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## Starting and Stopping Options

The following options are available in the SMC Dialog Plus controller:

- Soft Stop
- Pump Control
- Preset Slow Speed
- SMB Smart Motor Braking
- Accu-Stop/Slow Speed with Braking

## Features

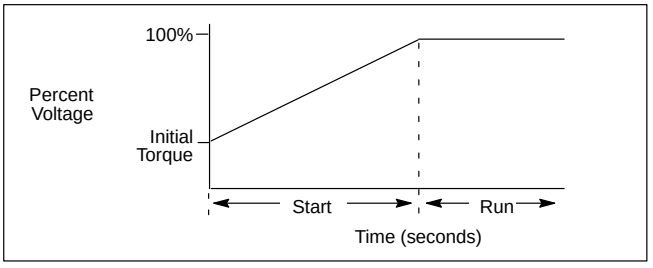
- Motor Protection
- Metering
- SCANport Communication
- LCD Display
- Keypad Programming
- Three Programmable Auxiliary Contacts

## Modes of Operation

The SMC Dialog Plus controller provides the following modes of operation: Soft Start with selectable Kickstart, Current Limit Start, Dual Ramp Start, and Full Voltage Start.

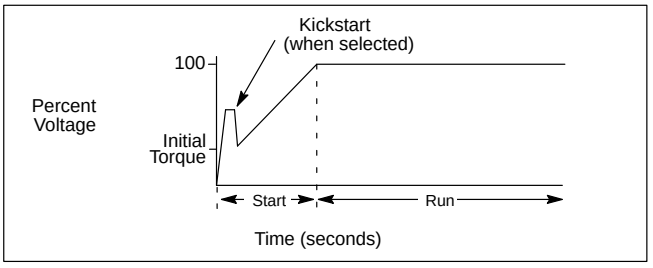
### Soft Start

This method has the most general application. The motor is raised to an initial torque value which is programmable from 0 to 90% of locked rotor torque. The motor voltage is gradually increased during the acceleration ramp time, which can be programmed from 0 to 30 seconds.



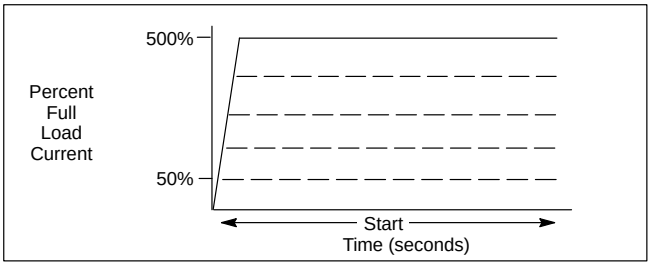

### Soft Start with Selectable Kickstart

A kickstart, or boost, at the beginning of the voltage ramp is intended to provide a current pulse of 550% of full load current. The kickstart time is adjustable from 0.0 to 2.0 seconds. This allows the motor to develop additional torque at start for loads which may need a boost to get started.




### Current Limit Start

This starting mode is used when it is necessary to limit the maximum starting current. The current limit can be programmed for 50 to 600% of full load current.

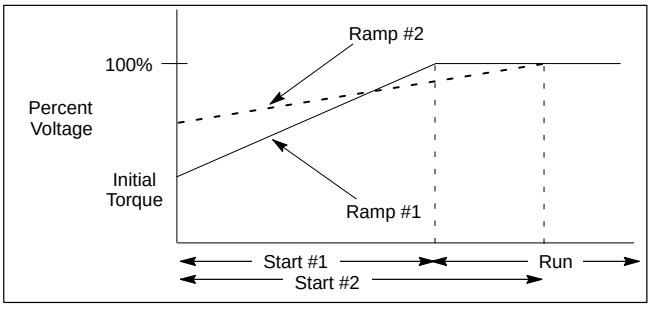



### Dual Ramp Start

This starting mode is useful on applications that have varying loads and therefore varying starting torque requirements. The Dual Ramp Start offers the user the option to select between two separate Soft Start profiles with separately adjustable ramp times and initial torque settings.

The acceleration ramp times can be programmed from 0 to 30 seconds. The initial torque values can be programmed from 0 to 90% of locked rotor torque.

**Note:** Dual Ramp is only available with the standard controller.



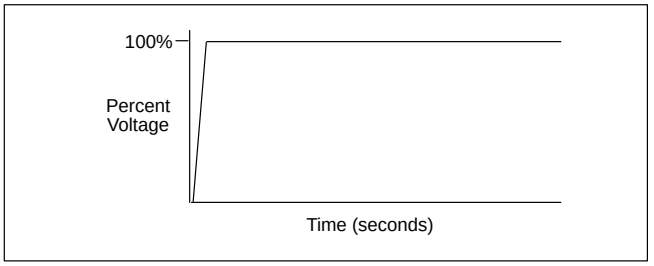


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## Modes of Operation, Continued

### Full Voltage Start

This mode is used for applications requiring across-the-line starting. The ramp time is less than 1/4 second.



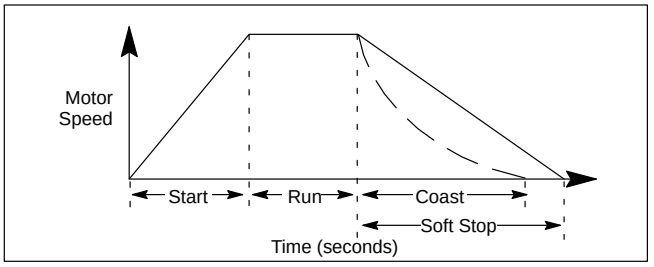

## Description of Starting and Stopping Options

The following options are available in the SMC Dialog Plus controller. Only one option may be added to the standard unit.

### Soft Stop ❶

This option can be used on applications that require an extended coast to rest. It is designed for frictional loads that tend to stop suddenly when voltage is removed from the motor.

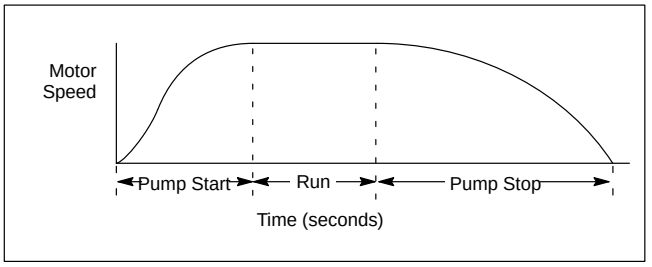
The voltage ramp down time can be programmed from 0 to 60 seconds. The load will stop when the motor voltage drops to a point where the load torque is greater than the motor torque.




### Pump Control ❶

This option is used to reduce surges during the starting and stopping of a centrifugal pump by smoothly accelerating and decelerating the motor. The microprocessor analyzes the motor variables and generates commands which control the motor and reduce the possibility of surges occurring in the system.

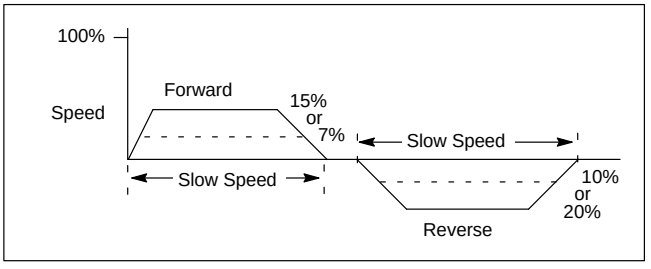
The starting time is programmable from 0 to 30 seconds and the stopping time is programmable from 0 to 120 seconds.




### Preset Slow Speed

This option can be used on applications that require a slow speed (for example, moving material into position).

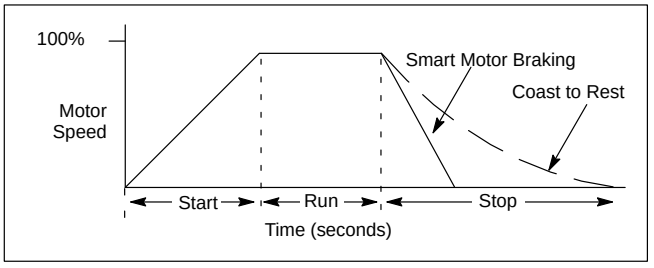
The preset slow speed can be programmed for either 7% of base speed (low) or 15% of base speed (high) in the forward direction. It can also be set for 10% of base speed (low) or 20% of base speed (high) in the reverse direction without a reversing contactor. The direction of rotation is programmable.




### SMB Smart Motor Braking ❶

This option provides motor braking for applications that require the motor to stop faster than a coast to rest. Braking control, with automatic zero speed shut off, is fully integrated into the compact design of the SMC Dialog Plus controller. This design facilitates a clean, straightforward installation and eliminates the requirement for additional hardware such as braking contactors, resistors, timers, and speed sensors.

The microprocessor based braking system applies braking current to a standard squirrel cage induction motor. The strength of the braking current is programmable from 150% to 400% of full load current.




❶ Not intended to be used as an emergency stop. Refer to the applicable standards for emergency stop requirements.

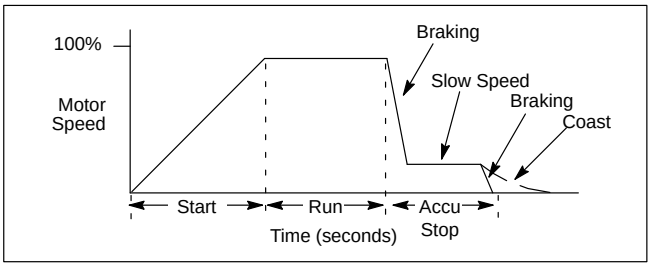

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## Description of Options, Continued

### Accu-Stop ❶

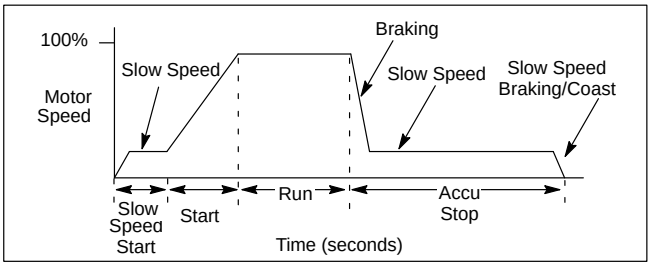
This option is used in applications requiring controlled position stopping. During stopping, braking torque is applied to the motor until it reaches preset slow speed (7 or 15% of rated speed) and holds the motor at this speed until a stop command is given. Braking torque is then applied until the motor reaches zero speed.

Braking current is programmable from 0 to 400% of full load current. Slow Speed Current is programmable from 0 to 450% of full load current. Slow speed can be programmed for either 7% (low) or 15% (high).




### Accu-Stop with Slow Speed at Start ❶

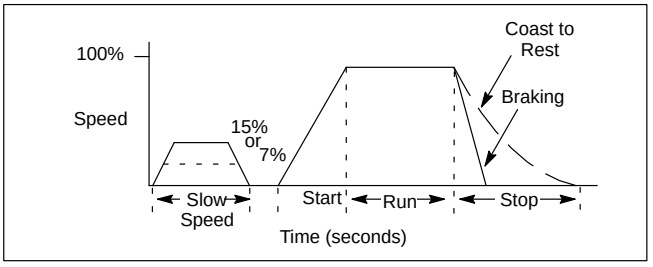
The Accu-Stop option can also allow the motor to operate at a preset slow speed when Slow Speed Start is selected. This minimizes the jogging required to position a load. The start command will ramp the voltage from the preset slow speed to full speed. The operation of Accu-Stop is the same as explained previously.




### Slow Speed with Braking ❶

Slow Speed with Braking is used on applications that require slow speed (in the forward direction) for positioning or alignment and also require braking control to stop.

Slow speed adjustments are 7% (low) or 15% (high) of rated speed. Slow speed acceleration current is adjustable from 0 to 450%. Slow speed running current is adjustable from 0 to 450% of full load current. Braking current is adjustable from 0 to 400%.




❶ Not intended to be used as an emergency stop. Refer to the applicable standards for emergency stop requirements.


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## Description of Features

### Electronic Motor Overload Protection

The SMC Dialog Plus controller incorporates, as standard, electronic motor overload protection. This overload protection is accomplished electronically with an $I^2t$ algorithm.

When coordinated with the proper short circuit protection, overload protection is intended to protect the motor, motor controller, and power wiring against overheating caused by excessive overcurrent. The SMC Dialog Plus controller meets applicable requirements as a motor overload protective device.

The controller's overload protection is programmable, providing the user with flexibility. The overload trip class can be selected for class 10, 15, 20, or 30 protection. The trip current is programmed by entering the motor full load current rating.

Thermal memory is included to accurately model motor operating temperature. Ambient insensitivity is inherent in the electronic design of the overload.

**Note:** The current sensing capability of the SMC Dialog Plus controller is disabled during bypass operation. The Bulletin 825 Converter Module is required for providing current feedback in these applications.

### Stall Protection and Jam Detection

Motors can experience locked rotor currents and develop high torque levels in the event of a stall or a jam. These conditions can result in winding insulation breakdown or mechanical damage to the connected load.

The SMC Dialog Plus controller provides both stall protection and jam detection for enhanced motor and system protection. Stall protection allows the user to program a maximum stall protection delay time from 0 to 10 seconds. The stall protection delay time is in addition to the programmed start time and begins only after the start time has timed out. If the controller senses that the motor is stalled, it will shut down after the delay period has expired.

Jam detection allows the user to determine the motor jam detection level as a percentage of the motor's full load current rating. To prevent nuisance tripping, a jam detection delay time, from 0.0 to 10.0 seconds, can be programmed. This allows the user to select the time delay required before the SMC Dialog Plus controller will trip on a motor jam condition. The motor current must remain above the jam detection level during the delay time. Jam detection is active only after the motor has reached full speed.

### Energy Saver

This is a standard feature with the SMC Dialog Plus controller. It is used to save energy on applications where the motor is lightly loaded or unloaded for long periods of time. The Energy Saver is a built-in feature of the controller. **It does not require additional panel space or external wiring.** And, it does not require a complicated setup procedure.

### Phase Rebalance

The SMC Dialog Plus controller incorporates, as standard, a dynamic Phase Rebalance feature. The controller compensates for voltage unbalance by automatically adjusting the voltage output to balance the three-phase currents drawn by the motor. When phase rebalance is achieved, motor life may be extended and production can continue without interruption. Phase Rebalance is a built-in feature of the controller and does not require a complicated set-up procedure.

**Note:** Phase Rebalance requires the use of the Bulletin 825 converter module and the 150-NFS fanning strip.

**Note:** The performance of the Phase Rebalance feature is dependent on the motor's loading and characteristics. Severe imbalances cannot be corrected.

### Underload Protection

Utilizing the underload protection of the SMC Dialog Plus controller, motor operation can be halted if a sudden drop in current is sensed.

The SMC Dialog Plus controller provides an adjustable underload trip setting from 0 to 99% of the programmed motor full load current rating with an adjustable trip delay time of 0 to 99 seconds.

### Undervoltage Protection

The SMC Dialog Plus controller's undervoltage protection will halt motor operation if a sudden drop in the incoming line voltage is detected.

The undervoltage trip level is adjustable as a percentage of the programmed line voltage, from 0 to 99%. To eliminate nuisance trips, a programmable undervoltage trip delay time of 0 to 99 seconds can also be programmed. The line voltage must remain below the undervoltage trip level during the programmed delay time.

### Overvoltage Protection

If a sudden rise in the incoming line voltage is detected, the SMC Dialog Plus controller's overvoltage protection will halt motor operation

The overvoltage trip level is adjustable as a percentage of the programmed line voltage, from 0 to 99%. To eliminate nuisance trips, a programmable overvoltage trip delay time of 0 to 99 seconds can also be programmed. The line voltage must remain above the overvoltage trip level during the programmed delay time.

### Voltage Unbalance Protection

Voltage unbalance is detected by monitoring the three-phase supply voltage magnitudes in conjunction with the rotational relationship of the three phases. The controller will halt motor operation when the calculated voltage unbalance reaches the user-programmed trip level.

The voltage unbalance trip level is programmable from 0 to 25% unbalance.

### Excessive Starts Per Hour

The SMC Dialog Plus controller allows the user to program the allowed number of starts per hour (up to 99). This helps eliminate motor stress caused by repeated starting during a short time period.


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## Description of Features, Continued

### Metering

Power monitoring parameters include:

- Three-phase current
- Three-phase voltage
- Power in kW
- Power usage in kWH
- Power factor
- Motor thermal capacity usage
- Elapsed time

**Note:** The motor thermal capacity usage allows the user to monitor the amount of overload thermal capacity usage before the SMC Dialog Plus controller's built-in electronic overload trips.

**Note:** In bypass configurations, the current sensing and power factor measurement capability of the SMC Dialog Plus controller is disabled. Three-phase current measurement, kW, kWH, and motor thermal capacity usage can still be maintained with the use of the Bulletin 825 Converter Module.

### Built-in SCANport Communication

A serial interface port is provided as standard, which allows connection to a Bulletin 1201 Human Interface Module or a variety of Bulletin 1203 Communication Modules. This includes Allen-Bradley Remote I/O, DeviceNet network, and RS 232/422/485-DF1.

### LCD Display

The SMC Dialog Plus controller's two-line 16-character backlit LCD display provides parameter identification using clear, informative text. Controller set up can be performed quickly and easily without the use of a reference manual. Parameters are arranged in an organized four-level menu structure for ease of programming and fast access to parameters.

### Keypad Programming

Programming of parameters is accomplished through a five-button keypad on the front of the SMC Dialog Plus controller. The five buttons include up and down arrows, an Enter button, a Select button, and an Escape button. The user needs only to enter the correct sequence of keystrokes for programming the SMC Dialog Plus controller.

### Auxiliary Contacts

Three hard contacts are furnished as standard with the SMC Dialog Plus controller. The first two contacts are programmable for Normal/Up-to-speed. The third is programmable for Normal/Fault.

### Easy Ship Program

Select enclosed controllers are available with the following quick deliveries:

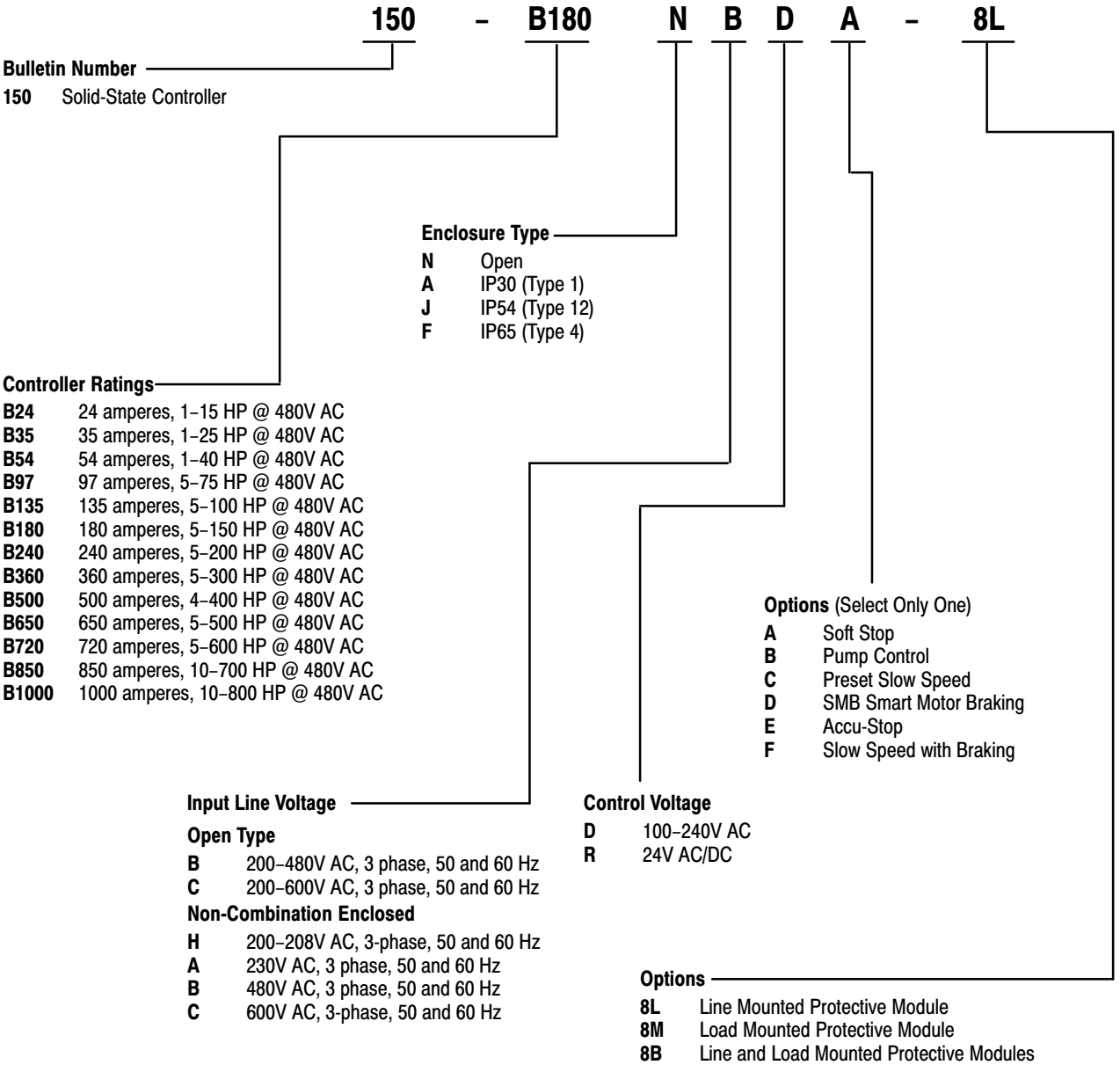
- NEMA Type 1 and Type 12 non-combination controllers rated 97 to 360 Amp, 208 to 480V AC, ship in 48 hours.
- NEMA Type 12 circuit breaker combination controllers rated 75 to 300 HP at 480V ship in 4 working days.

Catalog numbers listed in blue type are available on the Easy Ship Program.


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## Catalog Number Identification

### Open and Non-Combination





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## Catalog Number Identification, Continued

### Combination

**152H – B240 A BD B – 52 – 8B**

**Bulletin Number**

| | |
|---|---|
| **152B** | Solid-State Controller with Fusible Disconnect and Isolating Contactor |
| **152H** | Solid-State Controller with Fusible Disconnect |
| **153B** | Solid-State Controller with Circuit Breaker and Isolating Contactor |
| **153H** | Solid-State Controller with Circuit Breaker |

**Controller Ratings**

| | |
|---|---|
| **B24** | 24 amperes, 1–15 HP @ 480V AC |
| **B35** | 35 amperes, 1–25 HP @ 480V AC |
| **B54** | 54 amperes, 1–40 HP @ 480V AC |
| **B97** | 97 amperes, 5–75 HP @ 480V AC |
| **B135** | 135 amperes, 5–100 HP @ 480V AC |
| **B180** | 180 amperes, 5–150 HP @ 480V AC |
| **B240** | 240 amperes, 5–200 HP @ 480V AC |
| **B360** | 360 amperes, 5–300 HP @ 480V AC |
| **B500** | 500 amperes, 4–400 HP @ 480V AC |
| **B650** | 650 amperes, 5–500 HP @ 480V AC |
| **B720** | 720 amperes, 5–600 HP @ 480V AC |
| **B850** | 850 amperes, 10–700 HP @ 480V AC |
| **B1000** | 1000 amperes, 10–800 HP @ 480V AC |

**Enclosure Type**

| | |
|---|---|
| **A** | IP30 (Type 1) |
| **J** | IP54 (Type 12) |

**Line Voltage**

| | |
|---|---|
| **HD** | 200–208V AC, 3-phase, 50 and 60 Hz |
| **AD** | 230V AC 3-phase, 50 and 60 Hz |
| **BD** | 400–480V AC, 3-phase, 50 and 60 Hz |
| **CD** | 500–600V AC, 3-phase, 50 and 60 Hz |

**Control Options**

| | |
|---|---|
| **A** | Soft Stop |
| **B** | Pump Control |
| **C** | Preset Slow Speed |
| **D** | SMB Smart Motor Braking |
| **E** | Accu-Stop |
| **F** | Slow Speed with Braking |

**Horsepower**

| Cat. No. | HP Rating | Cat. No. | HP Rating | Cat. No. | HP Rating | Cat. No. | HP Rating | Cat. No. | HP Rating |
|---|---|---|---|---|---|---|---|---|---|
| **39** | 5 | **44** | 25 | **49** | 75 | **56** | 250 | **61** | 500 |
| **40** | 7.5 | **45** | 30 | **50** | 100 | **57** | 300 | **62** | 600 |
| **41** | 10 | **46** | 40 | **51** | 125 | **58** | 350 | **63** | 700 |
| **42** | 15 | **47** | 50 | **52** | 150 | **59** | 400 | **65** | 800 |
| **43** | 20 | **48** | 60 | **54** | 200 | **60** | 450 | **67** | 1000 |

**Options**

| | |
|---|---|
| **8L** | Line Mounted Protective Module |
| **8M** | Load Mounted Protective Module |
| **8B** | Line and Load Mounted Protective Modules |


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## Product Selection

### Open Type Controllers

#### Up to 480V AC with 100–240V AC Control Voltage

| Current ❸ Rating (A) | kW ❶ | | HP ❷ | | | Price Adder Code | Cat. No. ❹ | ✻ | Cat. No. ❹ | ✻ |
|---|---|---|---|---|---|---|---|---|---|---|
| | 230V AC 50 Hz | 400V AC 50 Hz | 200V AC 60 Hz | 230V AC 60 Hz | 460V AC 60 Hz | | | | | |
| 24 | 5.5 | 11 | 1–5 | 1–7.5 | 1–15 | a | 150-B24NBD | | 150-B24NBR | |
| 35 | 10 | 18.5 | 1–10 | 1–10 | 1–25 | b | 150-B35NBD | | 150-B35NBR | |
| 54 | 15 | 22 | 1–15 | 1–20 | 1–40 | c | 150-B54NBD | | 150-B54NBR | |
| 97 | 25 | 45 | 5–30 | 5–30 | 5–75 | d | 150-B97NBD | | 150-B97NBR | |
| 135 | 37 | 75 | 5–40 | 5–50 | 5–100 | e | 150-B135NBD | | 150-B135NBR | |
| 180 | 51 | 90 | 5–60 | 5–60 | 5–150 | f | 150-B180NBD | | 150-B180NBR | |
| 240 | 75 | 132 | 5–75 | 5–75 | 5–200 | g | 150-B240NBD | | 150-B240NBR | |
| 360 | 110 | 200 | 5–125 | 5–150 | 5–300 | h | 150-B360NBD | | 150-B360NBR | |
| 500 | 150 | 257 | 5–150 | 5–200 | 5–400 | i | 150-B500NBD | | 150-B500NBR | |
| 650 | 200 | 355 | 5–200 | 5–250 | 5–500 | j | 150-B650NBD | | 150-B650NBR | |
| 720 | 220 | 400 | 5–250 | 5–300 | 5–600 | k | 150-B720NBD | | 150-B720NBR | |
| 850 | 257 | 475 | 10–300 | 10–350 | 10–700 | l | 150-B850NBD | | 150-B850NBR | |
| 1000 | 315 | 530 | 10–350 | 10–400 | 10–800 | m | 150-B1000NBD | | 150-B1000NBR | |

#### Up to 600V AC with 100–240V AC Control Voltage

| Current ❸ Rating (A) | kW ❶ | | | HP ❷ | | | | Price Adder Code | Cat. No. ❹ | ✻ | Cat. No. ❹ | ✻ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 230V AC 50 Hz | 400V AC 50 Hz | 500V AC 50 Hz | 200V AC 60 Hz | 230V AC 60 Hz | 460V AC 60 Hz | 575V AC 60 Hz | | | | | |
| 24 | 5.5 | 11 | 15 | 1–5 | 1–7.5 | 1–15 | 1–20 | a | 150-B24NCD | | 150-B24NCR | |
| 35 | 10 | 18.5 | 22 | 1–10 | 1–10 | 1–25 | 1–30 | b | 150-B35NCD | | 150-B35NCR | |
| 54 | 15 | 22 | 37 | 1–15 | 1–20 | 1–40 | 1–50 | c | 150-B54NCD | | 150-B54NCR | |
| 97 | 25 | 45 | 63 | 5–30 | 5–30 | 5–75 | 5–75 | d | 150-B97NCD | | 150-B97NCR | |
| 135 | 37 | 75 | 90 | 5–40 | 5–50 | 5–100 | 5–125 | e | 150-B135NCD | | 150-B135NCR | |
| 180 | 51 | 90 | 132 | 5–60 | 5–60 | 5–150 | 5–150 | f | 150-B180NCD | | 150-B180NCR | |
| 240 | 75 | 132 | 160 | 5–75 | 5–75 | 5–200 | 5–250 | g | 150-B240NCD | | 150-B240NCR | |
| 360 | 110 | 200 | 250 | 5–125 | 5–150 | 5–300 | 5–350 | h | 150-B360NCD | | 150-B360NCR | |
| 500 | 150 | 257 | 355 | 5–150 | 5–200 | 5–400 | 5–500 | i | 150-B500NCD | | 150-B500NCR | |
| 650 | 200 | 355 | 475 | 5–200 | 5–250 | 5–500 | 5–600 | j | 150-B650NCD | | 150-B650NCR | |
| 720 | 220 | 400 | 500 | 5–250 | 5–300 | 5–600 | 5–700 | k | 150-B720NCD | | 150-B720NCR | |
| 850 | 257 | 475 | 600 | 10–300 | 10–350 | 10–700 | 10–800 | l | 150-B850NCD | | 150-B850NCR | |
| 1000 | 315 | 530 | 710 | 10–350 | 10–400 | 10–800 | 10–1000 | m | 150-B1000NCD | | 150-B1000NCR | |

❶ The minimum rating is: 0.7kW for devices with current ratings of 54A or less; 4kW for devices rated 97A through 720A; 7.5kW for devices rated 850A and greater.

❷ HP ratings at motor terminal voltages for 208, 480 and 600 line volts respectively.

❸ Controllers rated 97A and greater are not equipped with line and load terminal lugs. See page 3-37 for terminal lug kits.

❹ To order a controller that accepts 24V AC/DC control power input, replace the letter D with R in the catalog number. Example: Cat. No. 150-B135NB**D** becomes Cat. No. 150-B135NB**R**.

**Options — Page 3-59**
**Accessories — Page 3-62**
**Specifications — Page 3-65**
**Dimensions — Page 3-68**


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## Product Selection, Continued

**IP30 (Type 1) Vented Enclosed Non-Combination Controllers –** requires a separate 100–240V, 50/60 Hz single-phase control source. Line and load terminations are provided as standard. Enclosures other than those listed are available; consult your nearest Allen-Bradley sales office.

| Current Rating (A) | HP 200V AC 60 Hz | Price Adder Code | Cat. No. | ✻ | Current Rating (A) | kW ❶ 230V AC 50 Hz | HP 230V AC 60 Hz | Price Adder Code | Cat. No. | ✻ |
|---|---|---|---|---|---|---|---|---|---|---|
| 208V AC | | | | | 240V AC | | | | | |
| 24 | 1–5 | a | 150-B24AHD ❷ | | 24 | 5.5 | 1–7.5 | a | 150-B24AAD ❷ | |
| 35 | 1–10 | b | 150-B35AHD ❷ | | 35 | 10 | 1–10 | b | 150-B35AAD ❷ | |
| 54 | 1–15 | c | 150-B54AHD ❷ | | 54 | 15 | 1–20 | c | 150-B54AAD ❷ | |
| 97 | 5–30 | d | 150-B97AHD | | 97 | 25 | 5–30 | d | 150-B97AAD | |
| 135 | 5–40 | e | 150-B135AHD | | 135 | 37 | 5–50 | e | 150-B135AAD | |
| 180 | 5–60 | f | 150-B180AHD | | 180 | 51 | 5–60 | f | 150-B180AAD | |
| 240 | 5–75 | g | 150-B240AHD | | 240 | 75 | 5–75 | g | 150-B240AAD | |
| 360 | 5–125 | h | 150-B360AHD | | 360 | 110 | 5–150 | h | 150-B360AAD | |
| 500 | 5–150 | i | 150-B500AHD | | 500 | 150 | 5–200 | i | 150-B500AAD | |
| 650 | 5–200 | j | 150-B650AHD | | 650 | 200 | 5–250 | j | 150-B650AAD | |
| 720 | 5–250 | k | 150-B720AHD | | 720 | 220 | 5–300 | k | 150-B720AAD | |
| 850 | 10–300 | l | 150-B850AHD | | 850 | 257 | 10–350 | l | 150-B850AAD | |
| 1000 | 10–350 | m | 150-B1000AHD | | 1000 | 315 | 10–400 | m | 150-B1000AAD | |

| Current Rating (A) | kW ❶ 400V AC 50 Hz | HP 460V AC 60 Hz | Price Adder Code | Cat. No. | ✻ | Current Rating (A) | kW ❶ 500V AC 50 Hz | HP 575V AC 60 Hz | Price Adder Code | Cat. No. | ✻ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 480V AC | | | | | | 600V AC | | | | | |
| 24 | 11 | 1–15 | a | 150-B24ABD ❷ | | 24 | 15 | 1–20 | a | 150-B24ACD ❷ | |
| 35 | 18.5 | 1–25 | b | 150-B35ABD ❷ | | 35 | 22 | 1–30 | b | 150-B35ACD ❷ | |
| 54 | 22 | 1–40 | c | 150-B54ABD ❷ | | 54 | 37 | 1–50 | c | 150-B54ACD ❷ | |
| 97 | 45 | 5–75 | d | 150-B97ABD | | 97 | 63 | 5–75 | d | 150-B97ACD | |
| 135 | 75 | 5–100 | e | 150-B135ABD | | 135 | 90 | 5–125 | e | 150-B135ACD | |
| 180 | 90 | 5–150 | f | 150-B180ABD | | 180 | 132 | 5–150 | f | 150-B180ACD | |
| 240 | 132 | 5–200 | g | 150-B240ABD | | 240 | 160 | 5–250 | g | 150-B240ACD | |
| 360 | 200 | 5–300 | h | 150-B360ABD | | 360 | 250 | 5–350 | h | 150-B360ACD | |
| 500 | 257 | 5–400 | i | 150-B500ABD | | 500 | 355 | 5–500 | i | 150-B500ACD | |
| 650 | 355 | 5–500 | j | 150-B650ABD | | 650 | 475 | 5–600 | j | 150-B650ACD | |
| 720 | 400 | 5–600 | k | 150-B720ABD | | 720 | 500 | 5–700 | k | 150-B720ACD | |
| 850 | 475 | 10–700 | l | 150-B850ABD | | 850 | 600 | 10–800 | l | 150-B850ACD | |
| 1000 | 530 | 10–800 | m | 150-B1000ABD | | 1000 | 710 | 10–1000 | m | 150-B1000ACD | |

❶ The minimum rating is 0.7kW for devices with current ratings of 54A or less; 4kW for devices rated 97A through 720A; 7.5kW for devices 850A and greater.

❷ Includes internal circulating fan rather than enclosure ventilation.

**Options — Page 3-59**
**Accessories — Page 3-62**
**Specifications — Page 3-65**
**Dimensions — Page 3-68**


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## Product Selection, Continued

**IP65 (Type 4) Enclosed Non-Combination Controllers –** require a separate 100–240V, 50/60 Hz single-phase control source. Line and load terminations are provided as standard. The 97 to 1000A controllers include a bypass contactor and a Bulletin 825 converter module. Enclosures other than those listed are available; consult your nearest Allen-Bradley sales office.

| Current Rating (A) | HP 200V AC 60 Hz | Price Adder Code | Cat. No. | ✻ | Current Rating (A) | kW ❶ 230V AC 50 Hz | HP 230V AC 60 Hz | Price Adder Code | Cat. No. | ✻ |
|---|---|---|---|---|---|---|---|---|---|---|
| 208V AC | | | | | 240V AC | | | | | |
| 24 | 1–5 | a | 150-B24FHD | | 24 | 5.5 | 1–7.5 | a | 150-B24FAD | |
| 35 | 1–10 | b | 150-B35FHD | | 35 | 10 | 1–10 | b | 150-B35FAD | |
| 54 | 1–15 | c | 150-B54FHD | | 54 | 15 | 1–20 | c | 150-B54FAD | |
| 97 | 5–30 | d | 150-B97FHD | | 97 | 25 | 5–30 | d | 150-B97FAD | |
| 135 | 5–40 | e | 150-B135FHD | | 135 | 37 | 5–50 | e | 150-B135FAD | |
| 180 | 5–60 | f | 150-B180FHD | | 180 | 51 | 5–60 | f | 150-B180FAD | |
| 240 | 5–75 | g | 150-B240FHD | | 240 | 75 | 5–75 | g | 150-B240FAD | |
| 360 | 5–125 | h | 150-B360FHD | | 360 | 110 | 5–150 | h | 150-B360FAD | |
| 500 | 5–150 | i | 150-B500FHD | | 500 | 150 | 5–200 | i | 150-B500FAD | |
| 650 | 5–200 | j | 150-B650FHD | | 650 | 200 | 5–250 | j | 150-B650FAD | |
| 720 | 5–250 | k | 150-B720FHD | | 720 | 220 | 5–300 | k | 150-B720FAD | |
| 850 | 10–300 | l | 150-B850FHD | | 850 | 257 | 10–350 | l | 150-B850FAD | |
| 1000 | 10–350 | m | 150-B1000FHD | | 1000 | 315 | 10–400 | m | 150-B1000FAD | |

| Current Rating (A) | kW ❶ 400V AC 50 Hz | HP 460V AC 60 Hz | Price Adder Code | Cat. No. | ✻ | Current Rating (A) | kW ❶ 500V AC 50 Hz | HP 575V AC 60 Hz | Price Adder Code | Cat. No. | ✻ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 480V AC | | | | | | 600V AC | | | | | |
| 24 | 11 | 1–15 | a | 150-B24FBD | | 24 | 15 | 1–20 | a | 150-B24FCD | |
| 35 | 18.5 | 1–25 | b | 150-B35FBD | | 35 | 22 | 1–30 | b | 150-B35FCD | |
| 54 | 22 | 1–40 | c | 150-B54FBD | | 54 | 37 | 1–50 | c | 150-B54FCD | |
| 97 | 45 | 5–75 | d | 150-B97FBD | | 97 | 63 | 5–75 | d | 150-B97FCD | |
| 135 | 75 | 5–100 | e | 150-B135FBD | | 135 | 90 | 5–125 | e | 150-B135FCD | |
| 180 | 90 | 5–150 | f | 150-B180FBD | | 180 | 132 | 5–150 | f | 150-B180FCD | |
| 240 | 132 | 5–200 | g | 150-B240FBD | | 240 | 160 | 5–250 | g | 150-B240FCD | |
| 360 | 200 | 5–300 | h | 150-B360FBD | | 360 | 250 | 5–350 | h | 150-B360FCD | |
| 500 | 257 | 5–400 | i | 150-B500FBD | | 500 | 355 | 5–500 | i | 150-B500FCD | |
| 650 | 355 | 5–500 | j | 150-B650FBD | | 650 | 475 | 5–600 | j | 150-B650FCD | |
| 720 | 400 | 5–600 | k | 150-B720FBD | | 720 | 500 | 5–700 | k | 150-B720FCD | |
| 850 | 475 | 10–700 | l | 150-B850FBD | | 850 | 600 | 10–800 | l | 150-B850FCD | |
| 1000 | 530 | 10–800 | m | 150-B1000FBD | | 1000 | 710 | 10–1000 | m | 150-B1000FCD | |

❶ The minimum rating is 0.7kW for devices with current ratings of 54A or less; 4kW for devices rated 97A through 720A; 7.5kW for devices 850A and greater.

**Options — Page 3-59**
**Accessories — Page 3-62**
**Specifications — Page 3-65**
**Dimensions — Page 3-68**


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## Product Selection, Continued

**IP54 (Type 12) Enclosed Non-Combination Controllers –** require a separate 100–240V, 50/60 Hz single-phase control source. Line and load terminations are provided as standard. The 97 to 1000A controllers include a bypass contactor and a Bulletin 825 converter module. Enclosures other than those listed are available; consult your nearest Allen-Bradley sales office.

| Current Rating (A) | HP 200V AC 60 Hz | Price Adder Code | Cat. No. | ✻ | Current Rating (A) | kW ❶ 230V AC 50 Hz | HP 230V AC 60 Hz | Price Adder Code | Cat. No. | ✻ |
|---|---|---|---|---|---|---|---|---|---|---|
| 208V AC | | | | | 240V AC | | | | | |
| 24 | 1–5 | a | 150-B24JHD | | 24 | 5.5 | 1–7.5 | a | 150-B24JAD | |
| 35 | 1–10 | b | 150-B35JHD | | 35 | 10 | 1–10 | b | 150-B35JAD | |
| 54 | 1–15 | c | 150-B54JHD | | 54 | 15 | 1–20 | c | 150-B54JAD | |
| 97 | 5–30 | d | 150-B97JHD | | 97 | 25 | 5–30 | d | 150-B97JAD | |
| 135 | 5–40 | e | 150-B135JHD | | 135 | 37 | 5–50 | e | 150-B135JAD | |
| 180 | 5–60 | f | 150-B180JHD | | 180 | 51 | 5–60 | f | 150-B180JAD | |
| 240 | 5–75 | g | 150-B240JHD | | 240 | 75 | 5–75 | g | 150-B240JAD | |
| 360 | 5–125 | h | 150-B360JHD | | 360 | 110 | 5–150 | h | 150-B360JAD | |
| 500 | 5–150 | i | 150-B500JHD | | 500 | 150 | 5–200 | i | 150-B500JAD | |
| 650 | 5–200 | j | 150-B650JHD | | 650 | 200 | 5–250 | j | 150-B650JAD | |
| 720 | 5–250 | k | 150-B720JHD | | 720 | 220 | 5–300 | k | 150-B720JAD | |
| 850 | 10–300 | l | 150-B850JHD | | 850 | 257 | 10–350 | l | 150-B850JAD | |
| 1000 | 10–350 | m | 150-B1000JHD | | 1000 | 315 | 10–400 | m | 150-B1000JAD | |

| Current Rating (A) | kW ❶ 400V AC 50 Hz | HP 460V AC 60 Hz | Price Adder Code | Cat. No. | ✻ | Current Rating (A) | kW ❶ 500V AC 50 Hz | HP 575V AC 60 Hz | Price Adder Code | Cat. No. | ✻ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 480V AC | | | | | | 600V AC | | | | | |
| 24 | 11 | 1–15 | a | 150-B24JBD | | 24 | 15 | 1–20 | a | 150-B24JCD | |
| 35 | 18.5 | 1–25 | b | 150-B35JBD | | 35 | 22 | 1–30 | b | 150-B35JCD | |
| 54 | 22 | 1–40 | c | 150-B54JBD | | 54 | 37 | 1–50 | c | 150-B54JCD | |
| 97 | 45 | 5–75 | d | 150-B97JBD | | 97 | 63 | 5–75 | d | 150-B97JCD | |
| 135 | 75 | 5–100 | e | 150-B135JBD | | 135 | 90 | 5–125 | e | 150-B135JCD | |
| 180 | 90 | 5–150 | f | 150-B180JBD | | 180 | 132 | 5–150 | f | 150-B180JCD | |
| 240 | 132 | 5–200 | g | 150-B240JBD | | 240 | 160 | 5–250 | g | 150-B240JCD | |
| 360 | 200 | 5–300 | h | 150-B360JBD | | 360 | 250 | 5–350 | h | 150-B360JCD | |
| 500 | 257 | 5–400 | i | 150-B500JBD | | 500 | 355 | 5–500 | i | 150-B500JCD | |
| 650 | 355 | 5–500 | j | 150-B650JBD | | 650 | 475 | 5–600 | j | 150-B650JCD | |
| 720 | 400 | 5–600 | k | 150-B720JBD | | 720 | 500 | 5–700 | k | 150-B720JCD | |
| 850 | 475 | 10–700 | l | 150-B850JBD | | 850 | 600 | 10–800 | l | 150-B850JCD | |
| 1000 | 530 | 10–800 | m | 150-B1000JBD | | 1000 | 710 | 10–1000 | m | 150-B1000JCD | |

❶ The minimum rating is 0.7kW for devices with current ratings of 54A or less; 4kW for devices rated 97A through 720A; 7.5kW for devices 850A and greater.

**Options — Page 3-59**
**Accessories — Page 3-62**
**Specifications — Page 3-65**
**Dimensions — Page 3-68**


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## Product Selection, Continued

**IP30 (Type 1) Vented Enclosed Combination Controllers with Fusible Disconnect –** include a 120V central transformer and line and load terminations. Enclosures other than those listed are available; consult your nearest Allen-Bradley sales office.

| HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❸ | ✻ | HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❸ | ✻ |
|---|---|---|---|---|---|---|---|---|---|
| 208V AC, 60 Hz | | | | | 240V AC, 60 Hz | | | | |
| 1–5 | 24 | a | 152H-B24AHD-___❷ | | 1–7-1/2 | 24 | a | 152H-B24AAD-___❷ | |
| 7-1/2–10 | 35 | b | 152H-B35AHD-___❷ | | 10 | 35 | b | 152H-B35AAD-___❷ | |
| 15–20 | 54 | c | 152H-B54AHD-___❷ | | 15–20 | 54 | c | 152H-B54AAD-___❷ | |
| 25–30 | 97 | d | 152H-B97AHD-___ | | 25–30 | 97 | d | 152H-B97AAD-___ | |
| 40 | 135 | e | 152H-B135AHD-___ | | 40–50 | 135 | e | 152H-B135AAD-___ | |
| 50–60 | 180 | f | 152H-B180AHD-___ | | 60 | 180 | f | 152H-B180AAD-__ | |
| 75 | 240 | g | 152H-B240AHD-___ | | 75 | 240 | g | 152H-B240AAD-__ | |
| 100–125 | 360 | h | 152H-B360AHD-___ | | 100–150 | 360 | h | 152H-B360AAD-___ | |
| 150 | 500 | i | 152H-B500AHD-___ | | 200 | 500 | i | 152H-B500AAD-___ | |
| 200 | 650 | j | 152H-B650AHD-___ | | 250 | 650 | j | 152H-B650AAD-___ | |
| 250 | 720 | k | 152H-B720AHD-___ | | 300 | 720 | k | 152H-B720AAD-___ | |
| 300 | 850 | l | 152H-B850AHD-___ | | 350 | 850 | l | 152H-B850AAD-___ | |
| 350 | 1000 | m | 152H-B1000AHD-___ | | 400 | 1000 | m | 152H-B1000AAD-___ | |

| HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❸ | ✻ | HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❸ | ✻ |
|---|---|---|---|---|---|---|---|---|---|
| 480V AC, 60 Hz | | | | | 600V AC, 60 Hz | | | | |
| 1–15 | 24 | a | 152H-B24ABD-___❷ | | 1–20 | 24 | a | 152H-B24ACD-___❷ | |
| 20–25 | 35 | b | 152H-B35ABD-___❷ | | 25–30 | 35 | b | 152H-B35ACD-___❷ | |
| 30–40 | 54 | c | 152H-B54ABD-___❷ | | 40–50 | 54 | c | 152H-B54ACD-___❷ | |
| 50–75 | 97 | d | 152H-B97ABD-___ | | 60–75 | 97 | d | 152H-B97ACD-___ | |
| 100 | 135 | e | 152H-B135ABD-___ | | 100–125 | 135 | e | 152H-B135ACD-___ | |
| 125–150 | 180 | f | 152H-B180ABD-___ | | 150 | 180 | f | 152H-B180ACD-___ | |
| 200 | 240 | g | 152H-B240ABD-___ | | 200–250 | 240 | g | 152H-B240ACD-___ | |
| 250–300 | 360 | h | 152H-B360ABD-___ | | 300 | 360 | h | 152H-B360ACD-___ | |
| 350–400 | 500 | i | 152H-B500ABD-___ | | 350–500 | 500 | i | 152H-B500ACD-___ | |
| 450–500 | 650 | j | 152H-B650ABD-___ | | 600 | 650 | j | 152H-B650ACD-___ | |
| 600 | 720 | k | 152H-B720ABD-___ | | 700 | 7200 | k | 152H-B720ACD-___ | |
| 700 | 850 | l | 152H-B850ABD-___ | | 800 | 850 | l | 152H-B850ACD-___ | |
| 800 | 1000 | m | 152H-B1000ABD-___ | | 1000 | 1000 | m | 152H-B1000ACD-___ | |

❶ The nominal current rating for the combination package may differ from the controller, based on the horsepower. Consult your nearest Allen-Bradley sales office.

❷ Inlcudes internal circulating fan rather than enclosure ventilation.

❸ The catalog numbers listed are not complete. Select the horsepower suffix from Table 1 to complete the catalog number. Example: To order a fusible disconnect combination controller for a 200 HP motor with 480V line voltage, the catalog number is 152H-B240ABD-54.

**Table 1**

| HP | Suffix | HP | Suffix | HP | Suffix | HP | Suffix | HP | Suffix |
|---|---|---|---|---|---|---|---|---|---|
| 1 – 5 | -39 | 25 | -44 | 75 | -49 | 250 | -56 | 500 | -61 |
| 7.5 | -40 | 30 | -45 | 100 | -50 | 300 | -57 | 600 | -62 |
| 10 | -41 | 40 | -46 | 125 | -51 | 350 | -58 | 700 | -63 |
| 15 | -42 | 50 | -47 | 150 | -52 | 400 | -59 | 800 | -65 |
| 20 | -43 | 60 | -48 | 200 | -54 | 450 | -60 | 1000 | -67 |

**Options — Page 3-59**
**Accessories — Page 3-62**
**Specifications — Page 3-65**
**Dimensions — Page 3-68**


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## Product Selection, Continued

**IP54 (Type 12) Enclosed Combination Controllers with Fusible Disconnect –** include a 120V control transformer and line and load terminations. The 97 to 1000A controllers include a bypass contactor and a Bulletin 825 converter module. Enclosures other than those listed are available; consult your nearest Allen-Bradley sales office.

| HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❷ | ✻ | HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❷ | ✻ |
|---|---|---|---|---|---|---|---|---|---|
| 208V AC, 60 Hz | | | | | 240V AC, 60 Hz | | | | |
| 1–5 | 24 | a | 152H-B24JHD-___ ❸ | | 1–7-1/2 | 24 | a | 152H-B24JAD-___ ❸ | |
| 7-1/2–10 | 35 | b | 152H-B35JHD-___ ❸ | | 10 | 35 | b | 152H-B35JAD-___ ❸ | |
| 15–20 | 54 | c | 152H-B54JHD-___ ❸ | | 15–20 | 54 | c | 152H-B54JAD-___ ❸ | |
| 25–30 | 97 | d | 152H-B97JHD-___ | | 25–30 | 97 | d | 152H-B97JAD-___ | |
| 40 | 135 | e | 152H-B135JHD-___ | | 40–50 | 135 | e | 152H-B135JAD-___ | |
| 50–60 | 180 | f | 152H-B180JHD-___ | | 60 | 180 | f | 152H-B180JAD-___ | |
| 75 | 240 | g | 152H-B240JHD-___ | | 75 | 240 | g | 152H-B240JAD-___ | |
| 100–125 | 360 | h | 152H-B360JHD-___ | | 100–150 | 360 | h | 152H-B360JAD-___ | |
| 150 | 500 | i | 152H-B500JHD-___ | | 200 | 500 | i | 152H-B500JAD-___ | |
| 200 | 650 | j | 152H-B650JHD-___ | | 250 | 650 | j | 152H-B650JAD-___ | |
| 250 | 720 | k | 152H-B720JHD-___ | | 300 | 720 | k | 152H-B720JAD-___ | |
| 300 | 850 | l | 152H-B850JHD-___ | | 350 | 850 | l | 152H-B850JAD-___ | |
| 350 | 1000 | m | 152H-B1000JHD-___ | | 400 | 1000 | m | 152H-B1000JAD-___ | |

| HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❷ | ✻ | HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❷ | ✻ |
|---|---|---|---|---|---|---|---|---|---|
| 480V AC, 60 Hz | | | | | 600V AC, 60 Hz | | | | |
| 1–15 | 24 | a | 152H-B24JBD-___ ❸ | | 1–20 | 24 | a | 152H-B24JCD-___ ❸ | |
| 20–25 | 35 | b | 152H-B35JBD-___ ❸ | | 25–30 | 35 | b | 152H-B35JCD-___ ❸ | |
| 30–40 | 54 | c | 152H-B54JBD-___ ❸ | | 40–50 | 54 | c | 152H-B54JCD-___ ❸ | |
| 50–75 | 97 | d | 152H-B97JBD-___ | | 60–75 | 97 | d | 152H-B97JCD-___ | |
| 100 | 135 | e | 152H-B135JBD-___ | | 100–125 | 135 | e | 152H-B135JCD-___ | |
| 125–150 | 180 | f | 152H-B180JBD-___ | | 150 | 180 | f | 152H-B180JCD-___ | |
| 200 | 240 | g | 152H-B240JBD-___ | | 200–250 | 240 | g | 152H-B240JCD-___ | |
| 250–300 | 360 | h | 152H-B360JBD-___ | | 300 | 360 | h | 152H-B360JCD-___ | |
| 350–400 | 500 | i | 152H-B500JBD-___ | | 350–500 | 500 | i | 152H-B500JCD-___ | |
| 450–500 | 650 | j | 152H-B650JBD-___ | | 600 | 650 | j | 152H-B600JCD-___ | |
| 600 | 720 | k | 152H-B720JBD-___ | | 700 | 720 | k | 152H-B720JCD-___ | |
| 700 | 850 | l | 152H-B850JBD-___ | | 800 | 850 | l | 152H-B850JCD-___ | |
| 800 | 1000 | m | 152H-B1000JBD-___ | | 1000 | 1000 | m | 152H-B1000JCD-___ | |

❶ The nominal current rating for the combination package may differ from the controller, based on the horsepower. Consult your nearest Allen-Bradley sales office.

❷ The catalog numbers listed are not complete. Select the horsepower suffix from Table 1 to complete the catalog number. Example: To order a fusible disconnect combination controller for a 200 HP motor with 480V line voltage, the catalog number is 152H-B240JBD-54.

❸ Supplied without bypass contactor or converter module.

**Table 1**

| HP | Suffix | HP | Suffix | HP | Suffix | HP | Suffix | HP | Suffix |
|---|---|---|---|---|---|---|---|---|---|
| 1 – 5 | -39 | 25 | -44 | 75 | -49 | 250 | -56 | 500 | -61 |
| 7.5 | -40 | 30 | -45 | 100 | -50 | 300 | -57 | 600 | -62 |
| 10 | -41 | 40 | -46 | 125 | -51 | 350 | -58 | 700 | -63 |
| 15 | -42 | 50 | -47 | 150 | -52 | 400 | -59 | 800 | -65 |
| 20 | -43 | 60 | -48 | 200 | -54 | 450 | -60 | 1000 | -67 |

**Options — Page 3-59**
**Accessories — Page 3-62**
**Specifications — Page 3-65**
**Dimensions — Page 3-68**


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## Product Selection, Continued

**IP30 (Type 1) Vented Enclosed Combination Controllers with Circuit Breaker –** include a 120V control transformer and line and load terminations. Enclosures other than those listed are available; consult your nearest Allen-Bradley sales office.

| HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❸ | ✻ | HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❸ | ✻ |
|---|---|---|---|---|---|---|---|---|---|
| 208V AC, 60 Hz | | | | | 240V AC, 60 Hz | | | | |
| 1–5 | 24 | a | 153H-B24AHD-___❷ | | 1–7-1/2 | 24 | a | 153H-B24AAD-___❷ | |
| 7-1/2–10 | 35 | b | 153H-B35AHD-___❷ | | 10 | 35 | b | 153H-B35AAD-___❷ | |
| 15–20 | 54 | c | 153H-B54AHD-___❷ | | 15–20 | 54 | c | 153H-B54AAD-___❷ | |
| 25–30 | 97 | d | 153H-B97AHD-___ | | 25–30 | 97 | d | 153H-B97AAD-___ | |
| 40 | 135 | e | 153H-B135AHD-___ | | 40–50 | 135 | e | 153H-B135AAD-___ | |
| 50–60 | 180 | f | 153H-B180AHD-___ | | 60 | 180 | f | 153H-B180AAD-___ | |
| 75 | 240 | g | 153H-B240AHD-___ | | 75 | 240 | g | 153H-B240AAD-___ | |
| 100–125 | 360 | h | 153H-B360AHD-___ | | 100–150 | 360 | h | 153H-B360AAD-___ | |
| 150 | 500 | i | 153H-B500AHD-___ | | 200 | 500 | i | 153H-B500AAD-___ | |
| 200 | 650 | j | 153H-B650AHD-___ | | 250 | 650 | j | 153H-B650AAD-___ | |
| 250 | 720 | k | 153H-B720AHD-___ | | 300 | 720 | k | 153H-B720AAD-___ | |
| 300 | 850 | l | 153H-B850AHD-___ | | 350 | 850 | l | 153H-B850AAD-___ | |
| 350 | 1000 | m | 153H-B1000AHD-___ | | 400 | 1000 | m | 153H-B1000AAD-___ | |

| HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❸ | ✻ | HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❸ | ✻ |
|---|---|---|---|---|---|---|---|---|---|
| 480V AC, 60 Hz | | | | | 600V AC, 60 Hz | | | | |
| 1–15 | 24 | a | 153H-B24ABD-___❷ | | 1–20 | 24 | a | 153H-B24ACD-___❷ | |
| 20–25 | 35 | b | 153H-B35ABD-___❷ | | 25–30 | 35 | b | 153H-B35ACD-___❷ | |
| 30–40 | 54 | c | 153H-B54ABD-___❷ | | 40–50 | 54 | c | 153H-B54ACD-___❷ | |
| 50–75 | 97 | d | 153H-B97ABD-___ | | 60–75 | 97 | d | 153H-B97ACD-___ | |
| 100 | 135 | e | 153H-B135ABD-___ | | 100–125 | 135 | e | 153H-B135ACD-___ | |
| 125–150 | 180 | f | 153H-B180ABD-___ | | 150 | 180 | f | 153H-B180ACD-___ | |
| 200 | 240 | g | 153H-B240ABD-___ | | 200–250 | 240 | g | 153H-B240ACD-___ | |
| 250–300 | 360 | h | 153H-B360ABD-___ | | 300 | 360 | h | 153H-B360ACD-___ | |
| 350–400 | 500 | i | 153H-B500ABD-___ | | 350–500 | 500 | i | 153H-B500ACD-___ | |
| 450–500 | 650 | j | 153H-B650ABD-___ | | 600 | 650 | j | 153H-B650ACD-___ | |
| 600 | 720 | k | 153H-B720ABD-___ | | 700 | 720 | k | 153H-B720ACD-___ | |
| 700 | 850 | l | 153H-B850ABD-___ | | 800 | 850 | l | 153H-B850ACD-___ | |
| 800 | 1000 | m | 153H-B1000ABD-___ | | 1000 | 1000 | m | 153H-B1000ACD-___ | |

❶ The nominal current rating for the combination package may differ from the controller, based on the horsepower. Consult your nearest Allen-Bradley sales office.

❷ Includes internal circulating fan rather than enclosure ventilation.

❸ The catalog numbers listed are not complete. Select the horsepower suffix from Table 1 to complete the catalog number. Example: To order a circuit breaker style combination controller for a 200 HP motor with 480V line voltage, the catalog number is 153H-B240ABD-54.

**Table 1**

| HP | Suffix | HP | Suffix | HP | Suffix | HP | Suffix | HP | Suffix |
|---|---|---|---|---|---|---|---|---|---|
| 1 – 5 | -39 | 25 | -44 | 75 | -49 | 250 | -56 | 500 | -61 |
| 7.5 | -40 | 30 | -45 | 100 | -50 | 300 | -57 | 600 | -62 |
| 10 | -41 | 40 | -46 | 125 | -51 | 350 | -58 | 700 | -63 |
| 15 | -42 | 50 | -47 | 150 | -52 | 400 | -59 | 800 | -65 |
| 20 | -43 | 60 | -48 | 200 | -54 | 450 | -60 | 1000 | -67 |

**Options — Page 3-59**
**Accessories — Page 3-62**
**Specifications — Page 3-65**
**Dimensions — Page 3-68**


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## Product Selection, Continued

**IP54 (Type 12) Enclosed Combination Controllers with Circuit Breaker –** include a 120V control transformer and line and load terminations. The 97 to 1000A controllers include a bypass contactor and a Bulletin 825 converter module. Enclosures other than those listed are available; consult your nearest Allen-Bradley sales office.

| HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❷ | ✻ | HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❷ | ✻ |
|---|---|---|---|---|---|---|---|---|---|
| 208V AC, 60 Hz | | | | | 240V AC, 60 Hz | | | | |
| 1–5 | 24 | a | 153H-B24JHD-___❸ | | 1–7-1/2 | 24 | a | 153H-B24JAD-___❸ | |
| 7-1/2–10 | 35 | b | 153H-B35JHD-___❸ | | 10 | 35 | b | 153H-B35JAD-___❸ | |
| 15–20 | 54 | c | 153H-B54JHD-___❸ | | 15–20 | 54 | c | 153H-B54JAD-___❸ | |
| 25–30 | 97 | d | 153H-B97JHD-___ | | 25–30 | 97 | d | 153H-B97JAD-___ | |
| 40 | 135 | e | 153H-B135JHD-___ | | 40–50 | 135 | e | 153H-B135JAD-___ | |
| 50–60 | 180 | f | 153H-B180JHD-___ | | 60 | 180 | f | 153H-B180JAD-___ | |
| 75 | 240 | g | 153H-B240JHD-___ | | 75 | 240 | g | 153H-B240JAD-___ | |
| 100–125 | 360 | h | 153H-B360JHD-___ | | 100–150 | 360 | h | 153H-B360JAD-___ | |
| 150 | 500 | i | 153H-B500JHD-___ | | 200 | 500 | i | 153H-B500JAD-___ | |
| 200 | 650 | j | 153H-B650JHD-___ | | 250 | 650 | j | 153H-B650JAD-___ | |
| 250 | 720 | k | 153H-B720JHD-___ | | 300 | 720 | k | 153H-B720JAD-___ | |
| 300 | 850 | l | 153H-B850JHD-___ | | 350 | 850 | l | 153H-B850JAD-___ | |
| 350 | 1000 | m | 153H-B1000JHD-___ | | 400 | 1000 | m | 153H-B1000JAD-___ | |

| HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❷ | ✻ | HP Range | Controller Current Rating (A) ❶ | Price Adder Code | Cat. No. ❷ | ✻ |
|---|---|---|---|---|---|---|---|---|---|
| 480V AC, 60 Hz | | | | | 600V AC, 60 Hz | | | | |
| 1–15 | 24 | a | 153H-B24JBD-___❸ | | 1–20 | 24 | a | 153H-B24JCD-___❸ | |
| 20–25 | 35 | b | 153H-B35JBD-___❸ | | 25–30 | 35 | b | 153H-B35JCD-___❸ | |
| 30–40 | 54 | c | 153H-B54JBD-___❸ | | 40–50 | 54 | c | 153H-B54JCD-___❸ | |
| 50–75 | 97 | d | 153H-B97JBD-___ | | 60–75 | 97 | d | 153H-B97JCD-___ | |
| 100 | 135 | e | 153H-B135JBD-___ | | 100–125 | 135 | e | 153H-B135JCD-___ | |
| 125–150 | 180 | f | 153H-B180JBD-___ | | 150 | 180 | f | 153H-B150JCD-___ | |
| 200 | 240 | g | 153H-B240JBD-___ | | 200–250 | 240 | g | 153H-B240JCD-___ | |
| 250–300 | 360 | h | 153H-B360JBD-___ | | 300 | 360 | h | 153H-B360JCD-___ | |
| 350–400 | 500 | i | 153H-B500JBD-___ | | 350–500 | 500 | i | 153H-B500JCD-___ | |
| 450–500 | 650 | j | 153H-B650JBD-___ | | 600 | 650 | j | 153H-B650JCD-___ | |
| 600 | 720 | k | 153H-B720JBD-___ | | 700 | 720 | k | 153H-B720JCD-___ | |
| 700 | 850 | l | 153H-B850JBD-___ | | 800 | 850 | l | 153H-B850JCD-___ | |
| 800 | 1000 | m | 153H-B1000JBD-___ | | 1000 | 1000 | m | 153H-B1000JCD-___ | |

❶ The nominal current rating for the combination package may differ from the controller, based on the horsepower. Consult your nearest Allen-Bradley sales office.

❷ The catalog numbers listed are not complete. Select the horsepower suffix from Table 1 to complete the catalog number. Example: To order a circuit breaker style combination controller for a 200 HP motor with 240V line voltage, the catalog number is 153H-B240JAD-54.

❸ Supplied without bypass contactor or converter module.

**Table 1**

| HP | Suffix | HP | Suffix | HP | Suffix | HP | Suffix | HP | Suffix |
|---|---|---|---|---|---|---|---|---|---|
| 1 – 5 | -39 | 25 | -44 | 75 | -49 | 250 | -56 | 500 | -61 |
| 7.5 | -40 | 30 | -45 | 100 | -50 | 300 | -57 | 600 | -62 |
| 10 | -41 | 40 | -46 | 125 | -51 | 350 | -58 | 700 | -63 |
| 15 | -42 | 50 | -47 | 150 | -52 | 400 | -59 | 800 | -65 |
| 20 | -43 | 60 | -48 | 200 | -54 | 450 | -60 | 1000 | -67 |

**Options — Page 3-59**
**Accessories — Page 3-62**
**Specifications — Page 3-65**
**Dimensions — Page 3-68**


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## Options

| Option | Description | Price Adder Code | Cat. No. Modification | ✻ |
|---|---|---|---|---|
| Soft Stop | Provides a ramp down time of 0–60 seconds for applications which require an extended coast-to-rest. | a–m | A ❶ | |
| Pump Control | Provides smooth motor acceleration and deceleration, reducing surges caused by the starting and stopping of centrifugal pumps. Starting time is adjustable from 0 to 30 seconds, and stopping time is adjustable from 0 to 120 seconds. | a–m | B ❶ | |
| Preset Slow Speed | Provides preset slow speeds for positioning or alignment applications. Preset speeds can be selected at either 7% or 15% of rated motor speed, with adjustable slow speed current from 0% to 450% of full load motor current. | a–m | C ❶ | |
| SMB™ Smart Motor Braking | Provides a microprocessor based braking system that applies three-phase braking current to a standard squirrel cage induction motor. The strength of the braking current is adjustable from 0% to 400% of the motor's full load current rating. | a<br>b<br>c<br>d<br>e<br>f<br>g<br>h<br>i<br>j<br>k<br>l<br>m | D ❶ | |
| Accu-Stop™ | Provides stopping control for general positioning or to minimize jogging to stop. A three-phase braking current is applied to the motor (adjustable from 0% to 400% of full load current) until it reaches a preset slow speed (either 7% or 15% of rated motor speed). The motor is held at this speed until a stop command is given. Braking torque is then applied until the motor reaches zero speed. Slow speed current is adjustable from 0% to 450% of full load current. | a<br>b<br>c<br>d<br>e<br>f<br>g<br>h<br>i<br>j<br>k<br>l<br>m | E ❶ | |
| Slow Speed with Braking | Provides a preset slow speed for positioning or alignment applications. Preset speeds can be selected at either 7% or 15% of rated motor speed, with adjustable slow speed current from 0% to 450% of full load current.<br>Provides a microprocessor based braking system that applies three-phase braking current to a standard squirrel cage induction motor. The strength of the braking current is adjustable from 0% to 400% of full load motor current. | a<br>b<br>c<br>d<br>e<br>f<br>g<br>h<br>i<br>j<br>k<br>l<br>m | F ❶ | |
| Protective Modules | 24–54A, 480V Line Side Protective Module | a–c | -8L | |
| | 97–360A, 480V Line Side Protective Module | d–h | | |
| | 24–54A, 600V Line Side Protective Module | a–c | | |
| | 97–360A, 600V Line Side Protective Module | d–h | | |
| | 24–54A, 480V Load Side Protective Module | a–c | -8M | |
| | 97–360A, 480V Load Side Protective Module | d–h | | |
| | 24–54A, 600V Load Side Protective Module | a–c | | |
| | 97–360A, 600V Load Side Protective Module | d–h | | |
| | 24–54A, 480V Both Line and Load Side Protective Modules | a–c | -8B | |
| | 97–360A, 480V Both Line and Load Side Protective Modules | d–h | | |
| | 24–54A, 600V Both Line and Load Side Protective Modules | a–c | | |
| | 97–360A, 600V Both Line and Load Side Protective Modules | d–h | | |

❶ Add the designated letter to the end of the Cat. No. For example, to add the Pump Control option: Cat. No. 150-B24NBD**B** or Cat. No. 152H-B180JBD**B**-51.

**Product Selection — Page 3-51**


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## Enclosed Options

| Option | Description | Price Adder Code | Cat. No. Modification | ✻ |
|---|---|---|---|---|
| Push Buttons | Start-Stop Push Button | a–m | -1 | |
| | Start-Stop Push Button with H-O-A Selector Switch | a–m | -1F | |
| | Soft Stop Push Button ❶ | a–m | -1XA ❶ | |
| | Pump Stop Push Button ❶ | a–m | -1XB ❶ | |
| | Slow Speed Push Button ❶ | a–m | -1XC ❶ | |
| | Brake Push Button ❶ | a–m | -1XD ❶ | |
| | Accu-Stop/Slow Speed Push Button ❶ | a–m | -1XE ❶ | |
| Isolation Contactor | Line-Side Contactor | a–d<br>e–f<br>g<br>h<br>i<br>j<br>k–l<br>m | ❷ | |
| Selector Switch | Hand-Off-Auto Selector Switch | a–m | -3 | |
| Pilot Lights | Transformer Pilot Lights | a–m | -4_❸ | |
| | Push-to-Test Pilot Lights | a–m | -5_❸ | |
| Control Circuit Transformer | Control Circuit Transformer (fused primary and secondary) | a–m | -6P | |
| SCR Fusing | Fast acting current limiting SCR fusing for 24A unit | a | -SCR | |
| | Fast acting current limiting SCR fusing for 35A unit | b | | |
| | Fast acting current limiting SCR fusing for 54A unit | c | | |
| | Fast acting current limiting SCR fusing for 97–135A units | d–e | | |
| | Fast acting current limiting SCR fusing for 180A unit | f | | |
| | Fast acting current limiting SCR fusing for 240A unit | g | | |
| | Fast acting current limiting SCR fusing for 360A unit | h | | |
| | Fast acting current limiting SCR fusing for 500A unit | i | | |
| | Fast acting current limiting SCR fusing for 650–720A units | j–k | | |
| | Fast acting current limiting SCR fusing for 850A unit | l | | |
| | Fast acting current limiting SCR fusing for 1000A unit | m | | |
| Door-Mounted Human Interface Module | Programmer Only (Type 1) | a–m | -HAP | |
| | Programmer Only (Type 4/12) | a–m | -HJP | |
| | Digital Control Panel (Type 1) | a–m | -HA2 | |
| | Digital Control Panel (Type 4/12) | a–m | -HJ2 | |
| Communication Module | Remote I/O | a–m | -GD1 | |
| | RS- 232/422/485 | a–m | -GD2 | |
| | DH485 | a–m | -GD2 | |
| | DeviceNet™ Network | a–m | -GK5 | |
| Unwired Control Relays | Bulletin 700F 4-pole relay – 2 N.O. and 2 N.C. | a–m | -89F22 | |
| | Bulletin 700F 4-pole relay – 3 N.O. and 1 N.C. | a–m | -89F31 | |
| | Bulletin 700F 4-pole relay – 4 N.O. | a–m | -89F40 | |

❶ Option pushbuttons are available only when the corresponding option module is selected. For example: **Cat. No. 150-B24JBDA-1XA**.

❷ To order a combination enclosed controller with an isolation contactor, add the letter **B** to the bulletin prefix. For example, **Cat. No. 152H-B135JBD-50** becomes **Cat. No. 152B-B135JBD-50**. Bulletin 100 contactors are used through 600A. Enclosure dimensions are subject to change. Consult your nearest Allen-Bradley sales office.

❸ Specify pilot light lens color. Options: **A**mber, **B**lue, **C**lear, **G**reen, **R**ed, and **W**hite. For example, **-4R** for a red lens.


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## Enclosed Options, Continued

| Option | Description | Price Adder Code | Cat. No. Modification | ✻ |
|---|---|---|---|---|
| Auxiliary Contacts | N.O. auxiliary contacts for 24–240A units | a–g | -90 | |
| | N.O. auxiliary contactsfor 360–1000A units | h–m | | |
| | N.C. auxiliary contacts for 24–240A units | a–g | -91 | |
| | N.C. auxiliary contacts for 360–1000A units | h–m | | |
| Disconnect Auxiliary | N.O. disconnect auxiliary mounted on operating mechanism (operates with movement of external handle only) | a–m | -98 | |
| | N.C. disconnect auxiliary mounted on operating mechanism (operates with movement of external handle only) | a–m | -99 | |
| Circuit Breaker Auxiliary | Internal N.O. circuit breaker auxiliary | a–m | -98X | |
| | Internal N.C. circuit breaker auxiliary | a–m | -99X | |
| Shunt Trip | Circuit Breaker Shunt Trip for 24–54A units | a–c | -754 | |
| | Circuit Breaker Shunt Trip for 97–135A units | d–e | | |
| | Circuit Breaker Shunt Trip for 180–240A units | f–g | | |
| | Circuit Breaker Shunt Trip for 360–500A units | h–i | | |
| | Circuit Breaker Shunt Trip for 650–850A units | j–l | | |
| | Circuit Breaker Shunt Trip for 1000A unit | m | | |
| Line Voltage Monitor | Bulletin 813S Line Voltage Monitor | a–m | -813S | |
| Window Kit | Standard (3″H x 5″W) | a–m | -WK1 | |
| | Hinged (10″H x 10″W) | a–m | -WK2 | |

**Product Selection — Page 3-51**



✻ Prices = Consult Sales Office or price list



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## Accessories – Field Installed

### Protective Modules ❶❷



| Current Rating | Description | Price Adder Code | Field Modification Cat. No. | ✻ |
|---|---|---|---|---|
| 24–54A | 480V Protective Module | a–c | 150-N84 | |
| | 600V Protective Module | | 150-N86 | |
| 97–360A | 480V Protective Module | d–h | 150-N84L | |
| | 600V Protective Module | | 150-N86L | |

❶ The same protective module mounts on the line or load side of the SMC Dialog Plus Controller. For applications requiring both line and load side protection, two protective modules must be ordered.

❷ Surge protection is provided as standard on 500A through 1000A units.

### Terminal Lug Kits (97A through 1000A) ❸



| Current Rating | Conductor Range | Total No. of Terminal Lugs Possible Each Side | | Pkg. Qty. | Cat. No. | ✻ |
|---|---|---|---|---|---|---|
| | | Line Side | Load Side | | | |
| 97–135A | #6–4/0 AWG | 3 | 3 | 3 | 199-LF1 | |
| 180–360A | #6–4/0 AWG | 6 | 6 | 3 | 199-LF1 | |
| 500A | #4–500MCM AWG | 6 | 6 | 3 | 199-LG1 | |
| 650–720A | #4–500MCM AWG | 9 | 9 | 3 | 199-LG1 | |
| 850–1000A | (2) 1/0–500MCM AWG | 6 | 6 | 3 | 199-LJ1 | |

### IEC Terminal Covers.



| Description | Field Modification Cat. No. | ✻ |
|---|---|---|
| IEC line or load terminal covers for 97–135A devices (includes line and load termination covers) | 150-NT1 | |
| IEC line and load terminal covers for 180–360A devices (includes line and load termination covers) | 150-NT2 | |

Product Selection — Page 3-51



✻ Prices = Consult Sales Office or price list



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## Accessories – Field Installed, Continued

| Description | | | | Cat. No. | ✻ |
|---|---|---|---|---|---|
|  *Cat. No. 1201-HAP*  *Cat. No. 1201-HA1*  *Cat. No. 1201-HA2* | Human Interface Modules | Door Mount Bezel Kit | IP30 Type 1 | **1201-DMA** | |
| | | Programmer Only | IP30 Type 1 | **1201-HAP** | |
| | | | IP65 Type 4/12 | **1201-HJP** | |
| | | Analog Control Panel ❶ | IP30 Type 1 | **1201-HA1** | |
| | | Digital Control Panel ❶ | IP30 Type 1 | **1201-HA2** | |
| | | | IP65 Type 4/12 | **1201-HJ2** | |

| Description | | | | Use With | Type 1 (IP30) Cat. No. | ✻ |
|---|---|---|---|---|---|---|
|  *Communication Cable* ***Cat. No. 1202-C10***  *Communication Module* ***Cat. No. 1203-GD1*** | Communication Cables | Male-Male | 1/3 Meter | Human Interface Module and Communications Modules | **1202-C03** | |
| | | | 1 Meter | | **1202-C10** | |
| | | | 3 Meters | | **1202-C30** | |
| | | | 9 Meters | | **1202-C90** | |
| | Communication Modules | Single Point Remote I/O ❷ | | Bulletin 150 SMC Dialog Plus | **1203-GD1** | |
| | | RS232/RS422/RS485/DF1 ❷ | | | **1203-GD2** | |
| | | DH485 ❷ | | | **1203-GD2** | |
| | | DeviceNet Network | | | **1203–GK5** | |
| DriveTools™ | Programming Software ❸ | | | Personal Computer | **1300-DTLS** | |

❶ Start, Stop, and Jog buttons are the only active controls when used with the SMC Dialog Plus controller.

❷ Separately powered 120/240V AC.

❸ Requires the use of a 1203-GD2 communication module.

❹ Consult your nearest Allen-Bradley sales office.

**Product Selection — Page 3-51**


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## Accessories – Field Installed, Continued

### Converter Modules ❶

| Description | Motor Full Load Current Range (A) | Cat. No. | ✻ |
|---|---|---|---|
|  *Cat. No. 825-MCM180* | 1 – 12.5 | 825-MCM20 | |
| | 9 – 100 | 825-MCM180 | |
|  *Cat. No. 825-MCM630* | 64 – 360 | 825-MCM630 | |

| Description | Cat. No. | ✻ |
|---|---|---|
| Fanning Strip for Bulletin 825 Converter Modules  *Cat. No. 150-NFS* | 150-NFS | |
| Optional Bus Bars for Cat. No. 825-MCM180<br>Features<br>Terminals: M8<br>4 x 16 x 102mm<br>Weight: 230g  | 825-MVM | |

❶ Must be used with fanning strip **Cat. No. 150-NFS**.

❷ Use **Discount Schedule O7**.



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## Specifications

| Functional Design Specifications | | | |
|---|---|---|---|
| Standard Features | Installation | Power Wiring | The SMC Dialog Plus controller can be wired with or without an isolation contactor. Bypass contactors can be employed after the controller has brought the motor to full speed. |
| | | Control Wiring | 2- and 3-wire control for a wide variety of applications. |
| | Set-up | Keypad | The SMC Dialog Plus controller is configured with the front keypad and backlit LCD display. |
| | | Software | Parameter values can be downloaded to the SMC Dialog Plus controller with DriveTools programming software and the 1203-GD2 communication module. |
| | Communications | | One serial port provided for connection to optional human interface and communication modules. |
| | Starting Modes | | Soft start with selectable kickstart, current limit, dual ramp, and full voltage in one unit. |
| | Protection and Diagnostics | | Power loss, line fault, voltage unbalance, excessive startd/hour, phase reversal, undervoltage, overvoltage, controller temp, stall, jam, open gate, overload, underload, communication fault. |
| | Metering | | Amps, volts, kW, kWH, elapsed time, power factor, motor thermal capacity usage. |
| | Status Indication | | Stopped, ramping, stopping, at speed, and fault. |
| | Auxiliary Contacts | | 2 form "C" programmable as normal or up-to-speed; one progammable as normal or fault. |
| Optional Features | Soft Stop | | Extended coast-to-rest to minimize load shifting. Ramp down time is adjustable from 0 to 60 seconds. |
| | Pump Control | | Reduces fluid surges in centrifugal pumping systems during starting and stopping period. Starting time is adjustable from 0 to 30 seconds. Stopping time is adjustable from 0 to 120 seconds. |
| | Preset Slow Speed | | Enables the operator to position material. The preset slow speed can be set for low (7% of base speed), high (15% of base speed), reverse low (10% of base speed) or reverse high (20% of base speed). |
| | SMB Smart Motor Braking | | Provides motor braking without additional equipment for applications that require the motor to stop quickly. Braking current is adjustable from 0% to 400% of the motor's full load current rating. |
| | Accu-Stop/Slow Speed with Braking | | Combines Smart Motor Braking and Preset Slow Speed. Braking current is adjustable from 0% to 400% of full load current. Slow speed can be set for either Low (7% of base speed) or High (15% of base speed). |

**Product Selection — Page 3-51**



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## Specifications, Continued

| Electrical Ratings | | UL / CSA / NEMA | IEC |
|---|---|---|---|
| Power Circuit: | Rated Operation Voltage | 200–480V AC<br>200–600V AC (–15%, +10%) | 200–415V ~<br>200–500V ~ |
| | Rated Insulation Voltage | N/A | 500V ~ |
| | Rated Impulse Voltage | N/A | 6000V |
| | Dielectric Withstand | 2200V AC | 2500V ~ |
| | Repetitive Peak Inverse Voltage Rating | 200–480V AC: 1400V<br>200–600V AC: 1600V | 200–415V ~: 1400V<br>200–500V ~: 1600V |
| | Operating Frequency | 50/60 Hz | 50/60 Hz |
| | Utilization Category | MG 1 | AC-53a |
| | Protection Against Electrical Shock | N/A | IP00 (open device) |
| | DV/DT Protection | RC Snubber Network | |
| | Transient Protection | Metal Oxide Varistors:<br>220 Joules @ 24–360A<br>220 Joules @ 480V, 500–1000A<br>300 Joules @ 600V, 500–1000A | |
| Short Circuit Protection: | SCPD Performance | Type 1 | |
| | SCPD List | Maximum Fuse or Circuit Breaker: | |
| | Device Operational Current Rating:<br>24A<br>35A<br>54A<br>97A<br>135A<br>180A<br>240A<br>360A<br>500A<br>650A<br>720A<br>850A<br>1000A | <br>80A<br>125A<br>200A<br>350A<br>500A<br>600A<br>700A<br>1000A<br>1200A<br>1600A<br>2000A<br>2500A<br>3000A | |
| Control Circuit: | Rated Operational Voltage | 100–240V AC<br>24V AC<br>24V DC | 100–240V ~<br>24V ~<br>24V DC |
| | Rated Insulation Voltage | N/A | 240V ~ |
| | Rated Impulse Voltage | N/A | 3000V |
| | Dielectric Withstand | 1600V AC | 2000V ~ |
| | Operating Frequency | 50/60 Hz | 50/60 Hz |
| | Protection Against Electric Shock | N/A | IP20 |
| Power Requirements: | Control Module | 40 VA | |
| | Heatsink Fan(s)❶<br>24A<br>35A<br>54A<br>97A<br>135A<br>180A<br>240A<br>360A<br>500A<br>650A<br>720A<br>850A<br>1000A | <br>–<br>–<br>–<br>45 VA<br>45 VA<br>45 VA<br>45 VA<br>45 VA<br>145 VA<br>320 VA<br>320 VA<br>320 VA<br>320 VA | |

❶ For devices rated 24–500A, heatsink fans can be powered by either 110/120V AC or 220/240V AC. For devices rated 650–1000A, heatsink fans can only be powered by 110/120V AC.

**Product Selection — Page 3-51**



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## Specifications, Continued

| Electrical Ratings, Continued | | | UL / CSA / NEMA | IEC |
|---|---|---|---|---|
| Maximum Heat Dissipation (Watts): | Controller Rating: | | | |
| | | 24A | 110 | |
| | | 35A | 150 | |
| | | 54A | 200 | |
| | | 97A | 285 | |
| | | 135A | 490 | |
| | | 180A | 660 | |
| | | 240A | 935 | |
| | | 360A | 1170 | |
| | | 500A | 1400 | |
| | | 650A | 2025 | |
| | | 720A | 2250 | |
| | | 850A | 2400 | |
| | | 1000A | 2760 | |
| Auxiliary Contacts: | Rated Operation Voltage | | 240V AC | 240V ~ |
| | Rated Insulation Voltage | | N/A | 240V ~ |
| | Dielectric Withstand | | 1600V AC | 2000V ~ |
| | Operating Frequency | | 50/60 Hz | 50/60 Hz |
| | Utilization Category | | B300 (terminals 18–19)<br>C300 (terminals 18–20)<br>C300 (terminals 29–30) | AC-15 |
| | SCPD Performance | | Type 2 | |
| | SCPD List | | Class CC 8A @ 1000A Available Fault Current | |
| **Environmental** | | | | |
| Operating Temperature Range | | | 0°C – 50°C (32°F – 122°F) (open)<br>0°C – 40°C (32°F – 104°F) (enclosed) | |
| Storage and Transportation Temperature Range | | | –20°C – +75°C | |
| Altitude | | | 2000 meters | |
| Humidity | | | 5% – 95% (non-condensing) | |
| Pollution Degree | | | 2 | |
| **Mechanical** | | | | |
| Resistance to Vibration | | Operational | 1.0 G Peak, 0.006 Inch Displacement | |
| | | Non-Operational | 2.5 G, 0.015 Inch Displacement | |
| Resistance to Shock | | Operational | 15 G | |
| | | Non-Operational | 30 G | |
| Construction | | | Power Poles: Thermoset Moldings: 24–135A<br>Heatsink hockey puck thyristor: 180–1000A<br>Control Modules: Thermoset and Thermoplastic Moldings<br>Metal Parts: Anodized Aluminum, Plated Brass, Copper or Painted Steel | |
| Terminals | | | Power Terminals:<br>24–54A: 6.0mm hole with clamp screw<br>97 & 135A: One 11.5mm (.453) diameter hole each<br>180–360A: One 10.5mm (.413) diameter hole each<br>500A: Two 13.5mm (.531) diameter holes each<br>650 & 720A: Three 13.1mm (.515) diameter holes each<br>850 & 1000A: Six 13.1mm (.515) diameter holes each<br>Power Terminal Markings:<br>NEMA, CENELEC EN50 012<br>Control Terminals:<br>M 3.5 x 0.6 Pozidriv screw with self–lifting clamp plate | |

**Product Selection — Page 3-51**



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## Specifications, Continued

| Other | | |
|---|---|---|
| EMC Emission Levels | Conducted Radio Frequency Emissions<br>Radiated Emissions | Class A<br>Class A |
| EMC Immunity Levels | Electrostatic Discharge<br>Radio Frequency Electromagnetic Field<br>Fast Transient<br>Surge Transient | 8 kV Air Discharge<br>Per IEC 947-4-2<br>Per IEC 947-4-2<br>Per IEC 947-4-2 |
| Overload Characteristics | Current Range<br>Trip Classes<br>Trip Current Rating<br>Number of Poles | 1.0–999.9 Amps<br>10, 15, 20 & 30<br>120% of Motor FLC<br>3 |

## Approximate Dimensions and Shipping Weights

### Open Type Controllers

Dimensions are not intended for manufacturing purposes.

| Controller | Dimensions in Millimeters (Inches) | | | |
|---|---|---|---|---|
| | Height | Width | Depth | Weight |
| 24A | 180<br>(7.09) | 154<br>(6.06) | 185<br>(7.29) | 4.5 kg<br>10 lbs. |
| 35A | 240<br>(9.45) | 214<br>(8.43) | 195<br>(7.68) | 6.8 kg<br>15 lbs. |
| 54A | 290<br>(11.42) | 244<br>(9.61) | 225<br>(8.86) | 11.3 kg<br>25 lbs. |
| 97A | 336<br>(13.23) | 248<br>(9.77) | 256<br>(10.09) | 10.4 kg<br>23 lbs. |
| 135A | 336<br>(13.23) | 248<br>(9.77) | 256<br>(10.09) | 11.8 kg<br>26 lbs |
| 180A | 560<br>(22.06) | 273<br>(10.75) | 294<br>(11.58) | 25 kg<br>55 lbs. |
| 240A | 560<br>(22.06) | 273<br>(10.75) | 294<br>(11.58) | 30 kg<br>65 lbs. |
| 360A | 560<br>(22.06) | 273<br>(10.75) | 294<br>(11.58) | 30 kg<br>65 lbs. |
| 500A | 588<br>(23.17) | 508<br>(20.00) | 311<br>(12.23) | 40.8 kg<br>90 lbs. |
| 650A-1000A | 1524<br>(60.0) | 813<br>(32.00) | 402<br>(15.83) | 167.8 kg<br>370 lbs. |

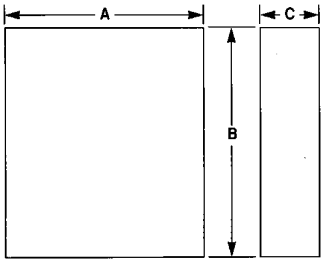
Product Selection — Page 3-51



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## Approximate Dimensions and Shipping Weights, Continued

Enclosed Type Controllers




Dimensions are in millimeters (inches). Dimensions are not intended for manufacturing purposes. All dimensions are subject to change.

Factory installed options may affect enclosure size requirements.

Exact dimensions can be obtained after order entry. Please consult your nearest Allen-Bradley sales office.

| Controller Rating | IP30 (Type 1) | | | IP54 (Type 12) | | | IP65 (Type 4) | | |
|---|---|---|---|---|---|---|---|---|---|
| | B Height | A Width | C Depth | B Height | A Width | C Depth | B Height | A Width | C Depth |
| **Non-Combination Controller** | | | | | | | | | |
| 24A | 610 (24) | 406 (16) | 229 (9) | 610 (24) | 406 (16) | 229 (9) | 610 (24) | 406 (16) | 229 (9) |
| 35A | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) |
| 54A | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) |
| 97A | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) |
| 135A | 965 (38) | 762 (30) | 356 (14) | 965 (38) | 762 (30) | 356 (14) | 965 (38) | 762 (30) | 356 (14) |
| 180A | 965 (38) | 762 (30) | 356 (14) | 965 (38) | 762 (30) | 356 (14) | 965 (38) | 762 (30) | 356 (14) |
| 240A | 965 (38) | 762 (30) | 356 (14) | 1295 (51) | 914 (36) | 356 (14) | 1295 (51) | 914 (36) | 356 (14) |
| 360A | 1295 (51) | 914 (36) | 356 (14) | 1295 (51) | 914 (36) | 356 (14) | 1295 (51) | 914 (36) | 356 (14) |
| 500A | 2286 (90) | 635 (25) | 508 (20) | 1829 (72) | 940 (37) | 610 (24) | 2286 (90) | 889 (35) | 508 (20) |
| 650A | 2286 (90) | 889 (35) | 508 (20) | 1880 (74) | 1829 (72) | 610 (24) | 2286 (90) | 1778 (70) | 508 (20) |
| 720A | 2286 (90) | 889 (35) | 508 (20) | 1880 (74) | 1829 (72) | 610 (24) | 2286 (90) | 1778 (70) | 508 (20) |
| 850A | 2286 (90) | 889 (35) | 508 (20) | ❶ | ❶ | ❶ | ❶ | ❶ | ❶ |
| 1000A | 2286 (90) | 889 (35) | 508 (20) | ❶ | ❶ | ❶ | ❶ | ❶ | ❶ |
| **Combination Controllers with Fusible Disconnect** | | | | | | | | | |
| 24A | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) | – | – | – |
| 35A | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) | – | – | – |
| 54A (6A Disconnect) | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) | – | – | – |
| 54A (100A Disconnect) | 965 (38) | 762 (30) | 356 (14) | 965 (38) | 762 (30) | 356 (14) | – | – | – |
| 97A | 965 (38) | 762 (30) | 356 (14) | 965 (38) | 762 (30) | 356 (14) | – | – | – |
| 135A | 965 (38) | 762 (30) | 356 (14) | 965 (38) | 762 (30) | 356 (14) | – | – | – |
| 180A | 1295 (51) | 914 (36) | 356 (14) | 1295 (51) | 914 (36) | 356 (14) | – | – | – |
| 240A | 1295 (51) | 914 (36) | 356 (14) | 1295 (51) | 914 (36) | 356 (14) | – | – | – |
| 360A | 1524 (60) | 914 (36) | 356 (14) | 1524 (60) | 914 (36) | 356 (14) | – | – | – |
| 500A | 2286 (90) | 1143 (45) | 508 (20) | 2286 (90) | 1270 (50) | 508 (20) | – | – | – |
| 650A | 2286 (90) | 1397 (55) | 508 (20) | 2286 (90) | 1778 (70) | 508 (20) | – | – | – |
| 720A | 2286 (90) | 1397 (55) | 508 (20) | 2286 (90) | 1778 (70) | 508 (20) | – | – | – |
| 850A | ❶ | ❶ | ❶ | ❶ | ❶ | ❶ | – | – | – |
| 1000A | ❶ | ❶ | ❶ | ❶ | ❶ | ❶ | – | – | – |
| **Combination Controllers with Circuit Breaker** | | | | | | | | | |
| 24A | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) | – | – | – |
| 35A | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) | – | – | – |
| 54A | 762 (30) | 610 (24) | 305 (12) | 762 (30) | 610 (24) | 305 (12) | – | – | – |
| 97A | 965 (38) | 762 (30) | 356 (14) | 965 (38) | 762 (30) | 356 (14) | – | – | – |
| 135A | 965 (38) | 762 (30) | 356 (14) | 965 (38) | 762 (30) | 356 (14) | – | – | – |
| 180A | 1295 (51) | 914 (36) | 356 (14) | 1295 (51) | 914 (36) | 356 (14) | – | – | – |
| 240A | 1295 (51) | 914 (36) | 356 (14) | 1295 (51) | 914 (36) | 356 (14) | – | – | – |
| 360A | 1524 (60) | 914 (36) | 356 (14) | 1524 (60) | 914 (36) | 356 (14) | – | – | – |
| 500A | 2286 (90) | 889 (35) | 508 (20) | 2286 (90) | 889 (35) | 508 (20) | – | – | – |
| 650A | 2286 (90) | 1397 (55) | 508 (20) | 2286 (90) | 1778 (70) | 508 (20) | – | – | – |
| 720A | 2286 (90) | 1397 (55) | 508 (20) | 2286 (90) | 1778 (70) | 508 (20) | – | – | – |
| 850A | ❶ | ❶ | ❶ | ❶ | ❶ | ❶ | – | – | – |
| 1000A | ❶ | ❶ | ❶ | ❶ | ❶ | ❶ | – | – | – |

❶ Consult your nearest/local Allen-Bradley sales office.

**Product Selection — Page 3-51**



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## Related Publications

| Publication Number | Title | Description |
|---|---|---|
| 150-2.5 ❶ | Feature Summary | This document assists specifiers in creating a complete solid-state reduced voltage starter specification. |
| 150-2.6 | Starting Solutions:<br>Solid-State Controllers vs. Electromechanical Starters | This document looks at:<br>• the history of AC motor starter technology<br>• the selection of the various starting methods<br>• the key issues involving trade-offs of the various starting methods |
| 150-5.2 | Application and Product Guide | This publication provides detailed information on;<br>• standard modes of operation<br>• product features<br>• control options<br>• examples of typical applications<br>• special application considerations |
| 150-911 | A Unique Cost-Effective Approach to Reducing Fluid “Surges” or “Hammering” in a Pipe System | This document provides a technical discussion of centrifugal pumping systems. The Pump Control option of the SMC Dialog Plus controller is featured as a cost-effective method to minimize the phenomenon known as “water hammer.” |

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