                |
| 1762-OV32T                                                                                                   |                                  | 175                        | 0                  |                               |                |
| 1762-OB32T                                                                                                   |                                  | 175                        | 0                  |                               |                |
| 1762-IQ32T                                                                                                   |                                  | 170                        | 0                  |                               |                |
| 1762-IQ16 (Series B)                                                                                         |                                  | 70                         | 0                  |                               |                |
| 1762-OW16 (Series B)                                                                                         |                                  | 140                        | 180                |                               |                |
| TOTAL MODULES:                                                                                               |                                  | TOTAL CALCULATED CURRENT:  |                    | (C)                           | (D)            |
| For 1762-L24BWA, 1762-L40BWA, 1762-L24BWAR, and 1762-L40BWAR only, add sum of any User 24V DC Sensor Current |                                  |                            |                    | (E)                           |                |

(1) These are optional accessories. Current is consumed only if the accessory is installed.

(2) Current for the 1761-NET-AIC or 1761-NET-ENI(W) can be supplied by the controller's communication port or from an external 24V DC source. No current is consumed from the controller when a user-supplied, external source is used. If an external source is to be used, do not select the device here. The current for a 2707-MVH232 or 2707-MVP232 MicroView Operator Interface is supplied from the controller's communication port, if directly connected.

**Master List of Catalog Numbers**

| <b>Cat. No.</b> | <b>Description</b>                                               | <b>Quantity Selected</b> |
|-----------------|------------------------------------------------------------------|--------------------------|
| 1762-L40BWA     | MicroLogix 1200 40-Point AC Controller                           |                          |
| 1762-L40BWAR    | MicroLogix 1200 40-Point AC Controller with Programming/HMI Port |                          |
| 1762-L40BXB     | MicroLogix 1200 40-Point DC Controller                           |                          |
| 1762-L40BXBR    | MicroLogix 1200 40-Point DC Controller with Programming/HMI Port |                          |
| 1762-MM1        | MicroLogix 1200 Memory Module                                    |                          |
| 1762-MM1RTC     | MicroLogix 1200 Memory Module with Real-Time Clock               |                          |
| 1762-RTC        | MicroLogix 1200 Real-Time Clock Module                           |                          |

**MicroLogix 1100/1200/1400 I/O**

|             |                                                                                |  |
|-------------|--------------------------------------------------------------------------------|--|
| 1762-IA8    | 8-Point 120V AC Input Module                                                   |  |
| 1762-IF2OF2 | Combination 2-Channel Input 2-Channel Output Voltage/Current Analog Module     |  |
| 1762-IF4    | 4-Channel Voltage/Current Analog Input Module                                  |  |
| 1762-IQ16   | 16-Point Sink/Source 24V DC Input Module                                       |  |
| 1762-IQ8    | 8-Point Sink/Source 24V DC Input Module                                        |  |
| 1762-IQ8OW6 | 8 Point Sink/Source 24V DC Input/6-Point AC/DC Relay Output Combination Module |  |
| 1762-IR4    | 4-Channel RTD/Resistance Input Module                                          |  |
| 1762-IT4    | 4-Channel Thermocouple/mV Input Module                                         |  |
| 1762-OA8    | 8-Point 120/240V AC Triac Output Module                                        |  |
| 1762-OB16   | 16-Point Sourcing 24V DC Output Module                                         |  |
| 1762-OB8    | 8-Point Sourcing 24V DC Output Module                                          |  |
| 1762-OF4    | 4-Channel Voltage/Current Analog Output Module                                 |  |
| 1762-OW16   | 16-Point AC/DC Relay Output Module                                             |  |
| 1762-OW8    | 8-Point AC/DC Relay Output Module                                              |  |
| 1762-OX6I   | 6-Point Isolated AC/DC Relay Output Module                                     |  |
| 1762-OV32T  | Solid State 24V DC Sink Output Module                                          |  |
| 1762-OB32T  | Solid State 24V DC Source Output Module                                        |  |
| 1762-IQ32T  | DC Input Module                                                                |  |

**MicroLogix 1400 Controllers and Accessories**

|              |                                                    |  |
|--------------|----------------------------------------------------|--|
| 1766-L32BWA  | MicroLogix 1400 32-point AC controller             |  |
| 1766-L32AWA  | MicroLogix 1400 32-point AC controller             |  |
| 1766-L32BXB  | MicroLogix 1400 32-point DC controller             |  |
| 1766-L32BWAA | MicroLogix 1400 32-point AC controller with Analog |  |
| 1766-L32AWAA | MicroLogix 1400 32-point AC controller with Analog |  |
| 1766-L32BXBA | MicroLogix 1400 32-point DC controller with Analog |  |
| 1766-MM1     | MicroLogix 1400 Memory Module                      |  |

**MicroLogix 1500 Controllers and Accessories**

|             |                                                         |  |
|-------------|---------------------------------------------------------|--|
| 1764-24AWA  | MicroLogix 1500 24-Point AC Base Unit                   |  |
| 1764-24BWA  | MicroLogix 1500 24-Point AC Base Unit                   |  |
| 1764-28BXB  | MicroLogix 1500 28-Point DC Base Unit                   |  |
| 1764-DAT    | MicroLogix Data Access Tool                             |  |
| 1764-LRP    | MicroLogix 1500 Processor Unit with RS-232 Port         |  |
| 1764-LSP    | MicroLogix 1500 Processor Unit                          |  |
| 1764-MM1    | MicroLogix 1500 8 KB Memory Module                      |  |
| 1764-MM1RTC | MicroLogix 1500 8 KB Memory Module with Real-Time Clock |  |
| 1764-MM2    | MicroLogix 1500 16 KB Memory Module                     |  |