

# Enclosed SMC-3, SMC Flex, and SMC-50 Smart Motor Controllers

Bulletin Numbers 150C, 152C, 153C, 150F, 152F, 153F, 150S, 152S, 153S

| Topic                                   | Page |
|-----------------------------------------|------|
| Overview                                | 2    |
| Enclosed SMC-3 Controllers              | 5    |
| Catalog Number Explanation              | 5    |
| Product Selection                       | 8    |
| Accessories                             | 12   |
| Wiring Diagrams                         | 14   |
| Standards Compliance and Certifications | 17   |
| Short-circuit Current Ratings           | 17   |
| Approximate Dimensions                  | 19   |
| Enclosed SMC Flex Controllers           | 23   |
| Catalog Number Explanation              | 23   |
| Product Selection                       | 25   |
| Accessories                             | 29   |
| Wiring Diagrams                         | 31   |
| Standards Compliance and Certifications | 34   |
| Short-circuit Current Ratings           | 35   |
| Approximate Dimensions                  | 37   |

| Topic                                   | Page |
|-----------------------------------------|------|
| Enclosed SMC-50 Controllers             | 44   |
| Catalog Number Explanation              | 44   |
| Product Selection                       | 45   |
| Accessories                             | 50   |
| Standards Compliance and Certifications | 55   |
| Wiring Diagrams                         | 55   |
| Short-circuit Current Ratings           | 61   |
| Approximate Dimensions                  | 63   |

## Additional Resources

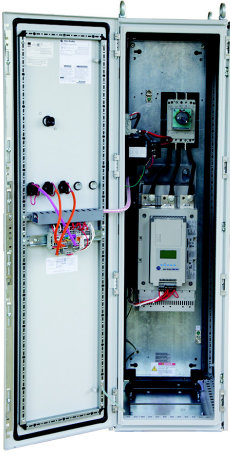
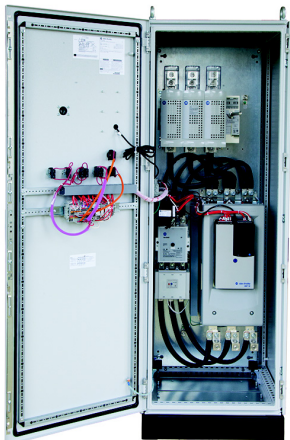
These documents contain additional information concerning related products from Rockwell Automation.

| Resource                                                                                                                                                                                | Description                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| SMC-3, SMC Flex, and SMC-50 Technical Data, publication <a href="#">150-TD009</a>                                                                                                       | Provides technical information for open SMC-3, SMC Flex, and SMC-50 controllers.    |
| SMC-50 User Manual, publication <a href="#">150-UM011</a>                                                                                                                               | Provides complete user information for SMC-50 controllers.                          |
| SMC Flex User Manual, publication <a href="#">150-UM008</a>                                                                                                                             | Provides complete user information for SMC Flex controllers.                        |
| SMC-3 Installation Instructions, publication <a href="#">150-IN004</a>                                                                                                                  | Provides installation instructions for SMC-3 controllers.                           |
| Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>                                                                                             | Provides general guidelines for installing a Rockwell Automation industrial system. |
| Product Certifications website, <a href="http://www.rockwellautomation.com/global/certification/overview.page">http://www.rockwellautomation.com/global/certification/overview.page</a> | Provides declarations of conformity, certificates, and other certification details. |

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## Overview

Our Enclosed soft starters can be fully customized with a wide variety of factory-installed options and are pre-engineered for quick factory lead times.

|                                                    |  |  |  |                                         |
|----------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------|
| Enclosed Starter Features                          | SMC™-3                                                                            | SMC™ Flex                                                                         | SMC™-50 Solid-state Controller                                                      | SMC™-50 Controller with Internal Bypass |
| True 3-phase control                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                     |
| Bypass                                             | Internal                                                                          | Internal                                                                          | External                                                                            | Internal                                |
| Protection and diagnostics                         | Basic                                                                             | Advanced                                                                          | Industry leading                                                                    | Industry leading                        |
| Start/stop modes                                   | 5                                                                                 | 9                                                                                 | 17                                                                                  | 17                                      |
| Enclosure type                                     | 1/12/4 or 3R                                                                      | 1/12/4 or 3R                                                                      | 1/12/4 or 3R                                                                        | 1/12/4 or 3R                            |
| Factory-installed communication modules (optional) | None                                                                              | RS-485, DeviceNet™, Ethernet/IP, ControlNet™ ProfiBUS                             | RS-485, DeviceNet™, Ethernet/IP, ControlNet™ ProfiBUS                               |                                         |
| Controller Current                                 | 1 ... 480 A                                                                       | 1 ... 1250 A                                                                      | 90 ... 520 A                                                                        | 108 ... 480 A                           |
| Voltage range                                      | 200...575V AC                                                                     | 200...575V AC                                                                     | 200...575V AC                                                                       | 200...575V AC                           |
| Control voltage                                    | 100...240V AC                                                                     | 100...240V AC                                                                     | 100...240V AC                                                                       | 100...240V AC                           |
| Option offering and customization                  | Moderate                                                                          | Extensive                                                                         | Extensive                                                                           | Extensive                               |
| Customization through Modified Industrial Controls | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                     |

|                                                                                    |  |  |  |                           |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------|
| Controller Features <sup>(1)</sup>                                                 | SMC™-3                                                                            | SMC™ Flex                                                                          | SMC™-50 Controller                                                                  |                           |
|                                                                                    |                                                                                   |                                                                                    | Solid-state                                                                         | with Internal Bypass      |
|                                                                                    | 200...690V<br>1...480 A                                                           | 200...690V<br>1...1250 A                                                           | 200...690V<br>90...520 A                                                            | 200...690V<br>108...480 A |
| Soft Start                                                                         | S                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Linear Acceleration/Deceleration                                                   | —                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Torque Control                                                                     | —                                                                                 | —                                                                                  | S                                                                                   | S                         |
| Kickstart                                                                          | S                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Pump Control                                                                       | —                                                                                 | 0                                                                                  | S                                                                                   | S                         |
| Current Limit                                                                      | S                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Dual Ramp Start                                                                    | —                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Full Voltage                                                                       | —                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Energy Saver                                                                       | —                                                                                 | —                                                                                  | S                                                                                   | S                         |
| Phase Rebalance                                                                    | —                                                                                 | —                                                                                  | S                                                                                   | —                         |
| Soft Stop                                                                          | S                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Preset Slow Speed                                                                  | —                                                                                 | S <sup>(2)</sup>                                                                   | S <sup>(3)</sup>                                                                    | S <sup>(3)</sup>          |
| Dual Slow Speed Commands                                                           | —                                                                                 | —                                                                                  | S                                                                                   | S                         |
| SMB™ Smart Motor Braking                                                           | —                                                                                 | 0                                                                                  | S                                                                                   | S                         |
| Accu-Stop™                                                                         | —                                                                                 | 0                                                                                  | S <sup>(4)</sup>                                                                    | S <sup>(4)</sup>          |
| Slow Speed with Braking                                                            | —                                                                                 | 0                                                                                  | S                                                                                   | S                         |
| Integrated Bypass Contactor (SMC-50 firmware rev. 5.XXX and higher)                | S                                                                                 | S                                                                                  | — <sup>(5)</sup>                                                                    | S                         |
| Integrated Motor Overload Protection                                               | S                                                                                 | S                                                                                  | S                                                                                   | S                         |
| DPI™ Communication                                                                 | —                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Metering                                                                           | —                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Real Time Clock                                                                    | —                                                                                 | —                                                                                  | S                                                                                   | S                         |
| Energy Saver Mode                                                                  | —                                                                                 | —                                                                                  | S                                                                                   | —                         |
| Motor Winding Heater Function                                                      | —                                                                                 | <sup>(6)</sup>                                                                     | S                                                                                   | S                         |
| Resistive Load Control (Firmware rev. 5.XXX and higher, solid-state devices only.) | —                                                                                 | —                                                                                  | S                                                                                   | —                         |
| Diagnostic Faults and Alarms                                                       | —                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Parameter Configuration/Programming Tools                                          | —                                                                                 | S                                                                                  | 0                                                                                   | 0                         |
| Human Interface Module (HIM)                                                       | —                                                                                 | 0                                                                                  | 0                                                                                   | 0                         |
| Parameter Configuration Module                                                     | —                                                                                 | —                                                                                  | 0                                                                                   | 0                         |
| DriveExplorer™ and DriveExecutive™                                                 | —                                                                                 | 0                                                                                  | 0                                                                                   | 0                         |
| Configuration Software: Connected Components Workbench                             | —                                                                                 | 0                                                                                  | 0                                                                                   | 0                         |
| Network Communications                                                             | —                                                                                 | 0                                                                                  | 0                                                                                   | 0                         |
| Inside-the-Delta Functionality                                                     | S                                                                                 | S                                                                                  | S                                                                                   | S                         |
| Individual Bit Enable of Faults and Alarms                                         | —                                                                                 | —                                                                                  | S                                                                                   | S                         |
| Automatic Tuning of Motor Parameters                                               | —                                                                                 | —                                                                                  | S                                                                                   | S                         |
| Digital I/O Expansion Module <sup>(7)</sup>                                        | —                                                                                 | —                                                                                  | 0                                                                                   | 0                         |
| Analog I/O Expansion Module <sup>(7)</sup>                                         | —                                                                                 | —                                                                                  | 0                                                                                   | 0                         |
| Ground Fault/CT/PTC Module <sup>(7)</sup>                                          | —                                                                                 | —                                                                                  | 0                                                                                   | 0                         |
| DeviceLogix™ (Firmware rev. 4.XXX and higher.)                                     | —                                                                                 | —                                                                                  | S                                                                                   | S                         |

(1) S = Standard Feature; 0 = Optional Feature

(2) Limited slow speed capability

(3) Advanced slow speed capability

(4) Accu-Stop is not included as a parameter/function for the SMC-50 controller. However, the Accu-Stop function can be accomplished with the Stop Option and Slow Speed with Braking functions.

(5) You can add an external bypass contactor as an option.

(6) Option using a Bulletin 1410 motor winding heater

(7) With removable terminal block.

This catalog is based on the minimum information needed to select an SMC soft starter for applications with low starting torque requirements. For product selection involving loads with high starting torque requirements (such as large fan, rock crusher, chipper,), use of the free tools available from the Rockwell Automation Website is recommended:

[http://www.ab.com/industrialcontrols/products/solid-state\\_motor\\_control/software/](http://www.ab.com/industrialcontrols/products/solid-state_motor_control/software/)

You can find full descriptions of features and modes of operation, as well as specifications in the selection guides for open SMC Controllers in the open style SMC controllers technical data, [publication 150-TD009](#).

## Enclosed SMC-3 Controllers

### Catalog Number Explanation

Examples given in this section are not intended to be used for product selection. Use ProposalWorks to configure Smart Motor Controllers. ProposalWorks is available from <http://www.rockwellautomation.com/global/e-tools/overview.page>.

Controllers Rated 90...1250 A

|             |   |            |          |          |          |   |            |   |          |
|-------------|---|------------|----------|----------|----------|---|------------|---|----------|
| <b>152F</b> | – | <b>D10</b> | <b>J</b> | <b>B</b> | <b>D</b> | – | <b>J20</b> | – | <b>3</b> |
| a           |   | b          | c        | d        | e        |   | f          |   | g        |

| a               |                                           |
|-----------------|-------------------------------------------|
| Bulletin Number |                                           |
| Code            | Description                               |
| 150C            | SMC-3 Non-combination                     |
| 152C            | SMC-3 Combination with Fusible Disconnect |
| 153C            | SMC-3 Combination with Circuit Breaker    |

| b                     |             |
|-----------------------|-------------|
| Controller Rating [A] |             |
| Code                  | Description |
| D10                   | 108         |
| D13                   | 135         |
| D20                   | 201         |
| D25                   | 251         |
| D31                   | 317         |
| D36                   | 361         |
| D48                   | 480         |

| c              |              |
|----------------|--------------|
| Enclosure Type |              |
| Code           | Description  |
| J              | 1/12/3R (3R) |

| d                  |                                  |
|--------------------|----------------------------------|
| Input Line Voltage |                                  |
| Code               | Description                      |
| H                  | 200...208V AC, 3-Phase, 50/60 Hz |
| A                  | 230V AC, 3-Phase, 50/60 Hz       |
| B                  | 400...460V AC, 3-Phase, 50/60 Hz |
| C                  | 500...575V AC, 3-Phase, 50/60 Hz |

| e               |             |
|-----------------|-------------|
| Control Voltage |             |
| Code            | Description |
| D               | 120V AC     |
| J               | 24V AC      |
| A               | 240V AC     |
| EJ              | 24V DC      |

| f                                                           |                 |      |             |
|-------------------------------------------------------------|-----------------|------|-------------|
| Fuse Clip/Circuit Breaker (CB)—Combination Controllers Only |                 |      |             |
| Code                                                        | Description     | Code | Description |
| J20                                                         | 200 A, Class J  | D12  | 125 A, CB   |
| J40                                                         | 400 A, Class J  | D17  | 175 A, CB   |
| J60                                                         | 600 A, Class J  | D25  | 250 A, CB   |
| L80                                                         | 800 A, Class L  | D40  | 400 A, CB   |
| L12                                                         | 1200 A, Class L | D60  | 600 A, CB   |
| L16                                                         | 1600 A, Class L | D80  | 800 A, CB   |
| D16                                                         | 160 A, DIN      | E12  | 1200 A, CB  |
| D25                                                         | 250 A, DIN      |      |             |
| D40                                                         | 400 A, DIN      |      |             |
| D63                                                         | 630 A, DIN      |      |             |
| D80                                                         | 800 A, DIN      |      |             |
| N12                                                         | 1250 A, DIN     |      |             |

| g                     |                                                          |      |                                                                               |      |                                                                |
|-----------------------|----------------------------------------------------------|------|-------------------------------------------------------------------------------|------|----------------------------------------------------------------|
| Options               |                                                          |      |                                                                               |      |                                                                |
| Code                  | Description                                              | Code | Description                                                                   | Code | Description                                                    |
| 1                     | Start-Stop Push-Button                                   | 8M   | Load-Mounted Protective Module                                                | P20  | 200 mm Mounting foot, sheet metal                              |
| 1E                    | On - Off Push-Button                                     |      |                                                                               | F10  | 100 mm Mounting foot, high-strength plastic                    |
| 3                     | Hand-Off-Auto Selector Switch                            | 8B   | Line- and Load-Mounted Protective Modules                                     | F20  | 200 mm Mounting foot, high-strength plastic                    |
| 3E                    | On - Off Selector Switch                                 | BP   | Bypass Starter                                                                | 416  | Plug-in Control Relay 2-pole                                   |
| 3H                    | Hand-Auto Selector Switch                                | NB   | NEMA Bypass Starter                                                           | 417  | Plug-in Control Relay On Delay                                 |
| 3B                    | SMC-Off-Bypass Selector Switch                           | IC   | Isolation Contactor                                                           | 418  | Plug-in Control Relay Off Delay                                |
| 13                    | Start-Stop Push-Button and Hand-Off-Auto Selector Switch | NI   | NEMA Isolation Contactor                                                      | 425  | Hour Meter                                                     |
| 4 ____ <sup>(1)</sup> | Pilot Lights                                             | 989  | 1 N.O 1 N.C Auxiliary Contact on Circuit Breaker or Fusible Disconnect Switch | 428  | Ammeter                                                        |
| 5 ____ <sup>(1)</sup> | Push to test Pilot Lights                                | 20S  | Communication: RS-485                                                         | 429  | Ground Fault Relay                                             |
| 1XA                   | Soft Stop Push Button                                    | 20D  | Communication: DeviceNet                                                      | 430  | Under Voltage Relay                                            |
| 1XB                   | Pump Stop Push Button                                    | 20E  | Communication: Ethernet/IP                                                    | 22   | Control Circuit Fusing                                         |
| 1XC                   | Slow Speed Push Button                                   | 20C  | Communication: Control Net                                                    | OPS  | Bul. 509 NEMA Size 1 starter and Bul. 592 solid-state overload |
| 1XD                   | Brake Push Button                                        | 20P  | Communication: ProfiBUS                                                       |      |                                                                |
| 6P                    | Control Circuit Transformer                              | PC   | Pump Control                                                                  |      |                                                                |
| 6XP                   | 1 Factor Additional VA                                   | BC   | Braking Control                                                               |      |                                                                |
| 6YP                   | 2 Factor Additional VA                                   | TB10 | 10 Spare Terminal Blocks                                                      |      |                                                                |
| 8L                    | Line-Mounted Protective Module                           | TB20 | 20 Spare Terminal Blocks                                                      |      |                                                                |
|                       |                                                          | P10  | 100 mm Mounting foot, sheet metal                                             |      |                                                                |

(1) Pilot Lights require configuration. See [Table 14](#)

**Table 1 - Pilot Light Configuration**

|          |          |          |          |          |
|----------|----------|----------|----------|----------|
| <b>4</b> | <b>R</b> | <b>G</b> | <b>X</b> | <b>W</b> |
| a        | b        | c        | d        | e        |

| a      |                           |
|--------|---------------------------|
| Option |                           |
| Code   | Description               |
| 4      | Pilot Light               |
| 5      | Push to test Pilot Lights |

| b             |             |
|---------------|-------------|
| ON Indication |             |
| Code          | Description |
| R             | 108         |
| G             | 135         |
| X             | none        |

| c              |             |
|----------------|-------------|
| OFF Indication |             |
| Code           | Description |
| R              | 108         |
| G              | 135         |
| X              | none        |

| d                |             |
|------------------|-------------|
| Fault Indication |             |
| Code             | Description |
| A                | Amber       |
| X                | none        |

| e                   |             |
|---------------------|-------------|
| Power ON Indication |             |
| Code                | Description |
| W                   | White       |

Note: The final character in the configuration string cannot be "X".

**Controllers Rated 5...85 A**

- Note: Controllers rated 5...85 A do not include snap-together wiring.

|            |   |          |           |          |          |   |          |   |           |
|------------|---|----------|-----------|----------|----------|---|----------|---|-----------|
| <b>150</b> | – | <b>C</b> | <b>30</b> | <b>F</b> | <b>B</b> | – | <b>D</b> | – | <b>8L</b> |
| a          |   | b        | c         | d        | e        |   | f        |   | g         |

| <b>a</b>               |                                                                                    |
|------------------------|------------------------------------------------------------------------------------|
| <b>Bulletin Number</b> |                                                                                    |
| <b>Code</b>            | <b>Description</b>                                                                 |
| 150                    | Non-combination solid-state controller                                             |
| 150B                   | Non-combination solid-state controller with isolation contactor                    |
| 152H                   | Combination solid-state controller with fusible disconnect                         |
| 152B                   | Combination solid-state controller with fusible disconnect and isolation contactor |
| 153H                   | Combination solid-state controller with circuit breaker                            |
| 153B                   | Combination solid-state controller with circuit breaker and isolation contactor    |

| <b>b</b>               |                    |
|------------------------|--------------------|
| <b>Controller Type</b> |                    |
| <b>Code</b>            | <b>Description</b> |
| C                      | SMC-3              |

| <b>c</b>                     |                    |
|------------------------------|--------------------|
| <b>Controller Rating [A]</b> |                    |
| <b>Code</b>                  | <b>Description</b> |
| 3                            | 3                  |
| 9                            | 9                  |
| 16                           | 16                 |
| 25                           | 25                 |
| 30                           | 30                 |
| 37                           | 37                 |
| 43                           | 43                 |
| 60                           | 60                 |
| 85                           | 85                 |

| <b>d</b>              |                                           |
|-----------------------|-------------------------------------------|
| <b>Enclosure Type</b> |                                           |
| <b>Code</b>           | <b>Description</b>                        |
| F                     | NEMA Type 4/12 (IP65)                     |
| X                     | NEMA Type 3R (IP44)<br>(Combination only) |

| <b>e</b>                                           |                                  |
|----------------------------------------------------|----------------------------------|
| <b>Input Line Voltage, 120V AC Control Voltage</b> |                                  |
| <b>Code</b>                                        | <b>Description</b>               |
| HD                                                 | 200...208V AC, 3-Phase, 50/60 Hz |
| AD                                                 | 230V AC, 3-Phase, 50/60 Hz       |
| BD                                                 | 400...460V AC, 3-Phase, 50/60 Hz |
| CD                                                 | 500...575V AC, 3-Phase, 50/60 Hz |

| <b>f</b>                                         |               |             |               |
|--------------------------------------------------|---------------|-------------|---------------|
| <b>Horsepower (Combination Controllers only)</b> |               |             |               |
| <b>Code</b>                                      | <b>Rating</b> | <b>Code</b> | <b>Rating</b> |
| 33                                               | 0.5           | 49          | 75            |
| 34                                               | 0.75          | 50          | 100           |
| 35                                               | 1             | 51          | 125           |
| 36                                               | 1.5           | 52          | 150           |
| 37                                               | 2             | 54          | 200           |
| 38                                               | 3             | 56          | 250           |
| 39                                               | 5             | 57          | 300           |
| 40                                               | 7.5           | 58          | 350           |
| 41                                               | 10            | 59          | 400           |
| 42                                               | 15            | 60          | 450           |
| 43                                               | 20            | 61          | 500           |
| 44                                               | 25            | 62          | 600           |
| 45                                               | 30            | 63          | 700           |
| 46                                               | 40            | 65          | 800           |
| 47                                               | 50            | 67          | 1000          |
| 48                                               | 60            |             |               |

| <b>g</b>                     |                                                              |
|------------------------------|--------------------------------------------------------------|
| <b>Options<sup>(1)</sup></b> |                                                              |
| <b>Code</b>                  | <b>Description</b>                                           |
| 1                            | Start-Stop Push Button                                       |
| 3                            | Hand-Off-Auto Selector Switch                                |
| 4R                           | Transformer Pilot Light - Red Run Indicator                  |
| 6P                           | Control Circuit Transformer                                  |
| 8L                           | Line-Mounted Protective Module                               |
| 8M                           | Load-Mounted Protective Module                               |
| 8B                           | Line- and Load-Mounted Protective Modules                    |
| 90                           | 1 N.O. auxiliary contact                                     |
| 900                          | 2 N.O. auxiliary contacts                                    |
| 901                          | 1 N.O. and 1 N.C. auxiliary contacts                         |
| 98                           | N.O. disconnect auxiliary mounted on the operating mechanism |
| 99                           | N.C. disconnect auxiliary mounted on the operating mechanism |
| NB                           | NEMA Bypass Starter                                          |
| BP                           | IEC Bypass Starter                                           |

(1) Load-side MOVs are not available with Pump and Braking options, or on delta-connected motors.

## Product Selection

- NOTE: Refer to and use Selection Wizards to ensure the SMC controller selection meets the application requirements. For additional assistance, please visit [www.ab.com](http://www.ab.com) or contact Industrial Controls Technical Support by email at [raictechsupport@ra.rockwell.com](mailto:raictechsupport@ra.rockwell.com) or by phone at 440-646-5800.

You can configure enclosed soft starters by selecting a power center, snap-together kits, transformers, and/or any applicable controller accessories.

### Power Centers

| Motor Current [A] | Rated Hp [Hp] |      |            |            | Non-combination Starters Cat. No. | Combination Starters Cat. No. |                      |
|-------------------|---------------|------|------------|------------|-----------------------------------|-------------------------------|----------------------|
|                   | 200...208V    | 230V | 400...460V | 500...575V |                                   | with Fusible Disconnect       | with Circuit Breaker |
| 108               | 30            | 40   | 75         | 100        | 150C-D10JCD                       | 152C-D10JCD-J20               | 153C-D10JCD-D17      |
| 135               | 40            | 50   | 100        | 125        | 150C-D13JCD                       | 152C-D13JCD-J20               | 153C-D13JCD-D25      |
| 201               | 60            | 75   | 150        | 150        | 150C-D20JCD                       | 152C-D20JCD-J40               | 153C-D20JCD-D25      |
| 251               | 75            | 100  | 200        | 200        | 150C-D25JCD                       | 152C-D25JCD-J40               | 153C-D25JCD-D40      |
| 317               | 100           | 125  | 250        | 300        | 150C-D31JCD                       | 152C-D31JCD-J60               | 153C-D31JCD-D40      |
| 361               | 125           | 150  | 300        | 350        | 150C-D36JCD                       | 152C-D36JCD-J60               | 153C-D36JCD-D80      |
| 480               | 150           | 200  | 400        | 500        | 150C-D48JCD                       | 152C-D48JCD-L80               | 153C-D48JCD-D80      |

### Transformers

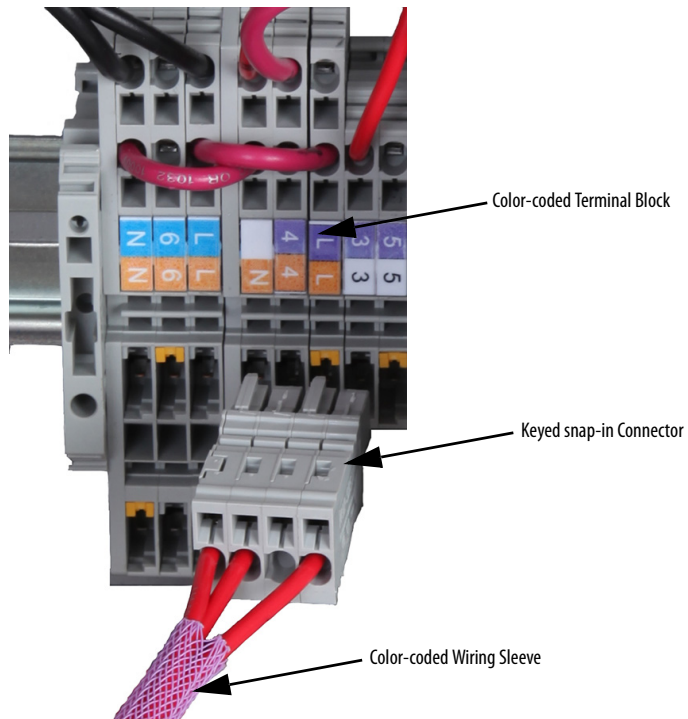
|                                                                                    | Controller Current [A]       | Capacity       | VA  | 208V x 120V Cat. No. | 240V x 120V Cat. No. | 460V x 120V Cat. No. | 575V x 120V Cat. No. |
|------------------------------------------------------------------------------------|------------------------------|----------------|-----|----------------------|----------------------|----------------------|----------------------|
|  | 108, 135, 251, 317, 361, 480 | Standard       | 200 | 1497-HD200           | 1497-AD200           | 1497-BD200           | 1497-CD200           |
|                                                                                    |                              | Extra Capacity | 350 | 1497-HD350           | 1497-AD350           | 1497-BD350           | 1497-CD350           |
|                                                                                    |                              | Extra Capacity | 500 | 1497-HD500           | 1497-AD500           | 1497-BD500           | 1497-CD500           |

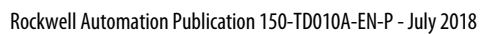
### Snap-together Wiring

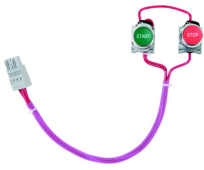
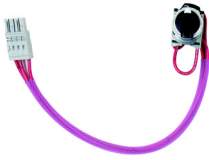
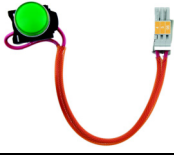
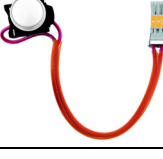
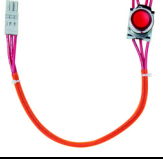
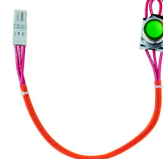
- Note: This option applies only to controllers with current ratings greater than 90 A.

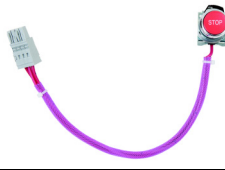
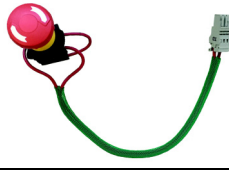
Component wiring is color coded by function. The wiring sleeve color corresponds to a colored label on the terminal block. Keyed connectors snap these components into the terminal block. This greatly reduced assembly time is ideal for the quick installation of pilot devices and control circuit transformers, and significantly reduces wiring errors. [Figure 31](#) shows an example of this feature.

**Figure 1 - Snap-together Wiring Example**



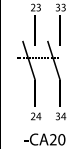


|                                                                                     | Description                                                                          | Cat. No.   |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------|
|    | Start-Stop Snap-together Push Button Kit, Metal Bezel 22.5 mm                        | 198-SSPBM  |
|    | 3-Position Hand-Off-Auto Snap-together Selector Switch Kit Metal Bezel 22.5 mm       | 198-3SSM   |
|                                                                                     | 2-Position On-Off or Hand-Auto Snap-together Selector Switch Kit Metal Bezel 22.5 mm | 198-2SSM   |
|    | Red Universal LED Pilot Light Snap-together Kit 22.5 mm                              | 198-RUPL   |
|    | Green Universal LED Pilot Light Snap-together Kit 22.5 mm                            | 198-GUPL   |
|   | White or Amber Universal LED Pilot Light Snap-together Kit 22.5 mm                   | 198-WUPL   |
|  | Red Universal LED Push to Test Pilot Light Snap-together Kit 22.5 mm                 | 198-RUPPLM |
|  | Green Universal LED Push to Test Pilot Light Snap-together Kit 22.5 mm               | 198-GUPPLM |

|                                                                                   | Description                                                                     | Cat. No.   |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------|
|  | White or Amber Universal LED Push to Test Pilot Light Kit Snap-together 22.5 mm | 198-WUPPLM |
|  | Stop Push Button Snap-together Kit N.C. 22.5 mm, Momentary                      | 198-PBM    |
|  | Emergency Stop Snap-together Kit                                                | 198-ESP    |

## Accessories

### Auxiliary Contact Blocks

| Description                                                                                                                                                                                                                                                                                                       | N.O. | N.C. | Connection Diagram                                                                 |                                                                                     |                                                                                      |                                                                                      | Cat. No.          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------|
|  <p>Auxiliary Contact Blocks for side mounting with sequence terminal designations</p> <ul style="list-style-type: none"> <li>1- and 2-pole</li> <li>Quick and easy mounting without tools One block per device only</li> </ul> | 1    | 0    |  |  |  |  | 150-CA10          |
|                                                                                                                                                                                                                                                                                                                   | 2    | 0    |                                                                                    |                                                                                     |                                                                                      |                                                                                      | 150-CA20          |
|                                                                                                                                                                                                                                                                                                                   | 0    | 1    |                                                                                    |                                                                                     |                                                                                      |                                                                                      | 150-CA01          |
|                                                                                                                                                                                                                                                                                                                   | 1    | 1    |                                                                                    |                                                                                     |                                                                                      |                                                                                      | 150-CA11 (Form C) |

## Fans

| Description                                                                                                                                                      | For Use With | Pkg. Qty.          | Cat. No.     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------|--------------|
|  <p>Fan</p> <ul style="list-style-type: none"> <li>Field installed</li> </ul> | Optional     | 150-C3...37        | 150-CF64     |
|                                                                                                                                                                  | Replacement  | 150-C43...85       | 150-CF147    |
|                                                                                                                                                                  |              | 150-C108, 150-C135 | 41391-801-03 |
|                                                                                                                                                                  |              | 150-C201, 150-C251 | 41391-801-01 |
|                                                                                                                                                                  |              | 150-C317...C480    | 41391-801-02 |

## Protective Modules

Do not place protective modules on the load side of a device when using an inside-the-delta connection.

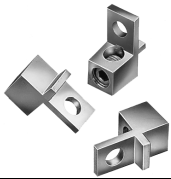
| Description                                                                         | For Use With           | Pkg. Qty.                           | Cat. No. |
|-------------------------------------------------------------------------------------|------------------------|-------------------------------------|----------|
|  | 480V Protective Module | 150-C3...37NB                       | 150-C84  |
|                                                                                     |                        | 150-C43...85NB (line and/or load)   | 150-C84P |
|                                                                                     |                        | 150-C108...480NB (line and/or load) | 150-F84L |
|                                                                                     | 600V Protective Module | 150-C3...37NC                       | 150-C86  |
|                                                                                     |                        | 150-C43...85NC (line and/or load)   | 150-C86P |
|                                                                                     |                        | 150-C108...480NC (line and/or load) | 150-F86L |

**IEC Line or Load Terminal Covers**

|                                                                                   | Description <sup>(1)</sup>                                                                                                     | Current Range [A] | Pkg. Quantity | Cat. No. |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|----------|
|  | <ul style="list-style-type: none"> <li>Dead front protection</li> <li>IP2X finger safe when used with 250 MCM cable</li> </ul> | 108...135         | 1             | 150-TC1  |
|                                                                                   |                                                                                                                                | 201...251         | 1             | 150-TC2  |
|                                                                                   | <ul style="list-style-type: none"> <li>Dead front protection</li> <li>IP2X finger safe when used with 500 MCM cable</li> </ul> | 317...480         | 1             | 150-TC3  |

(1) 5...85 A units have terminal guards as standard. No additional terminal guards are required.

**Terminal Lug Kits**

|                                                                                   | Current Range [A] <sup>(1)</sup> | Wire Size Range                                               | Total No. of Terminal Lugs Possible Each Side |           | Pkg. Qty. | Cat. No. |
|-----------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------|-----------------------------------------------|-----------|-----------|----------|
|                                                                                   |                                  |                                                               | Line Side                                     | Load Side |           |          |
|  | 108...135 <sup>(2)</sup>         | #6...250 MCM AWG<br>16 mm <sup>2</sup> ...120 mm <sup>2</sup> | 3                                             | 3         | 3         | 199-LF1  |
|                                                                                   | 201...251 <sup>(2)</sup>         |                                                               | 6                                             | 6         | 3         |          |
|                                                                                   | 317...480 <sup>(2)</sup>         | #4...500 MCM AWG<br>25 mm <sup>2</sup> ...240 mm <sup>2</sup> | 6                                             | 6         | 3         | 199-LG1  |

(1) 5...85 A units have box lugs standard. No additional lugs are required.

(2) When a multi-conductor lug is required, refer to the User Manual for appropriate lug catalog number.

**Marking Tags and Covers**

|                                                                                    | Description                                                                                                                                                 | For Use With | Pkg. Qty. | Cat. No. |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|----------|
|  | <b>Marking Tag Sheet</b> <ul style="list-style-type: none"> <li>160 perforated paper labels each, 6 x 17 mm, to be used with a transparent cover</li> </ul> | 150-C, 150-D | 10        | 100-FMP  |
|                                                                                    | <b>Transparent Cover</b> <ul style="list-style-type: none"> <li>To be used with marking tag sheets</li> </ul>                                               |              | 100       | 100-FMC  |

**Remote Reset Solenoid**

|                                                                                     | Description                                                                                                            | For Use With     | Pkg. Qty. | Cat. No. |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------|-----------|----------|
|  | <b>Remote Reset Solenoid</b> <ul style="list-style-type: none"> <li>for remote reset of electronic overload</li> </ul> | 193-T all, 150-C | 1         | 193-ER1⊗ |

**⊗ Voltage Suffix Codes**

- Available Coil Voltages 12...600V 50 Hz/12...600V 60 Hz
- Surcharge for special voltages up to 20 pcs. (no surcharge for quantities greater than 20 pcs.)

| Voltage | 24  | 48  | 110 | 115 | 120 | 220 | 240 |
|---------|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz   | J   | —   | D   | —   | —   | A   | —   |
| 60 Hz   | J   | —   | —   | —   | D   | —   | A   |
| DC      | Z24 | Z48 | —   | Z01 | —   | —   | —   |

## Enclosure Accessories

|                                                                                   | Description                                                                     | Construction Material | For Use With Enclosure Width | Cat. No.    |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------|------------------------------|-------------|
|  | <b>Perforated frame strip</b><br>• Mounting rail for door or panel installation | Sheet steel           | 400 mm                       | 198-DS400   |
|                                                                                   |                                                                                 |                       | 600 mm                       | 198-DS600   |
|                                                                                   |                                                                                 |                       | 1000 mm                      | 198-DS1000  |
|  | <b>Enclosure mounting foot</b><br>• 100 mm height                               | High-strength plastic | 400 mm                       | 198-FB100 A |
|                                                                                   |                                                                                 |                       | 600 mm                       | 198-FB100B  |
|                                                                                   |                                                                                 |                       | 1000 mm                      | 198-FB100C  |
|                                                                                   |                                                                                 | Sheet steel           | 400 mm                       | 198-PL100 A |
|                                                                                   |                                                                                 |                       | 600 mm                       | 198-PL100B  |
|                                                                                   |                                                                                 |                       | 1000 mm                      | 198-PL100C  |
|                                                                                   | <b>Enclosure mounting foot</b><br>• 200 mm height                               | Sheet steel           | 400 mm                       | 198-PL200 A |
|                                                                                   |                                                                                 |                       | 600 mm                       | 198-PL200B  |
|                                                                                   |                                                                                 |                       | 1000 mm                      | 198-PL200C  |

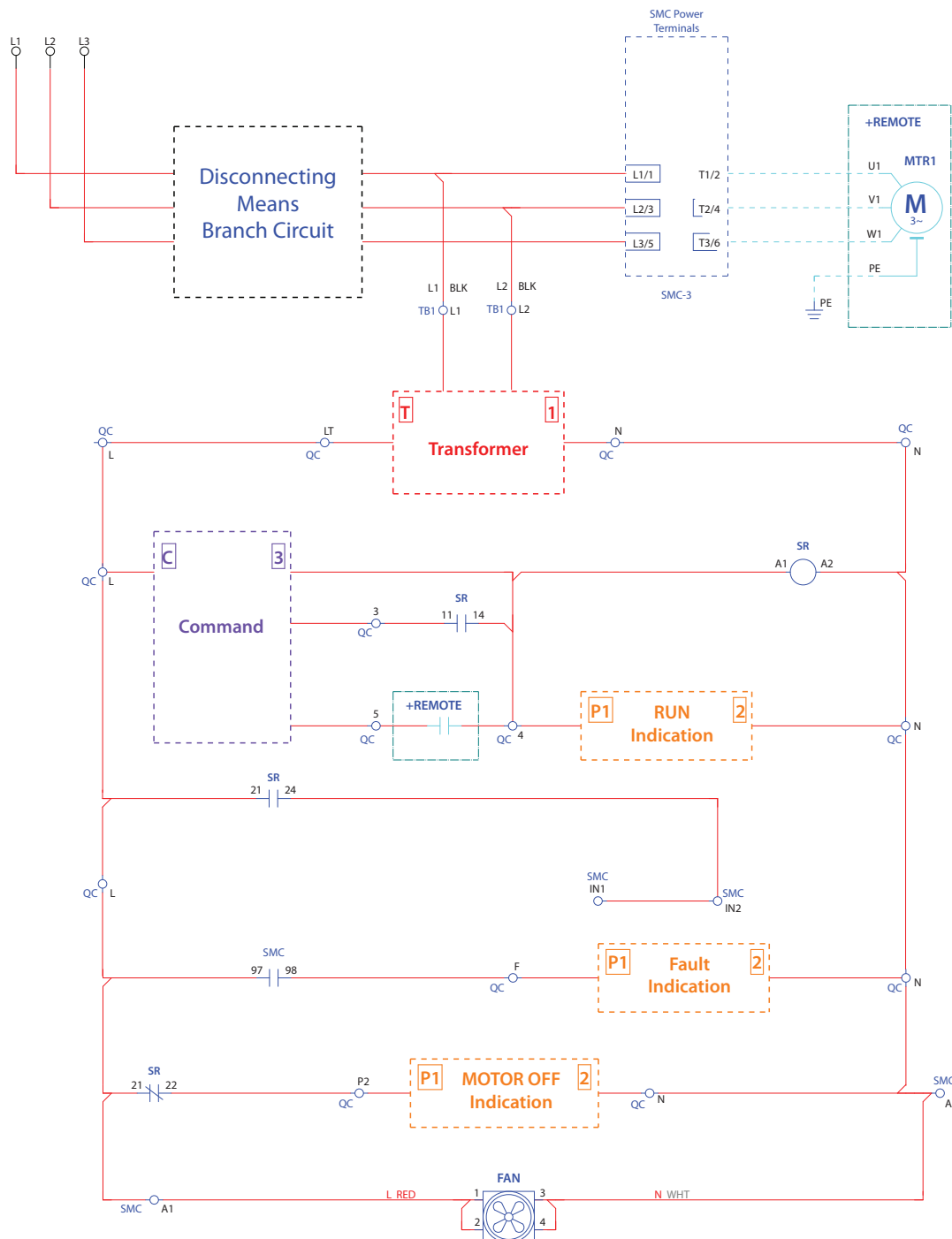
## Wiring Diagrams

The diagrams in this section illustrate basic SMC controller wiring. For specific wiring diagrams, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

### Notes:

- Use 75 °C Cu wire only
- Line fuses are customer supplied on controllers with factory-supplied disconnect switch. Refer to NEC when selecting short-circuit protection.
- Additional control circuit overcurrent protection is required for non-combination starters. Refer to NEC.

**Figure 3 - SMC-3 Controller Basic Wiring Diagram**



- For wiring diagrams for snap-together kits, please see the following figures:

- Command kits: [Figure 4](#), [Figure 5](#), and [Figure 6](#)
- Indication kit: [Figure 7](#)
- Transformer kit: [Figure 8](#)

**Table 2 - SMC-3 Controller DIP Switch Default Factory Settings**

| DIP Switch | Value | DIP Switch | Value | DIP Switch | Value | DIP Switch | Value | DIP Switch | Value | DIP Switch | Value | DIP Switch | Value |
|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|
| 1          | 0     | 3          | 0     | 5          | 1     | 7          | 0     | 9          | 0     | 11         | 1     | 13         | 0     |
| 2          | 1     | 4          | 0     | 6          | 0     | 8          | 0     | 10         | 0     | 12         | 0     | 14         | 0     |
|            |       |            |       |            |       |            |       |            |       |            |       | 15         | 1     |
|            |       |            |       |            |       |            |       |            |       |            |       | 16         | 0     |

Wiring Diagrams for Snap-together Kits

Figure 4 - Start-Stop Command Kit Wiring Diagram

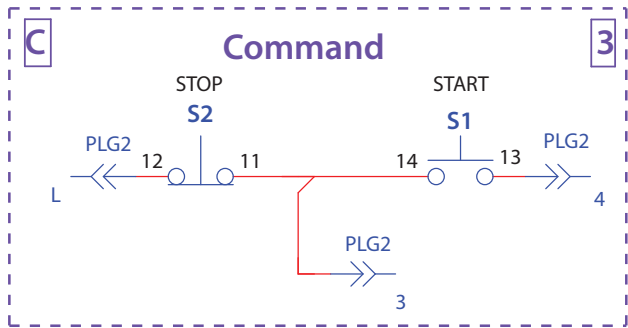


Figure 5 - Hand-OFF-Auto Command Kit Wiring Diagram

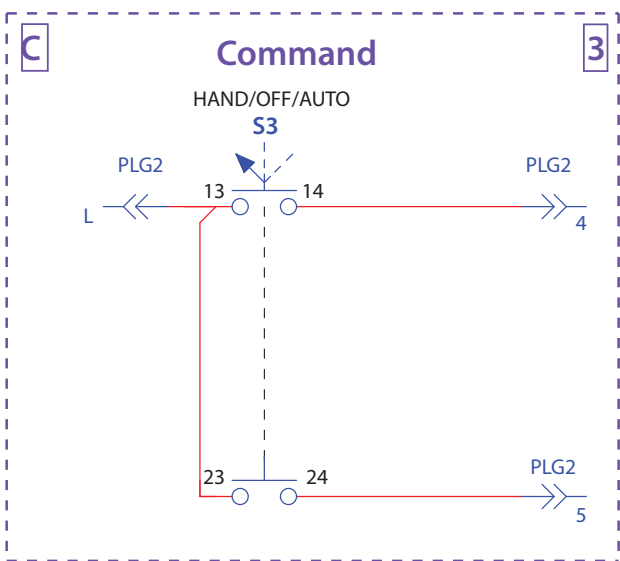


Figure 6 - Hand-OFF-Auto and Start-Stop Command Kit Wiring Diagram

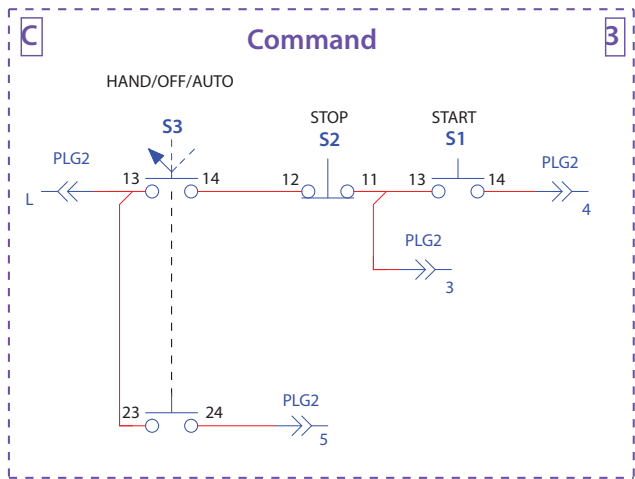


Figure 7 - Indication Kit Wiring Diagram

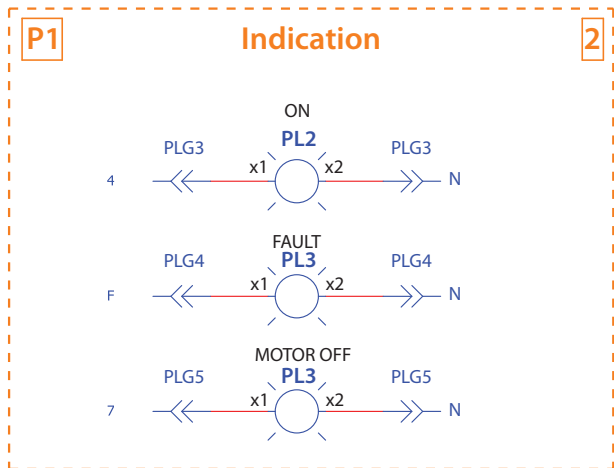
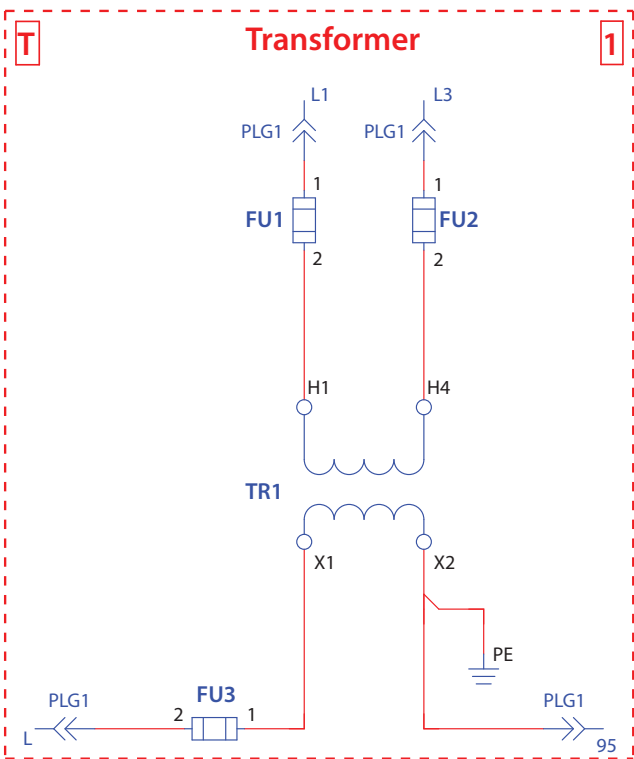


Figure 8 - Transformer Kit Wiring Diagram



## Standards Compliance and Certifications

| Standards Compliance—Open Controllers | Certifications—Open Controllers                                | Standards Compliance—Enclosed Controllers | Certifications—Enclosed Controllers |
|---------------------------------------|----------------------------------------------------------------|-------------------------------------------|-------------------------------------|
| UL 508                                | cULus Listed (Open Type) (File No. E96956, Guides NMFT, NMFT7) | UL 508A                                   | cULus Listed                        |
| CSA C22.2 No.14                       | CSA Certified (File No. LR 1234)                               |                                           |                                     |
| EN/IEC 60947-1                        | CE Marked                                                      |                                           |                                     |
| EN/IEC 60947-4-2                      | CCC Certified                                                  |                                           |                                     |

## Short-circuit Current Ratings

Determining the short circuit current ratings (SCCR) of a complex system can be very challenging, especially if proper considerations are not made during the initial stages of the component selection process.

The SCCRs in this section provide coordinated high fault branch circuit for enclosed soft starters and is based on compliance to IEC and UL standards. For comprehensive SCCR information, please consult the Rockwell Automation Global SCCR Selection Tool at <http://www.rockwellautomation.com/global/support/global-sccr.page>.

- Note: Ratings provided are for standard options only; does not include bypass or isolation contactor configurations

**Table 3 - Non-combination Enclosed Soft Starters with SMC-3 Controllers**

| Controller Rating [A] | Short Circuit Current Rating                                                                                                                                                                                                                                                                                            |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3                     | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 6 A Class J Fuse</li> <li>5 kA rms symmetrical, 600V maximum when protected by a maximum 12 A fuse</li> <li>5 kA rms symmetrical, 600V maximum when protected by a maximum 15 A circuit breaker</li> </ul>       |
| 9                     | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 15 A Class J Fuse</li> <li>5 kA rms symmetrical, 600V maximum when protected by a maximum 30 A fuse</li> <li>5 kA rms symmetrical, 600V maximum when protected by a maximum 30 A circuit breaker</li> </ul>      |
| 30                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 60 A Class J Fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 110 A fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 110 A circuit breaker</li> </ul>  |
| 37                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 60 A Class J Fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 125 A fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 125 A circuit breaker</li> </ul>  |
| 43                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 90 A Class J Fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 150 A fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 150 A circuit breaker</li> </ul>  |
| 60                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 125 A Class J Fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 225 A fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 225 A circuit breaker</li> </ul> |
| 85                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 175 A Class J Fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 300 A fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 300 A circuit breaker</li> </ul> |
| 108                   | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 200 A Class J Fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 400 A fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 300 A circuit breaker</li> </ul> |
| 135                   | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 250 A Class J Fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 500 A fuse</li> <li>10 kA rms symmetrical, 600V maximum when protected by a maximum 400 A circuit breaker</li> </ul> |
| 201                   | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 350 A Class J Fuse</li> <li>18 kA rms symmetrical, 600V maximum when protected by a maximum 600 A fuse</li> <li>18 kA rms symmetrical, 600V maximum when protected by a maximum 600 A circuit breaker</li> </ul> |
| 251                   | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse</li> <li>18 kA rms symmetrical, 600V maximum when protected by a maximum 700 A fuse</li> <li>18 kA rms symmetrical, 600V maximum when protected by a maximum 700 A circuit breaker</li> </ul> |

| Controller Rating [A] | Short Circuit Current Rating                                                                                                                                                                                                                                                                                              |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 317                   | <ul style="list-style-type: none"> <li>69 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse</li> <li>30 kA rms symmetrical, 600V maximum when protected by a maximum 800 A fuse</li> <li>30 kA rms symmetrical, 600V maximum when protected by a maximum 800 A circuit breaker</li> </ul>   |
| 351                   | <ul style="list-style-type: none"> <li>69 kA rms symmetrical, 600V maximum when protected by a maximum 600 A Class J Fuse</li> <li>30 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A fuse</li> <li>30 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A circuit breaker</li> </ul> |
| 480                   | <ul style="list-style-type: none"> <li>69 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse</li> <li>30 kA rms symmetrical, 600V maximum when protected by a maximum 1200 A fuse</li> <li>30 kA rms symmetrical, 600V maximum when protected by a maximum 1200 A circuit breaker</li> </ul> |

**Table 4 - Combination Enclosed Soft Starters with SMC-3 Controllers and Circuit Breakers**

| Controller Rating [A] | Short Circuit Current Rating                                                          |
|-----------------------|---------------------------------------------------------------------------------------|
| 3...25                | <ul style="list-style-type: none"> <li>5 kA rms symmetrical, 600V maximum</li> </ul>  |
| 30...135              | <ul style="list-style-type: none"> <li>10 kA rms symmetrical, 600V maximum</li> </ul> |
| 201...251             | <ul style="list-style-type: none"> <li>18 kA rms symmetrical, 600V maximum</li> </ul> |
| 317...361             | <ul style="list-style-type: none"> <li>30 kA rms symmetrical, 600V maximum</li> </ul> |
| 480                   | <ul style="list-style-type: none"> <li>42 kA rms symmetrical, 600V maximum</li> </ul> |

**Table 5 - Combination Enclosed Soft Starters with SMC-3 Controllers and Fusible Disconnect**

| Controller Rating [A] | Short Circuit Current Rating                                                                                                                                                                                              |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3                     | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 6 A Class J Fuse</li> </ul>                                                                                        |
| 9                     | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 15 A Class J Fuse</li> </ul>                                                                                       |
| 16                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 30 A Class J Fuse</li> </ul>                                                                                       |
| 25                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 50 A Class J Fuse</li> </ul>                                                                                       |
| 30...37               | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 60 A Class J Fuse</li> </ul>                                                                                       |
| 43                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 90 A Class J Fuse</li> </ul>                                                                                       |
| 60                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 125 A Class J Fuse</li> </ul>                                                                                      |
| 85                    | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 175 A Class J Fuse</li> </ul>                                                                                      |
| 108                   | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 200 A Class J Fuse</li> </ul>                                                                                      |
| 135                   | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 250 A Class J Fuse</li> </ul>                                                                                      |
| 201                   | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 350 A Class J Fuse</li> <li>18 kA rms symmetrical, 600V maximum when protected by a maximum 600 A fuse</li> </ul>  |
| 251                   | <ul style="list-style-type: none"> <li>70 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse</li> <li>18 kA rms symmetrical, 600V maximum when protected by a maximum 700 A fuse</li> </ul>  |
| 317                   | <ul style="list-style-type: none"> <li>69 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse</li> <li>30 kA rms symmetrical, 600V maximum when protected by a maximum 800 A fuse</li> </ul>  |
| 361                   | <ul style="list-style-type: none"> <li>69 kA rms symmetrical, 600V maximum when protected by a maximum 600 A Class J Fuse</li> <li>30 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A fuse</li> </ul> |
| 480                   | <ul style="list-style-type: none"> <li>69 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse</li> <li>42 kA rms symmetrical, 600V maximum when protected by a maximum 1200 A fuse</li> </ul> |

## Approximate Dimensions

Examples given in this section include standard options. Use ProposalWorks to obtain dimensions for Smart Motor Controllers with all available options. ProposalWorks is available from <http://www.rockwellautomation.com/global/e-tools/overview.page>.

Dimensions are in inches (millimeters) unless otherwise noted. Dimensions are not to be used for manufacturing purposes.

**Figure 9 - Enclosure for SMC Controllers—1400 mm x 400 mm x 500 mm**

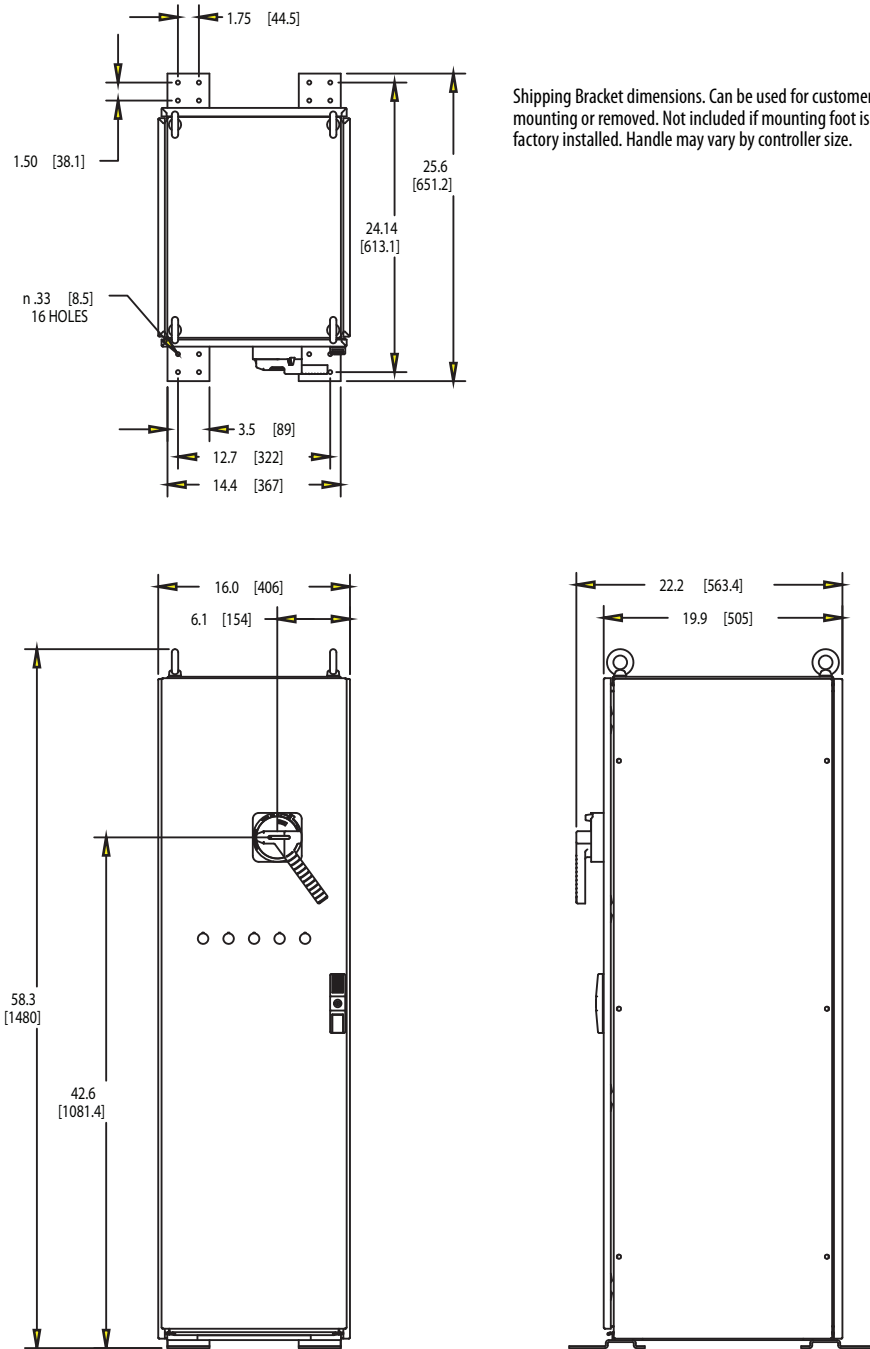
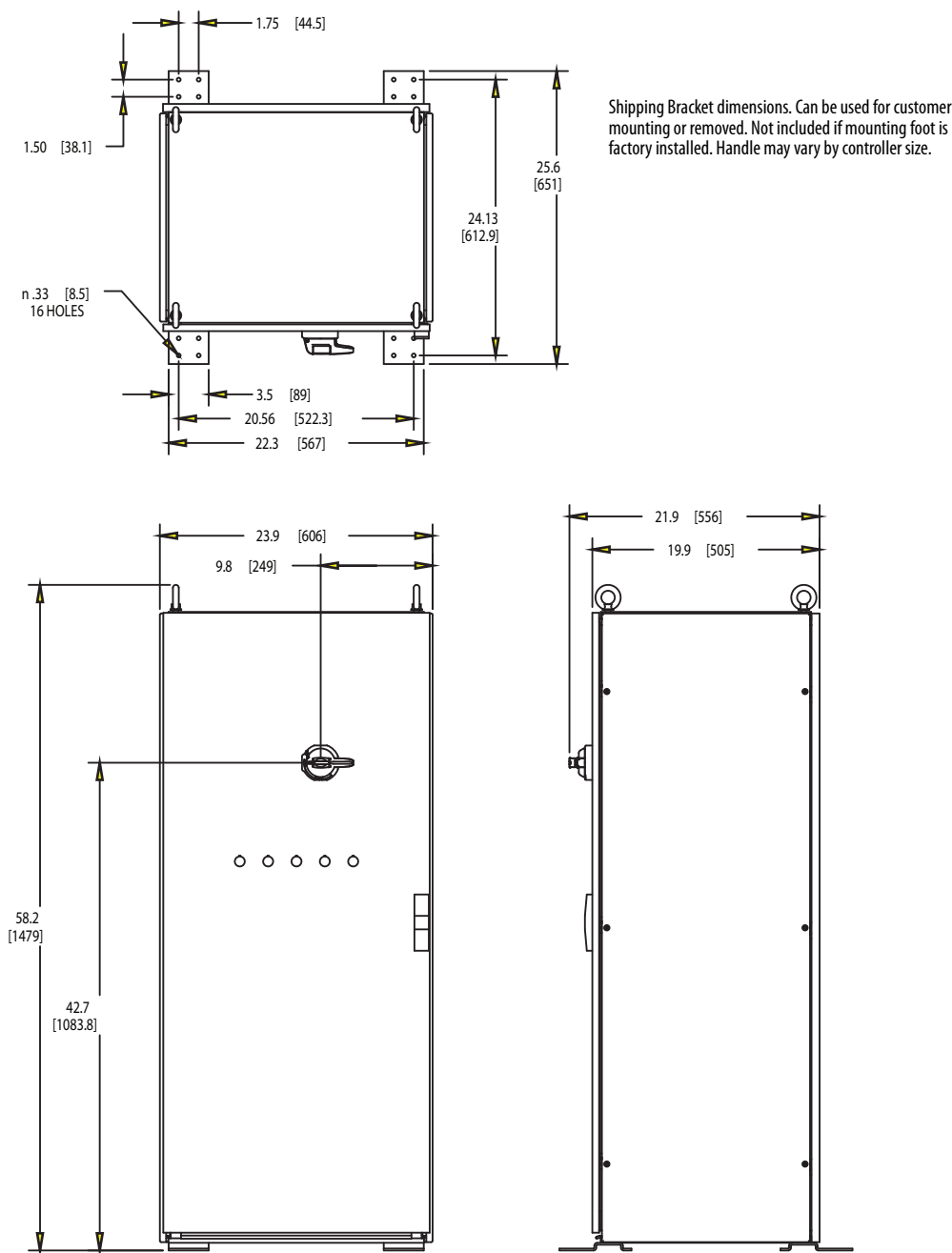
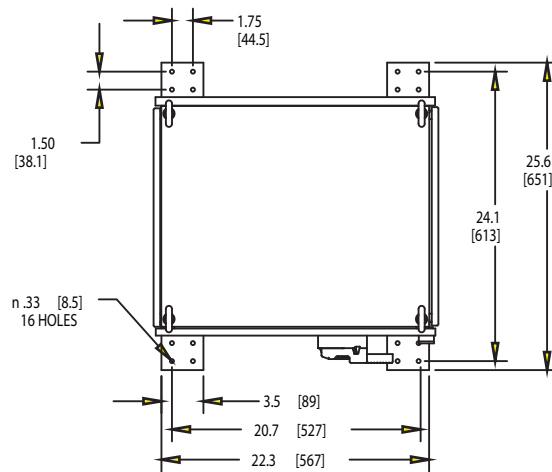
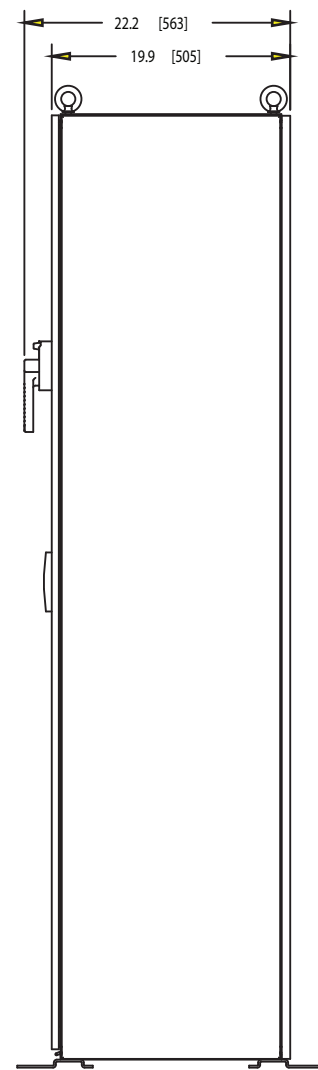
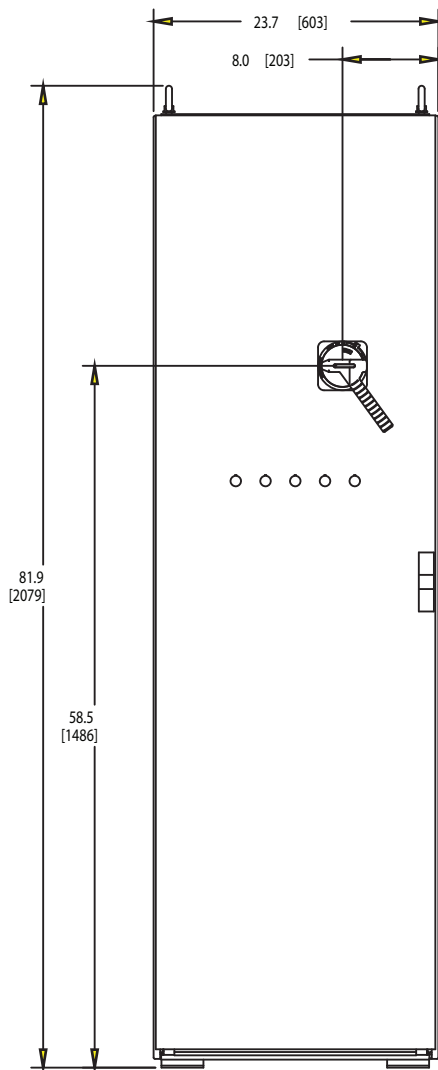


Figure 10 - Enclosure for SMC Controllers—1400 mm x 600 mm x 500 mm



**Figure 11 - Enclosure for SMC Controllers—2000 mm x 600 mm x 500 mm**

Shipping Bracket dimensions. Can be used for customer mounting or removed. Not included if mounting foot is factory installed. Handle may vary by controller size.

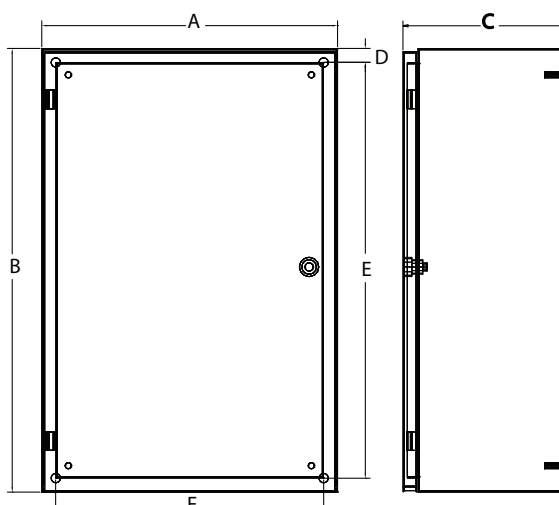


**Table 6 - SMC-3 Controller Enclosure Dimensions**

| Non-combination Controllers |                                                                          | Combination Controllers |                                                                           |                      |                                                                           |
|-----------------------------|--------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------|
|                             |                                                                          | With Fusible Disconnect |                                                                           | With Circuit Breaker |                                                                           |
| Cat. No.                    | Dimensions (H x W x D)                                                   | Cat. No.                | Dimensions (H x W x D)                                                    | Cat. No.             | Dimensions (H x W x D)                                                    |
| 150C-D10J...                | 1400 x 400 x 500<br>(55.1 x 15.7 x 19.7)<br>see <a href="#">Figure 9</a> | 152C-D10J...            | 1400 x 400 x 500<br>(55.1 x 15.7 x 19.7)<br>see <a href="#">Figure 9</a>  | 153C-D10J...         | 1400 x 400 x 500<br>(55.1 x 15.7 x 19.7)<br>see <a href="#">Figure 9</a>  |
| 150C-D13J...                |                                                                          | 152C-D13J...            |                                                                           | 153C-D13J...         |                                                                           |
| 150C-D20J...                |                                                                          | 152C-D20J...            | 1400 x 600 x 500<br>(55.1 x 23.6 x 19.7)<br>see <a href="#">Figure 10</a> | 153C-D20J...         |                                                                           |
| 150C-D25J...                |                                                                          | 152C-D25J...            |                                                                           | 153C-D25J...         |                                                                           |
| 150C-D31J...                |                                                                          | 152C-D31J...            | 2000 x 600 x 500<br>(78.7 x 23.6 x 19.7)<br>see <a href="#">Figure 11</a> | 153C-D31J...         | 2000 x 600 x 500<br>(78.7 x 23.6 x 19.7)<br>see <a href="#">Figure 11</a> |
| 150C-D36J...                |                                                                          | 152C-D36J...            |                                                                           | 153C-D36J...         |                                                                           |
| 150C-D48J...                |                                                                          | 152C-D48J...            |                                                                           | 153C-D48J...         |                                                                           |

**Figure 12 - Wall-mounted Enclosure Dimensions**

- Wall-mounted controllers do not include Snap-together wiring

**Table 7 - Wall-mounted Enclosed SMC-3 Controllers**

| Controller Rating<br>[A]   | Bulletin   | With Option        | Dimensions in inches (mm) |            |           |               |               |               |
|----------------------------|------------|--------------------|---------------------------|------------|-----------|---------------|---------------|---------------|
|                            |            |                    | A (Width)                 | B (Height) | C (Depth) | D (Mtg. Dim.) | E (Mtg. Dim.) | F (Mtg. Dim.) |
| Non-Combination Controller |            |                    |                           |            |           |               |               |               |
| 3...37                     | 150        | —                  | 8 (203)                   | 12 (305)   | 6 (152)   | 2.44 (62)     | 10.43 (265)   | 3.0 (76)      |
|                            |            | 6P                 | 12 (305)                  | 12 (305)   | 6 (152)   | 2.41 (61)     | 10.43 (265)   | 7.0 (178)     |
| 43...85                    | 150        | —                  | 8 (203)                   | 14 (356)   | 8 (203)   | 2.44 (62)     | 12.40 (315)   | 3.0 (76)      |
|                            |            | 6P                 | 16 (406)                  | 14 (356)   | 8 (203)   | 4.38 (111)    | 12.40 (315)   | 7.0 (178)     |
| Combination Controller     |            |                    |                           |            |           |               |               |               |
| 3...37                     | 152H,153H  | Any                | 16 (406)                  | 14 (356)   | 8 (203)   | 4.38 (111)    | 12.40 (315)   | 7.0 (178)     |
| 43                         | 152H       | Any                | 16 (406)                  | 14 (356)   | 8 (203)   | 4.38 (111)    | 12.40 (315)   | 7.0 (178)     |
|                            | 153H       | Any                | 16 (406)                  | 24 (610)   | 10 (254)  | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
| 60                         | 152H, 153H | Any                | 16 (406)                  | 24 (610)   | 9 (229)   | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
|                            | 152H       | Any                | 24 (610)                  | 30 (762)   | 12 (305)  | 0.75 (19)     | 28.5 (724)    | 22.5 (572)    |
| 85                         | 152H       | Any <sup>(1)</sup> | 16 (406)                  | 24 (610)   | 9 (229)   | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
|                            |            | Any <sup>(2)</sup> | 24 (610)                  | 30 (762)   | 12 (305)  | 0.75 (19)     | 28.5 (724)    | 22.5 (572)    |
|                            | 153H       | Any                | 16 (406)                  | 24 (610)   | 9 (229)   | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |

(1) Rating 20 Hp @208V, 25 Hp @240V, 50 Hp @ 480V, 60 Hp @ 600V.

(2) Rating 25 Hp @208V, 30 Hp @240V, 60 Hp @ 480V, 75 Hp @ 600V.

## Enclosed SMC Flex Controllers

### Catalog Number Explanation

Examples given in this section are not intended to be used for product selection. Use ProposalWorks to configure Smart Motor Controllers. ProposalWorks is available from <http://www.rockwellautomation.com/global/e-tools/overview.page>.

Controllers Rated 90...1250 A

|             |   |            |          |          |          |   |            |   |          |
|-------------|---|------------|----------|----------|----------|---|------------|---|----------|
| <b>152F</b> | – | <b>D10</b> | <b>J</b> | <b>B</b> | <b>D</b> | – | <b>J20</b> | – | <b>3</b> |
| a           |   | b          | c        | d        | e        |   | f          |   | g        |

| a               |                                              |
|-----------------|----------------------------------------------|
| Bulletin Number |                                              |
| Code            | Description                                  |
| 150F            | SMC Flex Non-combination                     |
| 152F            | SMC Flex Combination with Fusible Disconnect |
| 153F            | SMC Flex Combination with Circuit Breaker    |

| b                     |             |
|-----------------------|-------------|
| Controller Rating [A] |             |
| Code                  | Description |
| D10                   | 108         |
| D13                   | 135         |
| D20                   | 201         |
| D25                   | 251         |
| D31                   | 317         |
| D36                   | 361         |
| D48                   | 480         |
| D62                   | 625         |
| D78                   | 780         |
| D97                   | 970         |
| E12                   | 1250        |

| c              |              |
|----------------|--------------|
| Enclosure Type |              |
| Code           | Description  |
| J              | 1/12/3R (3R) |

| d                  |                                  |
|--------------------|----------------------------------|
| Input Line Voltage |                                  |
| Code               | Description                      |
| H                  | 200...208V AC, 3-Phase, 50/60 Hz |
| A                  | 230V AC, 3-Phase, 50/60 Hz       |
| B                  | 400...460V AC, 3-Phase, 50/60 Hz |
| C                  | 500...575V AC, 3-Phase, 50/60 Hz |

| e               |             |
|-----------------|-------------|
| Control Voltage |             |
| Code            | Description |
| D               | 120V AC     |
| J               | 24V AC      |
| A               | 240V AC     |
| EJ              | 24V DC      |

| f                                                               |                 |      |             |
|-----------------------------------------------------------------|-----------------|------|-------------|
| Fuse Clip/Circuit Breaker (CB)—<br>Combination Controllers Only |                 |      |             |
| Code                                                            | Description     | Code | Description |
| J20                                                             | 200 A, Class J  | D12  | 125 A, CB   |
| J40                                                             | 400 A, Class J  | D17  | 175 A, CB   |
| J60                                                             | 600 A, Class J  | D25  | 250 A, CB   |
| L80                                                             | 800 A, Class L  | D40  | 400 A, CB   |
| L12                                                             | 1200 A, Class L | D60  | 600 A, CB   |
| L16                                                             | 1600 A, Class L | D80  | 800 A, CB   |
| D16                                                             | 160 A, DIN      | E12  | 1200 A, CB  |
| D25                                                             | 250 A, DIN      |      |             |
| D40                                                             | 400 A, DIN      |      |             |
| D63                                                             | 630 A, DIN      |      |             |
| D80                                                             | 800 A, DIN      |      |             |
| N12                                                             | 1250 A, DIN     |      |             |

| g                    |                                                        |      |                                                                               |      |                                             |
|----------------------|--------------------------------------------------------|------|-------------------------------------------------------------------------------|------|---------------------------------------------|
| Options              |                                                        |      |                                                                               |      |                                             |
| Code                 | Description                                            | Code | Description                                                                   | Code | Description                                 |
| 1                    | Start-Stop Push-Button                                 | 6XP  | 1 Factor Additional VA                                                        | 20C  | Communication: Control Net                  |
| 1E                   | On - Off Push-Button                                   | 6YP  | 2 Factor Additional VA                                                        | 20P  | Communication: ProfiBUS                     |
| 3                    | Hand-Off-Auto Selector Switch                          | 8L   | Line-Mounted Protective Module                                                | PC   | Pump Control                                |
| 3E                   | On - Off Selector Switch                               | 8M   | Load-Mounted Protective Module                                                | BC   | Braking Control                             |
| 3H                   | Hand-Auto Selector Switch                              | 8B   | Line- and Load-Mounted Protective Modules                                     | TB10 | 10 Spare Terminal Blocks                    |
| 3B                   | SMC-Off-Bypass Selector Switch                         | BP   | Bypass Starter                                                                | TB20 | 20 Spare Terminal Blocks                    |
| 13                   | Start-Stop Push-Button & Hand-Off-Auto Selector Switch | NB   | NEMA Bypass Starter                                                           | P10  | 100 mm Mounting foot, sheet metal           |
| 4____ <sup>(1)</sup> | Pilot Lights                                           | IC   | Isolation Contactor                                                           | P20  | 200 mm Mounting foot, sheet metal           |
| 5____ <sup>(1)</sup> | Push to test Pilot Lights                              | NI   | NEMA Isolation Contactor                                                      | F10  | 100 mm Mounting foot, high-strength plastic |
| 1XA                  | Soft Stop Push Button                                  | 989  | 1 N.O 1 N.C Auxiliary Contact on Circuit Breaker or Fusible Disconnect Switch | F20  | 200 mm Mounting foot, high-strength plastic |
| 1XB                  | Pump Stop Push Button                                  | HC3  | SMC Flex Human Interface Module-Door mounted type 4/12                        | 416  | Plug-in Control Relay 2-pole                |
| 1XC                  | Slow Speed Push Button                                 | 20S  | Communication: RS-485                                                         | 417  | Plug-in Control Relay On Delay              |
| 1XD                  | Brake Push Button                                      | 20D  | Communication: DeviceNet                                                      | 418  | Plug-in Control Relay Off Delay             |
| 6P                   | Control Circuit Transformer                            | 20E  | Communication: Ethernet/IP                                                    |      |                                             |

(1) Pilot Lights require configuration. See [Table 8](#)

**Table 8 - Pilot Light Configuration**

| <b>4</b> | <b>R</b> | <b>G</b> | <b>X</b> | <b>W</b> |
|----------|----------|----------|----------|----------|
| a        | b        | c        | d        | e        |

| <b>a</b>      |                           |
|---------------|---------------------------|
| <b>Option</b> |                           |
| <b>Code</b>   | <b>Description</b>        |
| 4             | Pilot Light               |
| 5             | Push to test Pilot Lights |

| <b>b</b>             |                    |
|----------------------|--------------------|
| <b>ON Indication</b> |                    |
| <b>Code</b>          | <b>Description</b> |
| R                    | 108                |
| G                    | 135                |
| X                    | none               |

| <b>c</b>              |                    |
|-----------------------|--------------------|
| <b>OFF Indication</b> |                    |
| <b>Code</b>           | <b>Description</b> |
| R                     | 108                |
| G                     | 135                |
| X                     | none               |

| <b>d</b>                |                    |
|-------------------------|--------------------|
| <b>Fault Indication</b> |                    |
| <b>Code</b>             | <b>Description</b> |
| A                       | Amber              |
| X                       | none               |

| <b>e</b>                   |                    |
|----------------------------|--------------------|
| <b>Power ON Indication</b> |                    |
| <b>Code</b>                | <b>Description</b> |
| W                          | White              |

Note: The final character in the configuration string cannot be "X".

### Controllers Rated 5...85 A

- Note: Controllers rated 5...85 A do not include snap-together wiring.

| <b>152H</b> | <b>–</b> | <b>F85</b> | <b>F</b> | <b>BD</b> | <b>D</b> | <b>–</b> | <b>B</b> | <b>–</b> | <b>8L</b> |
|-------------|----------|------------|----------|-----------|----------|----------|----------|----------|-----------|
| a           |          | b          | c        | d         | e        |          | f        |          | g         |

| <b>a</b>               |                                                                                    |
|------------------------|------------------------------------------------------------------------------------|
| <b>Bulletin Number</b> |                                                                                    |
| <b>Code</b>            | <b>Description</b>                                                                 |
| 150                    | Non-combination solid-state controller                                             |
| 150B                   | Non-combination solid-state controller with isolation Contactor                    |
| 152H                   | Combination solid-state controller with fusible disconnect                         |
| 152B                   | Combination solid-state controller with fusible disconnect and isolation contactor |
| 153H                   | Combination solid-state controller with circuit breaker                            |
| 153B                   | Combination solid-state controller with circuit breaker and isolation contactor    |

| <b>b</b>                     |                    |
|------------------------------|--------------------|
| <b>Controller Rating [A]</b> |                    |
| <b>Code</b>                  | <b>Description</b> |
| F5                           | 5 A                |
| F25                          | 25 A               |
| F43                          | 43 A               |
| F60                          | 60 A               |
| F85                          | 85 A               |

| <b>c</b>              |                       |
|-----------------------|-----------------------|
| <b>Enclosure Type</b> |                       |
| <b>Code</b>           | <b>Description</b>    |
| F                     | NEMA Type 4/12 (IP65) |

| <b>d</b>                                           |                                   |
|----------------------------------------------------|-----------------------------------|
| <b>Input Line Voltage, 120V AC Control Voltage</b> |                                   |
| <b>Code</b>                                        | <b>Description</b>                |
| HD                                                 | 200...208V AC, 3-Phase, 50 /60 Hz |
| AD                                                 | 230V AC, 3-Phase, 50/60 Hz        |
| BD                                                 | 400...460V AC, 3-Phase, 50/60 Hz  |
| CD                                                 | 500...575V AC, 3-Phase, 50/60 Hz  |

| <b>e</b>               |                    |
|------------------------|--------------------|
| <b>Control Options</b> |                    |
| <b>Code</b>            | <b>Description</b> |
| Blank                  | Standard           |
| B                      | Pump Control       |
| D                      | Braking Control    |

| <b>f</b>                                         |               |             |               |             |               |             |               |             |               |             |               |
|--------------------------------------------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| <b>Horsepower (Combination Controllers only)</b> |               |             |               |             |               |             |               |             |               |             |               |
| <b>Code</b>                                      | <b>Rating</b> | <b>Code</b> | <b>Rating</b> | <b>Code</b> | <b>Rating</b> | <b>Code</b> | <b>Rating</b> | <b>Code</b> | <b>Rating</b> | <b>Code</b> | <b>Rating</b> |
| 33                                               | 0.5           | 39          | 5             | 45          | 30            | 51          | 125           | 59          | 400           |             |               |
| 34                                               | 0.75          | 40          | 7.5           | 46          | 40            | 52          | 150           | 60          | 450           |             |               |
| 35                                               | 1             | 41          | 10            | 47          | 50            | 54          | 200           | 61          | 500           |             |               |
| 36                                               | 1.5           | 42          | 15            | 48          | 60            | 56          | 250           | 62          | 600           |             |               |
| 37                                               | 2             | 43          | 20            | 49          | 75            | 57          | 300           | 63          | 700           |             |               |
| 38                                               | 3             | 44          | 25            | 50          | 100           | 58          | 350           | 65          | 800           |             |               |
|                                                  |               |             |               |             |               |             |               | 67          | 1000          |             |               |

| <b>g</b>                    |
|-----------------------------|
| <b>Options</b>              |
| See <a href="#">page 25</a> |

| 9<br>Options <sup>(1)</sup> |                                                                            |      |                                                                                                   |
|-----------------------------|----------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------|
| Code                        | Description                                                                | Code | Description                                                                                       |
| 1                           | Start-Stop Push Button                                                     | 6PM  | 2000VA Control Circuit Transformer (fused primary and secondary)                                  |
| 1F                          | Start-Stop Push Button with Hand-Off-Auto Selector Switch                  | 8L   | Line-Mounted Protective Module                                                                    |
| 1XA <sup>(2)</sup>          | Soft Stop Push Button                                                      | 8M   | Load-Mounted Protective Module                                                                    |
| 1XB <sup>(2)</sup>          | Pump Stop Push Button                                                      | 8B   | Line- and Load-Mounted Protective Modules                                                         |
| 1XC <sup>(2)</sup>          | Slow Speed Push Button                                                     | HC3  | Human Interface Module; Door-mounted, Full Numeric (Type 4/12)                                    |
| 1XD <sup>(2)</sup>          | Brake Push Button                                                          | 20S  | Communication: RS-485                                                                             |
| 1XE <sup>(2)</sup>          | Accu-Stop/Slow Speed Push Button                                           | 20D  | Communication: DeviceNet                                                                          |
| 3                           | Hand-Off-Auto Selector Switch                                              | 20E  | Communication: Ethernet/IP                                                                        |
| 3B <sup>(3)</sup>           | SMC-Off-Bypass Selector Switch                                             | 20C  | Communication: Control Net                                                                        |
| 4G                          | Transformer Pilot Light - Green Power On Indicator                         | 20P  | Communication: ProfIBUS                                                                           |
| 4R                          | Transformer Pilot Light - Red Run Indicator                                | 98   | N.O. disconnect auxiliary mounted on operating mechanism                                          |
| 5R                          | Push-to-Test Pilot Light - Red Run Indicator                               | 99   | N.C. disconnect auxiliary mounted on operating mechanism                                          |
| 6P                          | Control Circuit Transformer (fused primary and secondary)                  | 98X  | Internal N.O. circuit breaker auxiliary                                                           |
| 6PX                         | Additional 100VA Control Circuit Transformer (fused primary and secondary) | 99X  | Internal N.C. circuit breaker auxiliary                                                           |
| 6PK                         | 1000VA Control Circuit Transformer (fused primary and secondary)           | SEL  | Service Entrance Label                                                                            |
| 6PL                         | 1600VA Control Circuit Transformer (fused primary and secondary)           | OPS  | Oil Pump Starter;<br>Bulletin 509 NEMA Size 1 starter and Bulletin 592 solid-state overload relay |

(1) Load-side MOVs are not available with Pump and Braking options, or on delta-connected motors.

(2) Option push buttons are available only when the corresponding option module is selected.

(3) Bypass contactor and overload are not included with this option. You must add -NB or -BP to the catalog string to add these devices.

## Product Selection

- NOTE: Refer to and use Selection Wizards to ensure the SMC controller selection meets the application requirements. For additional assistance, please visit [www.ab.com](http://www.ab.com) or contact Industrial Controls Technical Support by email at [raictechsupport@ra.rockwell.com](mailto:raictechsupport@ra.rockwell.com) or by phone at 440-646-5800.

You can configure enclosed soft starters by selecting a power center, snap-together kits, transformers, and/or any applicable controller accessories.

## Power Centers

| Motor Current [A] | Rated Hp [Hp] |      |            |            | Non-combination<br>Starters Cat. No. | Combination Starters Cat. No. |                      |
|-------------------|---------------|------|------------|------------|--------------------------------------|-------------------------------|----------------------|
|                   | 200...208V    | 230V | 400...460V | 500...575V |                                      | with Fusible<br>Disconnect    | with Circuit Breaker |
| 108               | 30            | 40   | 75         | 100        | 150F-D10JCD                          | 152F-D10JCD-J20               | 153F-D10JCD-D17      |
| 135               | 40            | 50   | 100        | 125        | 150F-D13JCD                          | 152F-D13JCD-J20               | 153F-D13JCD-D25      |
| 201               | 60            | 75   | 150        | 150        | 150F-D20JCD                          | 152F-D20JCD-J40               | 153F-D20JCD-D25      |
| 251               | 75            | 100  | 200        | 200        | 150F-D25JCD                          | 152F-D25JCD-J40               | 153F-D25JCD-D40      |
| 317               | 100           | 125  | 250        | 300        | 150F-D31JCD                          | 152F-D31JCD-J60               | 153F-D31JCD-D40      |
| 361               | 125           | 150  | 300        | 350        | 150F-D36JCD                          | 152F-D36JCD-J60               | 153F-D36JCD-D80      |
| 480               | 150           | 200  | 400        | 500        | 150F-D48JCD                          | 152F-D48JCD-L80               | 153F-D48JCD-D80      |

## Transformers

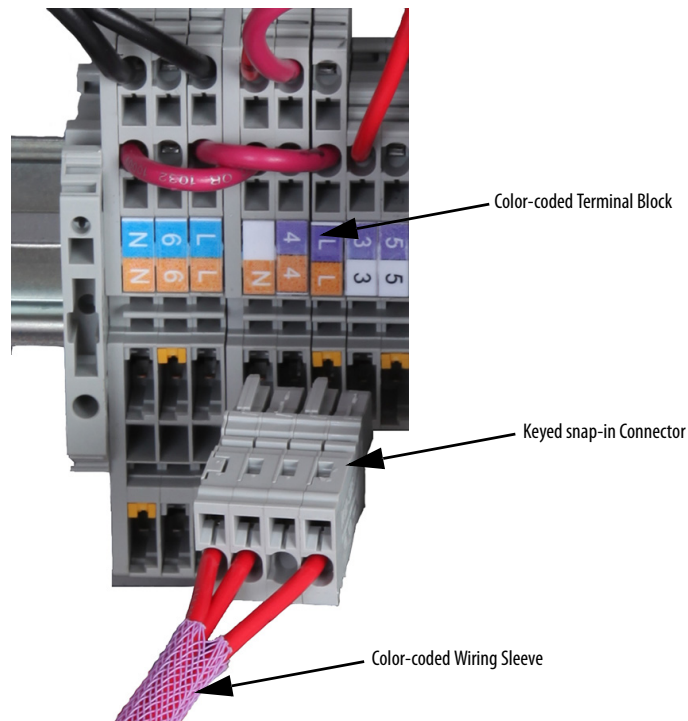
|                                                                                     | Controller Current [A]       | Capacity       | VA  | 208V x 120V Cat. No. | 240V x 120V Cat. No. | 460V x 120V Cat. No. | 575V x 120V Cat. No. |
|-------------------------------------------------------------------------------------|------------------------------|----------------|-----|----------------------|----------------------|----------------------|----------------------|
|  | 108, 135, 251, 317, 361, 480 | Standard       | 200 | 1497-HD200           | 1497-AD200           | 1497-BD200           | 1497-CD200           |
|                                                                                     |                              | Extra Capacity | 350 | 1497-HD350           | 1497-AD350           | 1497-BD350           | 1497-CD350           |
|                                                                                     |                              | Extra Capacity | 500 | 1497-HD500           | 1497-AD500           | 1497-BD500           | 1497-CD500           |

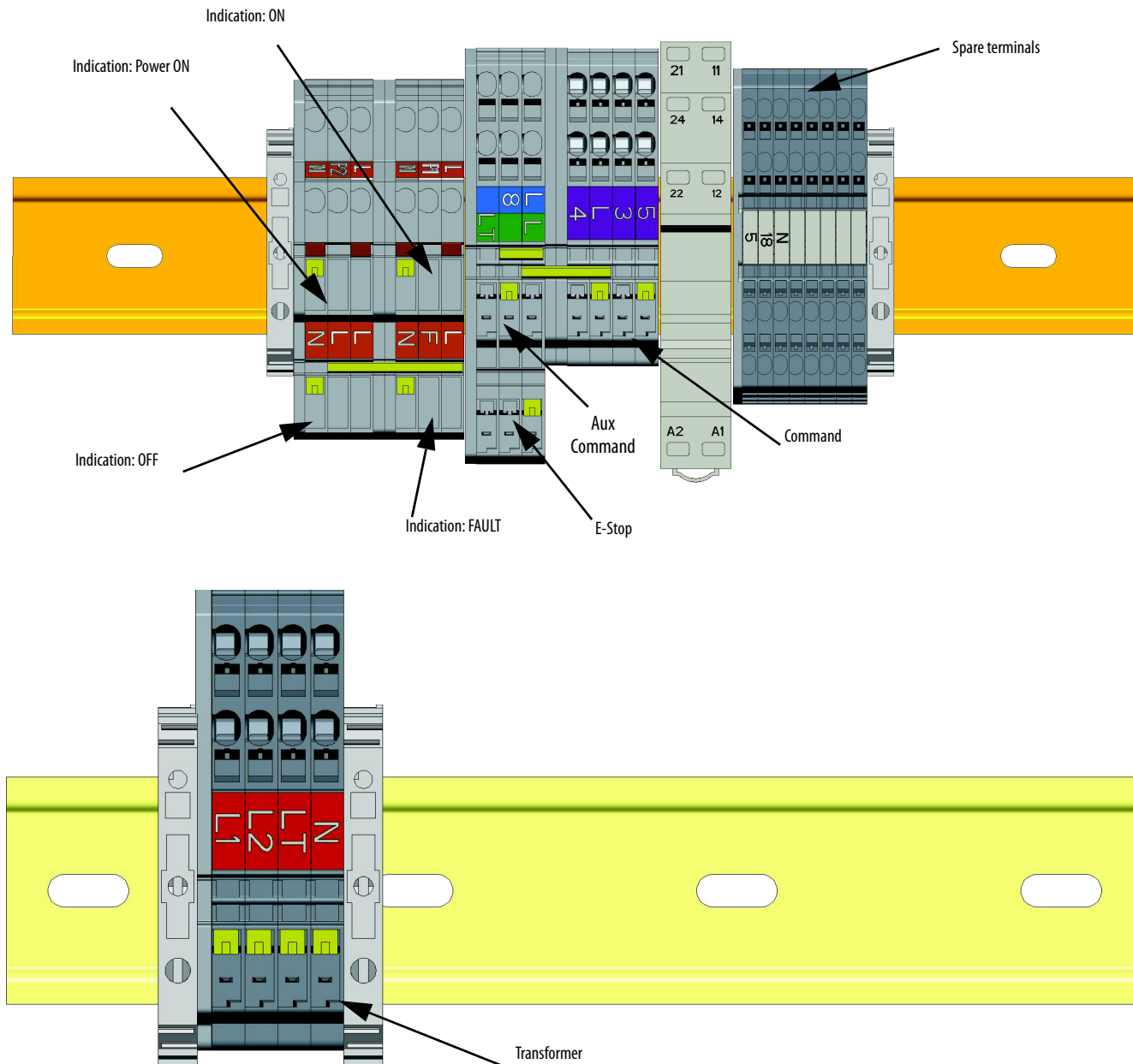
### *Snap-together Wiring*

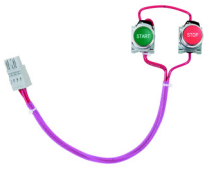
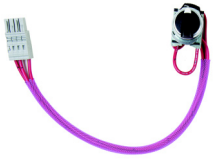
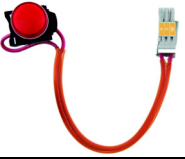
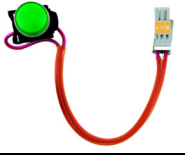
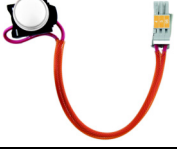
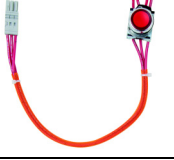
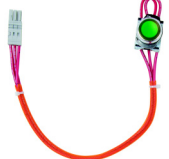
- **Note:** This option applies only to controllers with current ratings greater than 90 A.

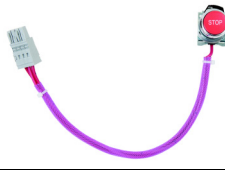
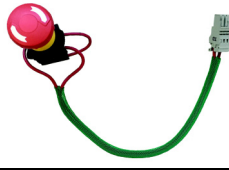
Component wiring is color coded by function. The wiring sleeve color corresponds to a colored label on the terminal block. Keyed connectors snap these components into the terminal block. This greatly reduced assembly time is ideal for the quick installation of pilot devices and control circuit transformers, and significantly reduces wiring errors. [Figure 31](#) shows an example of this feature.

### Figure 13 - Snap-together Wiring Example



**Figure 14 - SMC Flex Controller Snap-together Wiring**

|                                                                                     | Description                                                                          | Cat. No.   |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------|
|    | Start-Stop Snap-together Push Button Kit, Metal Bezel 22.5 mm                        | 198-SSPBM  |
|    | 3-Position Hand-Off-Auto Snap-together Selector Switch Kit Metal Bezel 22.5 mm       | 198-3SSM   |
|                                                                                     | 2-Position On-Off or Hand-Auto Snap-together Selector Switch Kit Metal Bezel 22.5 mm | 198-2SSM   |
|    | Red Universal LED Pilot Light Snap-together Kit 22.5 mm                              | 198-RUPL   |
|    | Green Universal LED Pilot Light Snap-together Kit 22.5 mm                            | 198-GUPL   |
|   | White or Amber Universal LED Pilot Light Snap-together Kit 22.5 mm                   | 198-WUPL   |
|  | Red Universal LED Push to Test Pilot Light Snap-together Kit 22.5 mm                 | 198-RUPPLM |
|  | Green Universal LED Push to Test Pilot Light Snap-together Kit 22.5 mm               | 198-GUPPLM |

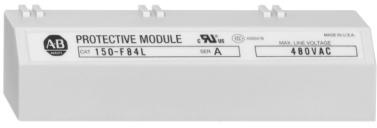
|                                                                                   | Description                                                                     | Cat. No.   |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------|
|  | White or Amber Universal LED Push to Test Pilot Light Kit Snap-together 22.5 mm | 198-WUPPLM |
|  | Stop Push Button Snap-together Kit N.C. 22.5 mm, Momentary                      | 198-PBM    |
|  | Emergency Stop Snap-together Kit                                                | 198-ESP    |

## Accessories

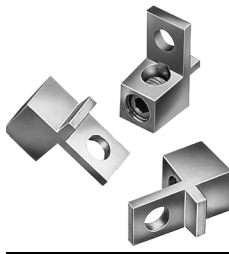
### Protective Modules

The same protective module mounts on the line or load side of the SMC Flex controller. Use of protective modules is highly recommended. For applications requiring both line and load side protection, you must order two protective modules.

- Note: You must not place protective modules on the load (motor) side of an SMC Flex controller when using an inside-the-delta connection or with pump, braking, or linear speed acceleration/deceleration control.

|  | Current Rating [A] | Description            | Cat. No. |
|-------------------------------------------------------------------------------------|--------------------|------------------------|----------|
|                                                                                     | 5...85             | 480V Protective Module | 150-F84  |
|                                                                                     | 90...520           |                        | 150-F84L |
|                                                                                     | 5...85             | 600V Protective Module | 150-F86  |
|                                                                                     | 90...520           |                        | 150-F86L |

### Terminal Lug Kits

|                                                                                     | Current Range [A] <sup>(1)</sup> | Wire Size Range                                               | Total No. of Terminal Lugs Possible Each Side |           | Pkg. Qty. | Cat. No.  |
|-------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------|-----------------------------------------------|-----------|-----------|-----------|
|                                                                                     |                                  |                                                               | Line Side                                     | Load Side |           |           |
|  | 108...135 <sup>(2)</sup>         | #6...250 MCM AWG<br>16 mm <sup>2</sup> ...120 mm <sup>2</sup> | 3                                             | 3         | 3         | 199-LF1   |
|                                                                                     | 201...251 <sup>(2)</sup>         |                                                               | 6                                             | 6         | 3         |           |
|                                                                                     | 317...480 <sup>(2)</sup>         | #4...500 MCM AWG<br>25 mm <sup>2</sup> ...240 mm <sup>2</sup> | 6                                             | 6         | 3         | 199-LG1   |
|                                                                                     | 625...780                        | 2/0...500 MCM                                                 | 3                                             | 3         | 3         | 100-DL630 |
|                                                                                     | 970                              | 4/0...500 MCM                                                 | 6                                             | 6         | 3         | 100-DL680 |
|                                                                                     | 1250 <sup>(3)</sup>              | 2/0...500 MCM                                                 | 6                                             | 6         | 3         | 100-DL630 |
|                                                                                     |                                  | 4/0...500 MCM                                                 | 3                                             | 3         | 3         | 100-DL680 |

(1) 5...85 A units have box lugs standard. No additional lugs are required.

(2) When a multi-conductor lug is required, refer to the User Manual for appropriate lug catalog number.

(3) The 1250 A device requires (1) 100-DL630 and (1) 100-DL680 per connection.

## IEC Line or Load Terminal Covers

|  | Description <sup>(1)</sup>                                                                                                     | Current Range [A] | Pkg. Quantity | Cat. No. |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|----------|
|                                                                                   | <ul style="list-style-type: none"> <li>Dead front protection</li> <li>IP2X finger safe when used with 250 MCM cable</li> </ul> | 108...135         | 1             | 150-TC1  |
|                                                                                   |                                                                                                                                | 201...251         | 1             | 150-TC2  |
|                                                                                   | <ul style="list-style-type: none"> <li>Dead front protection</li> <li>IP2X finger safe when used with 500 MCM cable</li> </ul> | 317...480         | 1             | 150-TC3  |

(1) 5...85 A units have terminal guards as standard. No additional terminal guards are required.

## Human Interface Modules (HIMs) and Communication Modules

| Description                                                                         |                                                                                                                                          |                                                                                       | Cat. No.                |                                                                                                      |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------|
|    | Hand-held HIM                                                                                                                            | LCD display, Full Numeric Keypad <sup>(2)</sup>                                       | 20-HIM-A3               |                                                                                                      |
|                                                                                     |                                                                                                                                          | LCD display, Programmer only                                                          | 20-HIM-A5               |                                                                                                      |
|                                                                                     | Door-mounted HIM                                                                                                                         |                                                                                       | 20-HIM-C3S              |                                                                                                      |
|                                                                                     |                                                                                                                                          | Remote (panel mount) LCD Display, Full Numeric Keypad (version of Cat. No. 20-HIM-A6) | 20-HIM-C5S              |                                                                                                      |
|                                                                                     | HIM Interface Cables                                                                                                                     | HIM Interface Cable, 1 m (39 in)                                                      | 20-HIM-H10              |                                                                                                      |
|                                                                                     |                                                                                                                                          | Cable Kit (Male-Female) 0.33 m (1.1 ft)                                               | 1202-H03                |                                                                                                      |
|                                                                                     |                                                                                                                                          | Cable Kit (Male-Female) 1 m (3.3 ft)                                                  | 1202-H10                |                                                                                                      |
|                                                                                     |                                                                                                                                          | Cable Kit (Male-Female) 3 m (9.8 ft)                                                  | 1202-H30                |                                                                                                      |
|                                                                                     |                                                                                                                                          | Cable Kit (Male-Female) 9 m (29.5 ft)                                                 | 1202-H90                |                                                                                                      |
|                                                                                     |                                                                                                                                          | DPI/SCANport™ One to Two Port Splitter Cable                                          | 1203-S03                |                                                                                                      |
| Description (IP30/Type 1)                                                           |                                                                                                                                          | For Use With                                                                          | Cat. No.                |                                                                                                      |
|  | Communication Modules (installed into the physical space assigned to control module expansion port 9; connected to DPI port 4 via cable) | RS485 DF1 Communication Adapter                                                       | SMC Flex                | 20-COMM-S                                                                                            |
|                                                                                     |                                                                                                                                          | PROFIBUS™ DP Communication Adapter                                                    |                         | 20-COMM-P                                                                                            |
|                                                                                     |                                                                                                                                          | ControlNet™ Communication Adapter (Coax)                                              |                         | 20-COMM-C                                                                                            |
|                                                                                     |                                                                                                                                          | Interbus™ Communication Adapter                                                       |                         | 20-COMM-I                                                                                            |
|                                                                                     |                                                                                                                                          | Modbus/TCP Communication Adapter                                                      |                         | 20-COMM-M                                                                                            |
|                                                                                     |                                                                                                                                          | DeviceNet™ Communication Adapter                                                      |                         | 20-COMM-D                                                                                            |
|                                                                                     |                                                                                                                                          | EtherNet/IP™ Communication Adapter                                                    |                         | 20-COMM-E                                                                                            |
|                                                                                     |                                                                                                                                          | HVAC Communication Adapter                                                            |                         | 20-COMM-H                                                                                            |
|                                                                                     |                                                                                                                                          | ControlNet™ Communication Adapter (Fiber)                                             | 20-COMM-Q               |                                                                                                      |
| Connected Components Workbench™ Software                                            |                                                                                                                                          | Programming Software                                                                  | Windows 7/2000/XP/Vista | Available for download at <a href="http://www.rockwellautomation.com">www.rockwellautomation.com</a> |
| DriveExecutive™                                                                     |                                                                                                                                          |                                                                                       |                         | 9303-4DTE01ENE                                                                                       |
| DriveTools™ SP <sup>(1)</sup>                                                       |                                                                                                                                          |                                                                                       |                         | 9303-4DTS01ENE                                                                                       |
| AnaCANda™ RS-232 to DPI                                                             |                                                                                                                                          | PC Interface                                                                          | Serial                  | 1203-SSS <sup>(3)</sup>                                                                              |
| DPI to USB                                                                          |                                                                                                                                          |                                                                                       | USB                     | 1203-USB <sup>(4)</sup>                                                                              |

(1) Includes DriveExecutive™ and DriveObserver™

(2) Requires a 20-HIM-H10 cable to connect to the SMC Flex.

(3) Includes Cat. No. 1203-SFC and 1202-C10 cables.

(4) Includes Cat. No. 20-HIM-H10 and 22-HIM-H10 cables.

## Enclosure Accessories

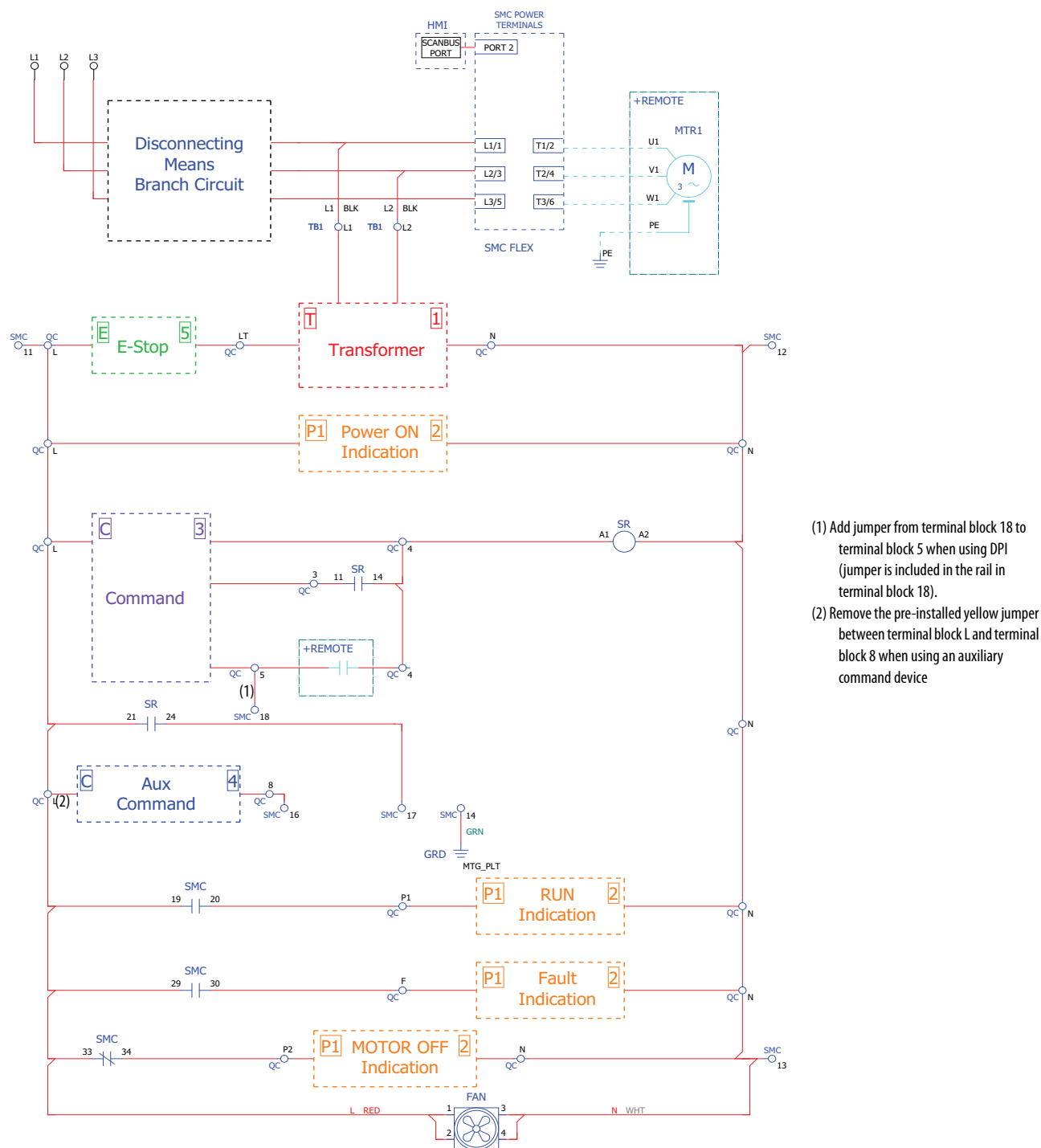
|                                                                                   | Description                                                                     | Construction Material | For Use With Enclosure Width | Cat. No.    |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------|------------------------------|-------------|
|  | <b>Perforated frame strip</b><br>• Mounting rail for door or panel installation | Sheet steel           | 400 mm                       | 198-DS400   |
|                                                                                   |                                                                                 |                       | 600 mm                       | 198-DS600   |
|                                                                                   |                                                                                 |                       | 1000 mm                      | 198-DS1000  |
|  | <b>Enclosure mounting foot</b><br>• 100 mm height                               | High-strength plastic | 400 mm                       | 198-FB100 A |
|                                                                                   |                                                                                 |                       | 600 mm                       | 198-FB100B  |
|                                                                                   |                                                                                 |                       | 1000 mm                      | 198-FB100C  |
|                                                                                   |                                                                                 | Sheet steel           | 400 mm                       | 198-PL100 A |
|                                                                                   |                                                                                 |                       | 600 mm                       | 198-PL100B  |
|                                                                                   |                                                                                 |                       | 1000 mm                      | 198-PL100C  |
|                                                                                   | <b>Enclosure mounting foot</b><br>• 200 mm height                               | Sheet steel           | 400 mm                       | 198-PL200 A |
|                                                                                   |                                                                                 |                       | 600 mm                       | 198-PL200B  |
|                                                                                   |                                                                                 |                       | 1000 mm                      | 198-PL200C  |

## Wiring Diagrams

The diagrams in this section illustrate basic SMC controller wiring. For specific wiring diagrams, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

### Notes:

- Use 75 °C Cu wire only
- Line fuses are customer supplied on controllers with factory-supplied disconnect switch. Refer to NEC when selecting short-circuit protection.
- Additional control circuit overcurrent protection is required for non-combination starters. Refer to NEC.

**Figure 15 - SMC Flex Controller Basic Wiring Diagram**

- For wiring diagrams for snap-together kits, please see the following figures:
  - Command kits: [Figure 16](#), [Figure 17](#), and [Figure 18](#); Auxiliary Command kits: [Figure 19](#), [Figure 20](#), and [Figure 21](#)
  - Emergency Stop (E-Stop) kit: [Figure 22](#)
  - Indication kit: [Figure 23](#)
  - Transformer kit: [Figure 24](#)
- SMC Flex controller factory pre-programmed parameters; Parameter 109: AUX4CFG set to NORMAL NC TO NORMAL NC.
- For units with DPI, set Logic Mask (Parameter 87) to 0010 0100.

## Wiring Diagrams for Snap-together Kits

Figure 16 - Start-Stop Command Kit Wiring Diagram

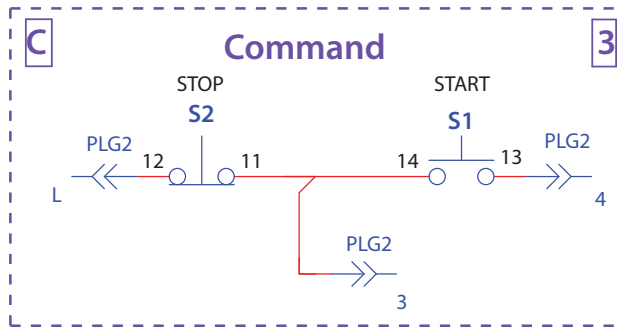


Figure 17 - Hand-OFF-Auto Command Kit Wiring Diagram

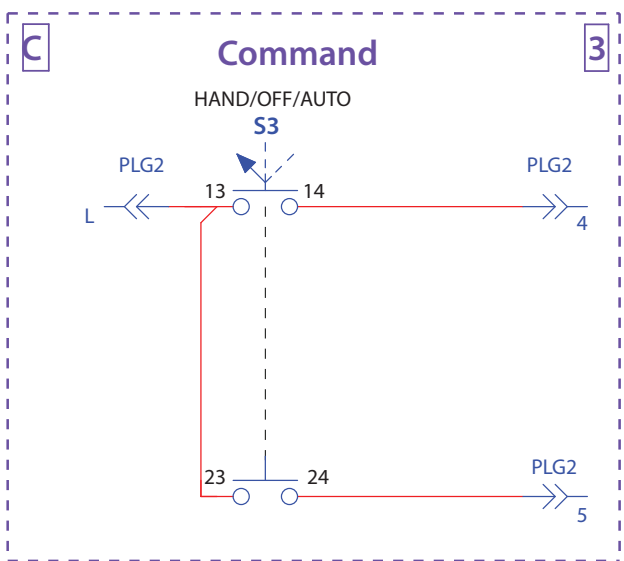


Figure 18 - Hand-OFF-Auto and Start-Stop Command Kit Wiring Diagram

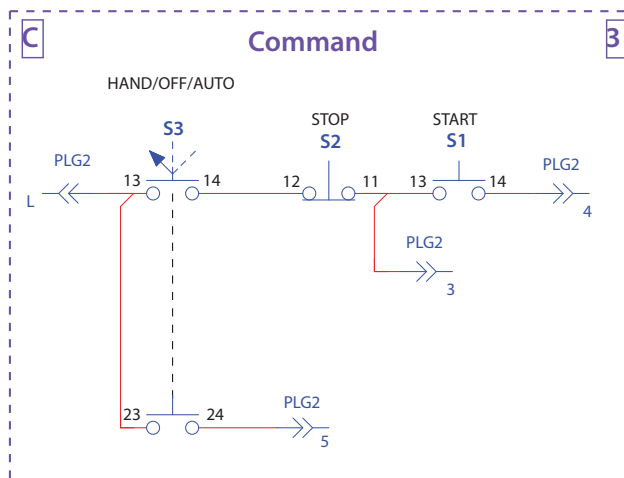


Figure 19 - Soft Stop Auxiliary Command Kit Wiring Diagram

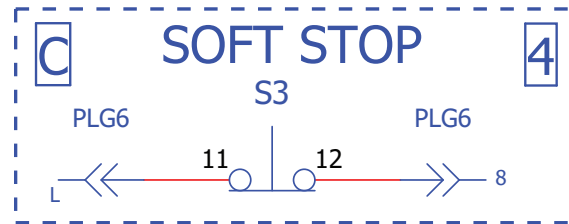


Figure 20 - Pump Stop Auxiliary Command Kit Wiring Diagram

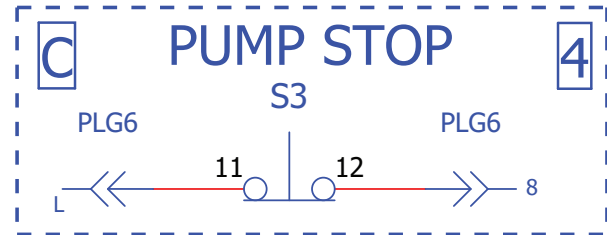


Figure 21 - Brake Auxiliary Command Kit Wiring Diagram

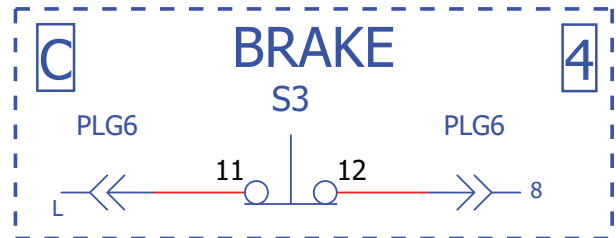


Figure 22 - E-Stop Kit Wiring Diagram

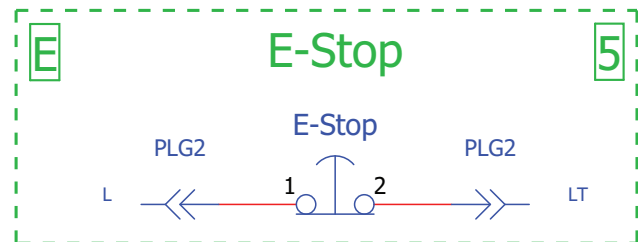


Figure 23 - Indication Kit Wiring Diagram

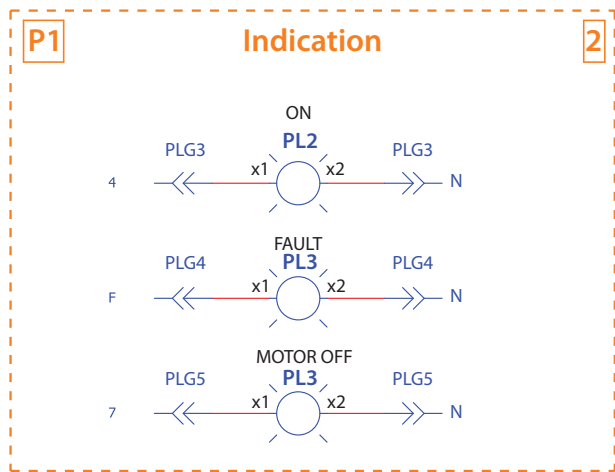
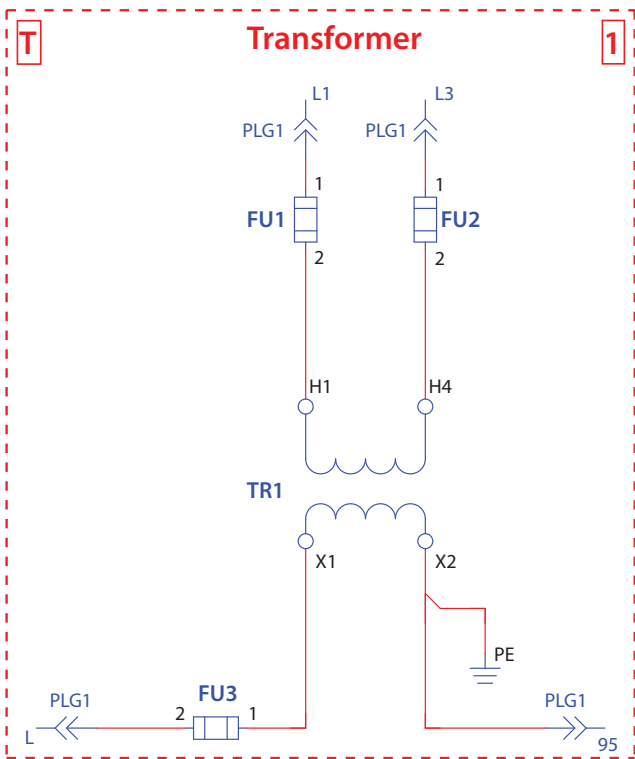


Figure 24 - Transformer Kit Wiring Diagram



Standards Compliance and Certifications

| Standards Compliance—Open Controllers | Certifications—Open Controllers                                |
|---------------------------------------|----------------------------------------------------------------|
| UL 508                                | cULus Listed (Open Type) (File No. E96956, Guides NMFT, NMFT7) |
| CSA C22.2 No.14                       | CSA Certified (File No. LR 1234)                               |
| EN/IEC 60947-1                        | CE Marked                                                      |
| EN/IEC 60947-4-2                      | CCC Certified                                                  |

| Standards Compliance—Enclosed Controllers | Certifications—Enclosed Controllers |
|-------------------------------------------|-------------------------------------|
| UL 508A                                   | cULus Listed                        |

## Short-circuit Current Ratings

Determining the short circuit current ratings (SCCR) of a complex system can be very challenging, especially if proper considerations are not made during the initial stages of the component selection process.

The SCCRs in this section provide coordinated high fault branch circuit for enclosed soft starters and is based on compliance to IEC and UL standards. For comprehensive SCCR information, please consult the Rockwell Automation Global SCCR Selection Tool at <http://www.rockwellautomation.com/global/support/global-sccr.page>.

- Note: Ratings provided are for standard options only; does not include bypass or isolation contactor configurations

**Table 9 - Non-combination Enclosed Soft Starters with SMC Flex Controllers**

| Controller Rating [A] | Short Circuit Current Rating                                                                                                                                                                                                                                                                                                     |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5                     | <ul style="list-style-type: none"> <li>• 70 kA rms symmetrical, 600V maximum when protected by a maximum 10 A Class J Fuse</li> <li>• 5 kA rms symmetrical, 600V maximum when protected by a maximum 20 A fuse</li> <li>• 5 kA rms symmetrical, 600V maximum when protected by a maximum 20 A circuit breaker</li> </ul>         |
| 25                    | <ul style="list-style-type: none"> <li>• 70 kA rms symmetrical, 600V maximum when protected by a maximum 50 A Class J Fuse</li> <li>• 5 kA rms symmetrical, 600V maximum when protected by a maximum 100 A fuse</li> <li>• 5 kA rms symmetrical, 600V maximum when protected by a maximum 100 A circuit breaker</li> </ul>       |
| 43                    | <ul style="list-style-type: none"> <li>• 70 kA rms symmetrical, 600V maximum when protected by a maximum 90 A Class J Fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 150 A fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 150 A circuit breaker</li> </ul>     |
| 60                    | <ul style="list-style-type: none"> <li>• 70 kA rms symmetrical, 600V maximum when protected by a maximum 125 A Class J Fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 225 A fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 225 A circuit breaker</li> </ul>    |
| 85                    | <ul style="list-style-type: none"> <li>• 70 kA rms symmetrical, 600V maximum when protected by a maximum 175 A Class J Fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 300 A fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 300 A circuit breaker</li> </ul>    |
| 108                   | <ul style="list-style-type: none"> <li>• 70 kA rms symmetrical, 600V maximum when protected by a maximum 200 A Class J Fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 400 A fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 300 A circuit breaker</li> </ul>    |
| 135                   | <ul style="list-style-type: none"> <li>• 70 kA rms symmetrical, 600V maximum when protected by a maximum 225 A Class J Fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 500 A fuse</li> <li>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 400 A circuit breaker</li> </ul>    |
| 201                   | <ul style="list-style-type: none"> <li>• 70 kA rms symmetrical, 600V maximum when protected by a maximum 350 A Class J Fuse</li> <li>• 18 kA rms symmetrical, 600V maximum when protected by a maximum 600 A fuse</li> <li>• 18 kA rms symmetrical, 600V maximum when protected by a maximum 600 A circuit breaker</li> </ul>    |
| 251                   | <ul style="list-style-type: none"> <li>• 70 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse</li> <li>• 18 kA rms symmetrical, 600V maximum when protected by a maximum 700 A fuse</li> <li>• 18 kA rms symmetrical, 600V maximum when protected by a maximum 700 A circuit breaker</li> </ul>    |
| 317                   | <ul style="list-style-type: none"> <li>• 69 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse</li> <li>• 30 kA rms symmetrical, 600V maximum when protected by a maximum 800 A fuse</li> <li>• 30 kA rms symmetrical, 600V maximum when protected by a maximum 800 A circuit breaker</li> </ul>    |
| 361                   | <ul style="list-style-type: none"> <li>• 69 kA rms symmetrical, 600V maximum when protected by a maximum 600 A Class J Fuse</li> <li>• 30 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A fuse</li> <li>• 30 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A circuit breaker</li> </ul>  |
| 480                   | <ul style="list-style-type: none"> <li>• 69 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse</li> <li>• 30 kA rms symmetrical, 600V maximum when protected by a maximum 1200 A fuse</li> <li>• 30 kA rms symmetrical, 600V maximum when protected by a maximum 1200 A circuit breaker</li> </ul>  |
| 625                   | <ul style="list-style-type: none"> <li>• 74 kA rms symmetrical, 600V maximum when protected by a maximum 1600 A Class L Fuse</li> <li>• 42 kA rms symmetrical, 600V maximum when protected by a maximum 1600 A fuse</li> <li>• 42 kA rms symmetrical, 600V maximum when protected by a maximum 1600 A circuit breaker</li> </ul> |
| 780                   | <ul style="list-style-type: none"> <li>• 74 kA rms symmetrical, 600V maximum when protected by a maximum 1600 A Class L Fuse</li> <li>• 42 kA rms symmetrical, 600V maximum when protected by a maximum 1600 A fuse</li> <li>• 42 kA rms symmetrical, 600V maximum when protected by a maximum 2000 A circuit breaker</li> </ul> |

**Table 10 - Combination Enclosed Soft Starters with SMC Flex Controllers and Circuit Breakers**

| Controller Rating [A] | Short Circuit Current Rating          |
|-----------------------|---------------------------------------|
| 5...25                | • 5 kA rms symmetrical, 600V maximum  |
| 43...135              | • 10 kA rms symmetrical, 600V maximum |
| 201...251             | • 18 kA rms symmetrical, 600V maximum |
| 317A...361            | • 30 kA rms symmetrical, 600V maximum |
| 480                   | • 42 kA rms symmetrical, 600V maximum |
| 625...780             | • 42 kA rms symmetrical, 600V maximum |

**Table 11 - Combination Enclosed Soft Starters with SMC Flex Controllers and Fusible Disconnect**

| Controller Rating [A] | Short Circuit Current Rating                                                                                                                                                 |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5                     | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 10 A Class J Fuse<br>• 5 kA rms symmetrical, 600V maximum when protected by a maximum 20 A Class J Fuse    |
| 25                    | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 50 A Class J Fuse<br>• 5 kA rms symmetrical, 600V maximum when protected by a maximum 100 A Class J Fuse   |
| 43                    | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 90 A Class J Fuse<br>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 150 A Class J Fuse  |
| 60                    | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 125 A Class J Fuse<br>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 225 A Class J Fuse |
| 85                    | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 175 A Class J Fuse<br>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 300 A Class J Fuse |
| 108                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 200 A Class J Fuse<br>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse |
| 135                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 225 A Class J Fuse<br>• 10 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse |
| 201                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 350 A Class J Fuse<br>• 18 kA rms symmetrical, 600V maximum when protected by a maximum 600 A Class J Fuse |
| 251                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse<br>• 18 kA rms symmetrical, 600V maximum when protected by a maximum 700 A Class J Fuse |
| 317                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse<br>• 30 kA rms symmetrical, 600V maximum when protected by a maximum 800 A fuse         |
| 361                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 600 A Class J Fuse<br>• 30 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A fuse        |
| 480                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse<br>• 42 kA rms symmetrical, 600V maximum when protected by a maximum 1200 A fuse        |
| 625                   | • 74 kA rms symmetrical, 600V maximum when protected by a maximum 1600 A Class L Fuse<br>• 42 kA rms symmetrical, 600V maximum when protected by a maximum 1600 A fuse       |
| 780                   | • 74 kA rms symmetrical, 600V maximum when protected by a maximum 1600 A Class L Fuse<br>• 42 kA rms symmetrical, 600V maximum when protected by a maximum 1600 A fuse       |

## Approximate Dimensions

Examples given in this section include standard options. Use ProposalWorks to obtain dimensions for Smart Motor Controllers with all available options. ProposalWorks is available from <http://www.rockwellautomation.com/global/e-tools/overview.page>.

Dimensions are in millimeters (inches) unless otherwise noted. Dimensions are not to be used for manufacturing purposes.

**Figure 25 - Enclosure for SMC Controllers—1400 mm x 400 mm x 500 mm**

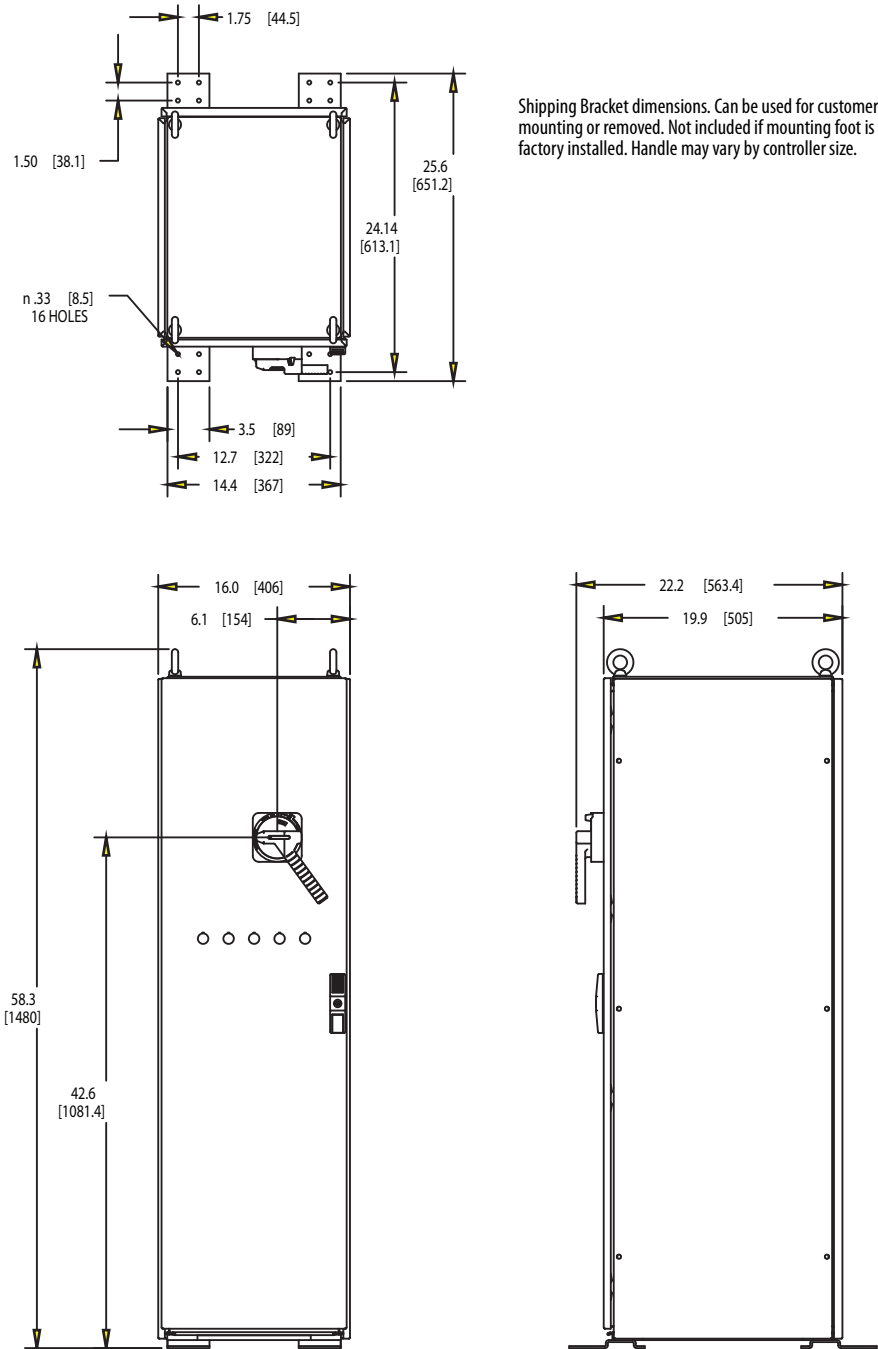
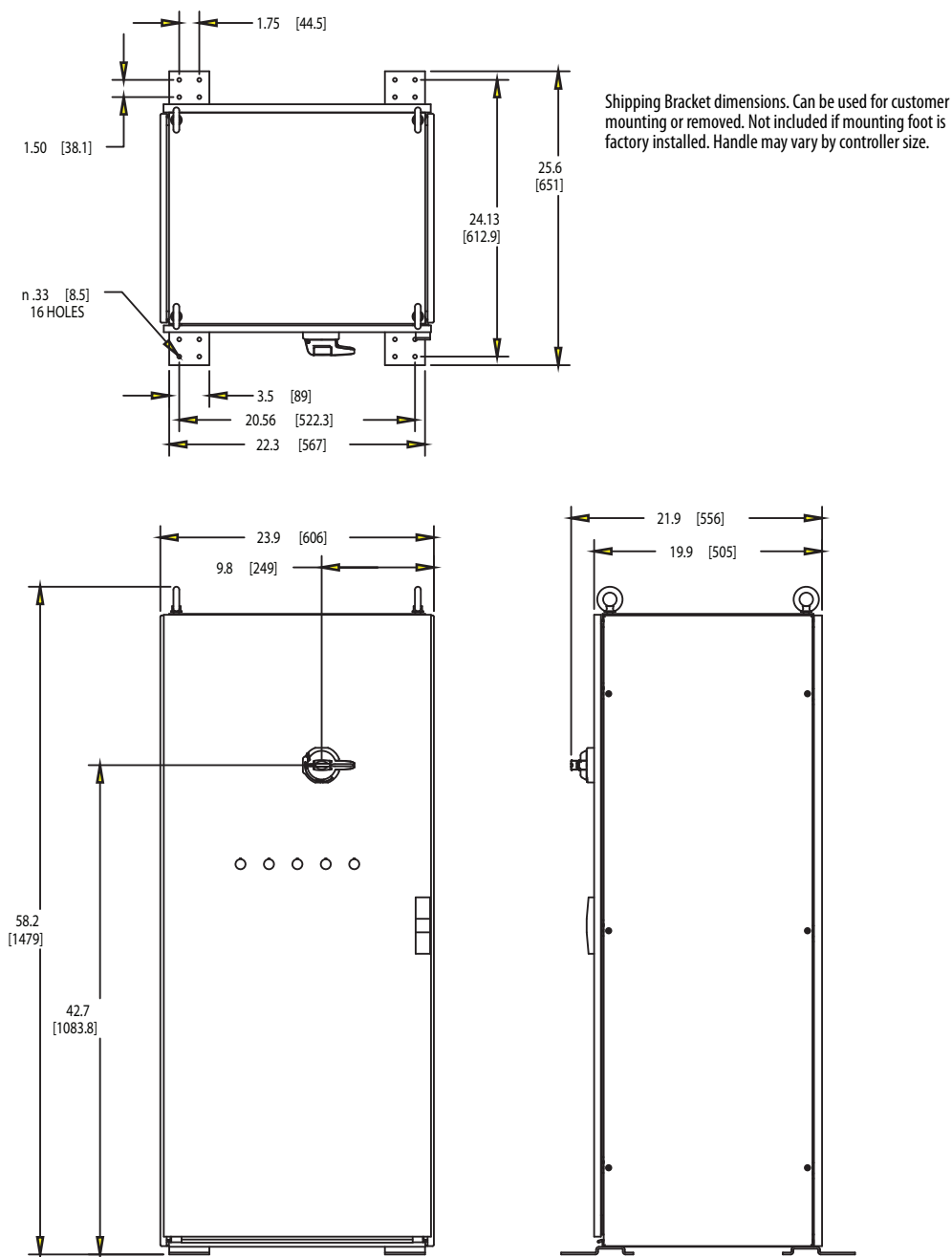
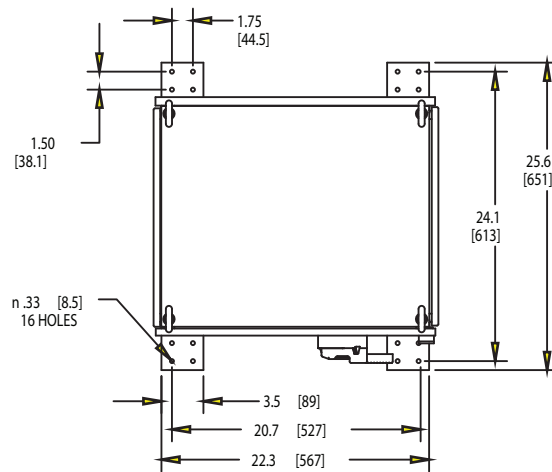


Figure 26 - Enclosure for SMC Controllers—1400 mm x 600 mm x 500 mm



**Figure 27 - Enclosure for SMC Controllers—2000 mm x 600 mm x 500 mm**

Shipping Bracket dimensions. Can be used for customer mounting or removed. Not included if mounting foot is factory installed. Handle may vary by controller size.

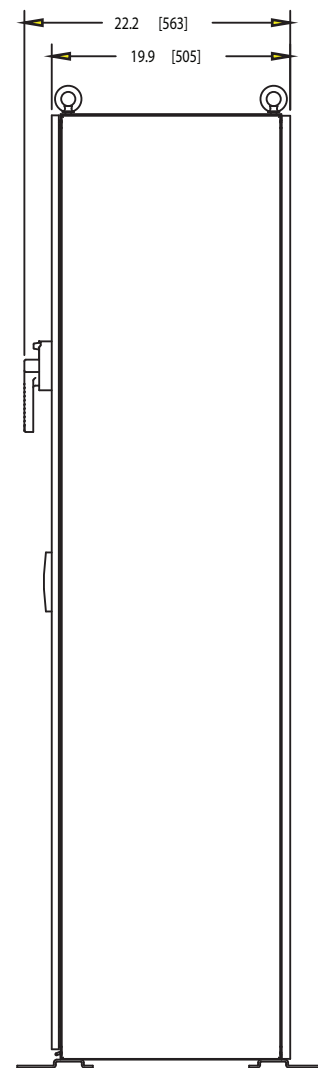
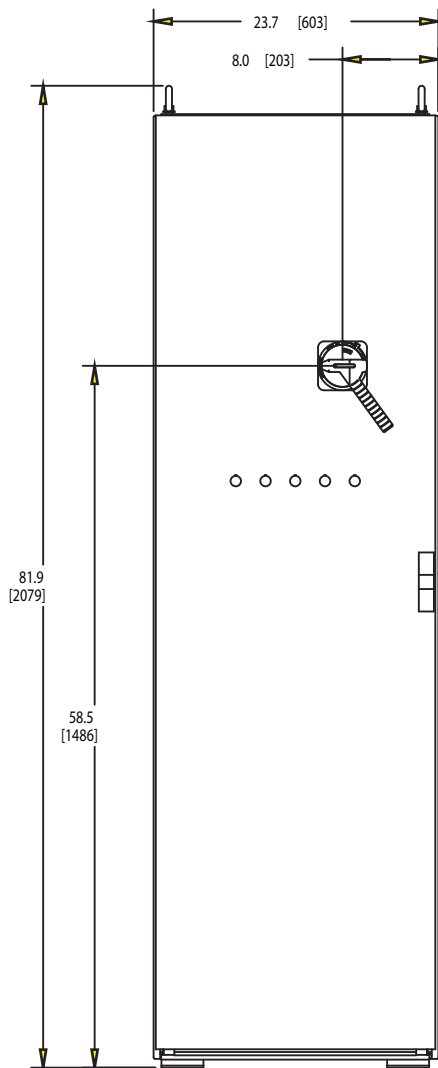
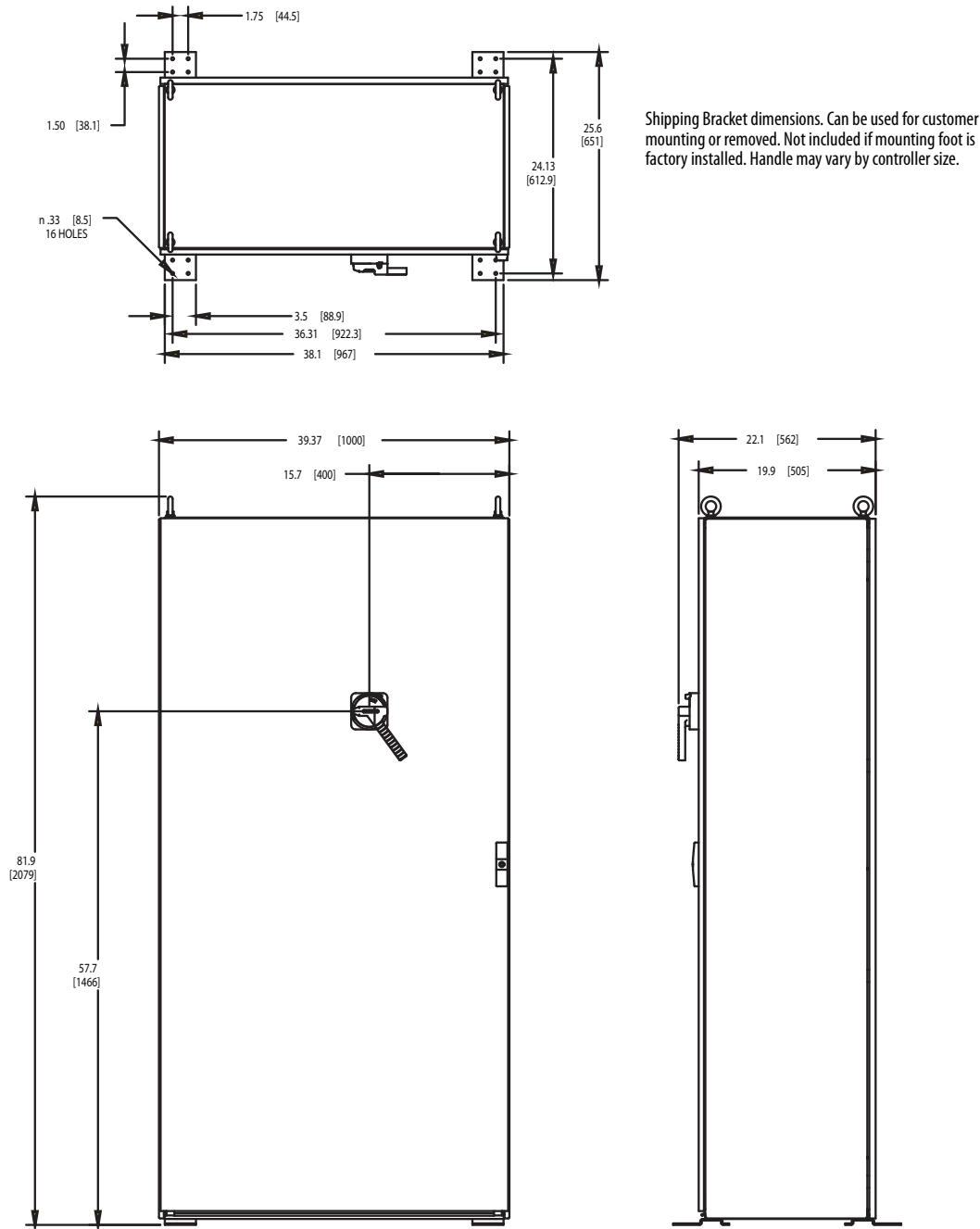
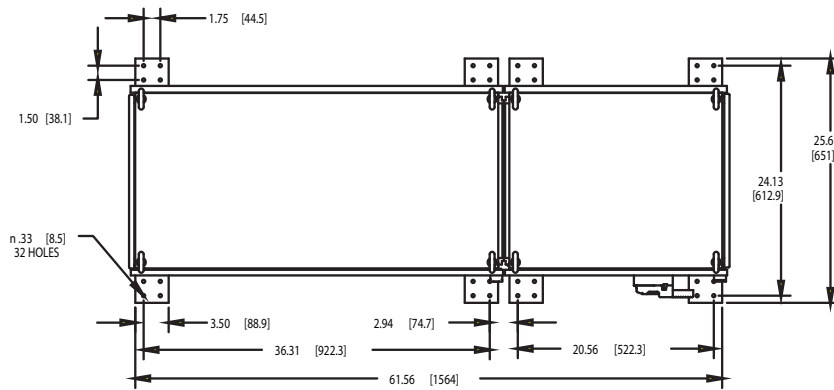
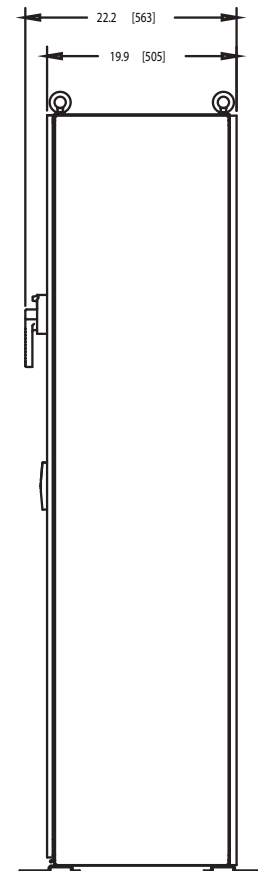
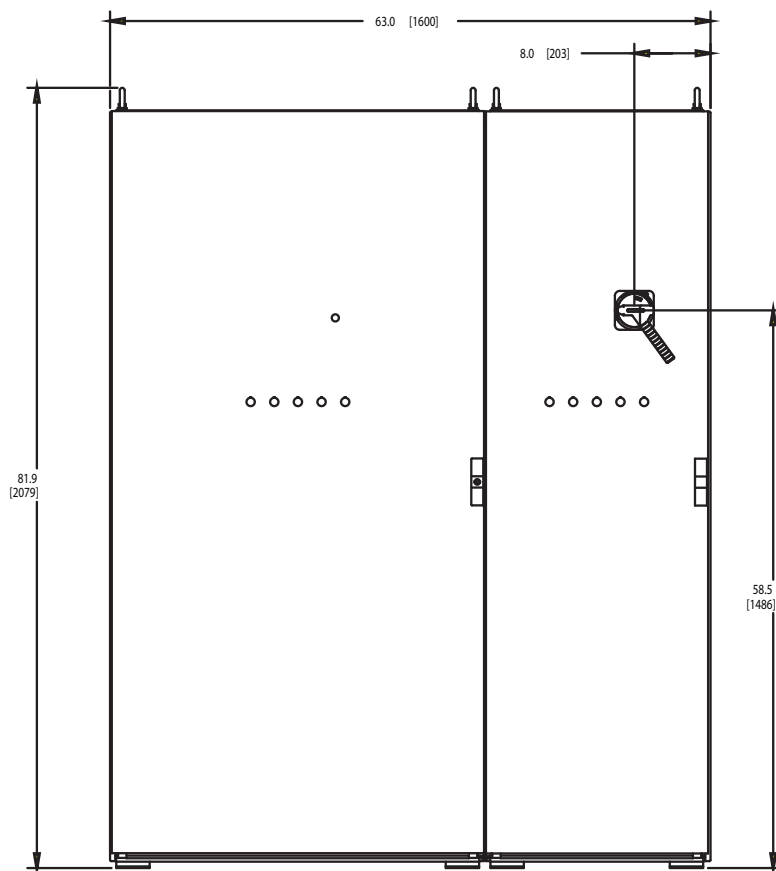


Figure 28 - Enclosure for SMC Controllers—2000 mm x 1000 mm x 500 mm



**Figure 29 - Enclosure for SMC Controllers—2000 mm x 1600 mm x 500 mm**

Shipping Bracket dimensions. Can be used for customer mounting or removed. Not included if mounting foot is factory installed. Handle may vary by controller size.

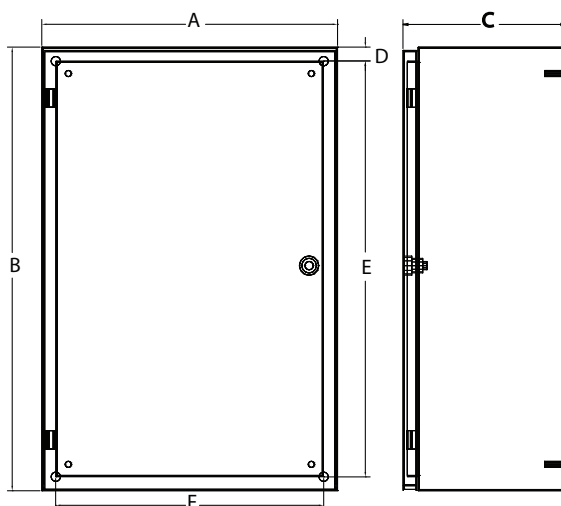


**Table 12 - SMC Flex Controller Enclosure Dimensions**

| Non-combination Controllers |                                                                            | Combination Controllers |                                                                           |                      |                                                                           |
|-----------------------------|----------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------|
|                             |                                                                            | With Fusible Disconnect |                                                                           | With Circuit Breaker |                                                                           |
| Cat. No.                    | Dimensions (H x W x D)                                                     | Cat. No.                | Dimensions (H x W x D)                                                    | Cat. No.             | Dimensions (H x W x D)                                                    |
| 150F-D10J...                | 1400 x 400 x 500<br>(55.1 x 15.7 x 19.7)<br>see <a href="#">Figure 25</a>  | 152F-D10J...            | 1400 x 400 x 500<br>(55.1 x 15.7 x 19.7)<br>see <a href="#">Figure 25</a> | 153F-D10J...         | 1400 x 400 x 500<br>(55.1 x 15.7 x 19.7)<br>see <a href="#">Figure 25</a> |
| 150F-D13J...                |                                                                            | 152F-D13J...            |                                                                           | 153F-D13J...         |                                                                           |
| 150F-D20J...                |                                                                            | 152F-D20J...            | 1400 x 600 x 500<br>(55.1 x 23.6 x 19.7)<br>see <a href="#">Figure 26</a> | 153F-D20J...         |                                                                           |
| 150F-D25J...                |                                                                            | 152F-D25J...            |                                                                           | 153F-D25J...         |                                                                           |
| 150F-D31J...                |                                                                            | 152F-D31J...            | 2000 x 600 x 500<br>(78.7 x 23.6 x 19.7)<br>see <a href="#">Figure 27</a> | 153F-D31J...         | 2000 x 600 x 500<br>(78.7 x 23.6 x 19.7)<br>see <a href="#">Figure 27</a> |
| 150F-D36J...                |                                                                            | 152F-D36J...            |                                                                           | 153F-D36J...         |                                                                           |
| 150F-D48J...                |                                                                            | 152F-D48J...            |                                                                           | 153F-D48J...         |                                                                           |
| 150F-D62J...                | 2000 x 1000 x 500<br>(78.7 x 39.4 x 19.7)<br>see <a href="#">Figure 28</a> | 152F-D62J...            | 2000 x 1600 x 500<br>(78.7 x 63 x 19.7)<br>see <a href="#">Figure 29</a>  | 153F-D62J...         | 2000 x 1600 x 500<br>(78.7 x 63 x 19.7)<br>see <a href="#">Figure 29</a>  |
| 150F-D78J...                |                                                                            | 152F-D78J...            |                                                                           | 153F-D78J...         |                                                                           |

**Figure 30 - Wall-mounted Enclosure Dimensions**

- Wall-mounted controllers do not include Snap-together wiring



**Table 13 - Wall-mounted Enclosed SMC Flex Controllers**

| Controller<br>Rating [A]   | Bulletin               | With Option                | Dimensions in inches (mm) |            |           |               |               |               |
|----------------------------|------------------------|----------------------------|---------------------------|------------|-----------|---------------|---------------|---------------|
|                            |                        |                            | A (Width)                 | B (Height) | C (Depth) | D (Mtg. Dim.) | E (Mtg. Dim.) | F (Mtg. Dim.) |
| Non-Combination Controller |                        |                            |                           |            |           |               |               |               |
| 5...43                     | 150                    | —                          | 16 (406)                  | 24 (610)   | 10 (254)  | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
|                            |                        | 6_ <sup>(1)</sup>          | 16 (406)                  | 24 (610)   | 10 (254)  |               | 22.5 (572)    | 14.5 (368)    |
|                            |                        | BP                         | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 150, 150B              | NB,NI                      | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 150                    | NB,6P_ <sup>(2)</sup>      | 30 (762)                  | 38 (965)   | 14 (356)  |               | 36.5 (927)    | 28.5 (724)    |
| 60                         | 150                    | —                          | 16 (406)                  | 24 (610)   | 10 (254)  | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
|                            | 150B                   | —                          | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            |                        | BP                         | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 150                    | 6_ <sup>(1)</sup>          | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            |                        | NB                         | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 150, 150B              | NI                         | 30 (762)                  | 38 (965)   | 14 (356)  |               | 36.5 (927)    | 28.5 (724)    |
| 85                         | 150                    | —                          | 16 (406)                  | 24 (610)   | 10 (254)  | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
|                            | 150B                   | —                          | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            |                        | BP                         | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 150                    | NB                         | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            |                        | 6_ <sup>(2)</sup>          | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 150, 150B              | NB,NI,6P_ <sup>(2)</sup>   | 30 (762)                  | 38 (965)   | 14 (356)  |               | 36.5 (927)    | 28.5 (724)    |
|                            | Combination Controller |                            |                           |            |           |               |               |               |
| 5...25                     | 152H,152B,153H,153B    | —                          | 16 (406)                  | 24 (610)   | 10 (254)  | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
|                            |                        | BP,NB,NI,6_ <sup>(1)</sup> | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
| 43                         | 152H,152B,153H,153B    | —                          | 16 (406)                  | 24 (610)   | 10 (254)  | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
|                            |                        | BP,6_ <sup>(1)</sup>       | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            |                        | NI, NB                     | 30 (762)                  | 38 (965)   | 14 (356)  |               | 36.5 (927)    | 28.5 (724)    |
| 60                         | 153H,153B              | —                          | 16 (406)                  | 24 (610)   | 10 (254)  | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
|                            | 152H,153H,153B         | 6_ <sup>(1)</sup>          | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 152H,152B              | —                          | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 152H,152B,153H,153B    | NI, NB                     | 30 (762)                  | 38 (965)   | 14 (356)  |               | 36.5 (927)    | 28.5 (724)    |
| 85                         | 153H,153B              | —                          | 16 (406)                  | 24 (610)   | 10 (254)  | 0.75 (19)     | 22.5 (572)    | 14.5 (368)    |
|                            | 152H,152B              | —                          | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 152H,153H,153B         | 6_ <sup>(1)</sup>          | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            | 153H                   | BP                         | 24 (610)                  | 30 (762)   | 12 (305)  |               | 28.5 (724)    | 22.5 (572)    |
|                            |                        | BP,6_ <sup>(1)</sup>       | 30 (762)                  | 38 (965)   | 14 (356)  |               | 36.5 (927)    | 28.5 (724)    |
|                            | 152H,152B,153B         | BP,NB,NI                   | 30 (762)                  | 38 (965)   | 14 (356)  |               | 36.5 (927)    | 28.5 (724)    |

(1) Extra capacity transformer may require a larger enclosure; consult your local Rockwell Automation sales office or Allen-Bradley distributor.

(2) 1 kVA control transformers or larger extra capacity transformers may require a larger enclosure; consult your local Rockwell Automation sales office or Allen-Bradley distributor.

## Enclosed SMC-50 Controllers

### Catalog Number Explanation

Examples given in this section are not intended to be used for product selection. Use ProposalWorks to configure Smart Motor Controllers. ProposalWorks is available from <http://www.rockwellautomation.com/global/e-tools/overview.page>.

Controllers Rated 90...1250 A

**152F**    **–**    **D10**    **J**    **B**    **D**    **–**    **J20**    **–**    **3**

a                      b                      c                      d                      e                      f                      g

| a               |                                            |
|-----------------|--------------------------------------------|
| Bulletin Number |                                            |
| Code            | Description                                |
| 150S            | SMC-50 Non-combination                     |
| 152S            | SMC-50 Combination with Fusible Disconnect |
| 153S            | SMC-50 Combination with Circuit Breaker    |

| b                     |             |                 |             |
|-----------------------|-------------|-----------------|-------------|
| Controller Rating [A] |             |                 |             |
| Solid-state           |             | External Bypass |             |
| Code                  | Description | Code            | Description |
| C90                   | 90          | D10             | 108         |
| D11                   | 110         | D13             | 135         |
| D14                   | 140         | D20             | 201         |
| D18                   | 180         | D25             | 251         |
| D21                   | 210         | D31             | 317         |
| D26                   | 260         | D36             | 361         |
| D32                   | 320         | D48             | 480         |
| D36                   | 361         |                 |             |
| D42                   | 420         |                 |             |
| D52                   | 520         |                 |             |

| c              |              |
|----------------|--------------|
| Enclosure Type |              |
| Code           | Description  |
| J              | 1/12/3R (3R) |

| d                  |                                  |
|--------------------|----------------------------------|
| Input Line Voltage |                                  |
| Code               | Description                      |
| H                  | 200...208V AC, 3-Phase, 50/60 Hz |
| A                  | 230V AC, 3-Phase, 50/60 Hz       |
| B                  | 400...460V AC, 3-Phase, 50/60 Hz |
| C                  | 500...575V AC, 3-Phase, 50/60 Hz |

| e               |             |
|-----------------|-------------|
| Control Voltage |             |
| Code            | Description |
| D               | 120V AC     |
| J               | 24V AC      |
| A               | 240V AC     |
| EJ              | 24V DC      |

| f                                                           |                 |      |             |
|-------------------------------------------------------------|-----------------|------|-------------|
| Fuse Clip/Circuit Breaker (CB)—Combination Controllers Only |                 |      |             |
| Code                                                        | Description     | Code | Description |
| J20                                                         | 200 A, Class J  | D12  | 125 A, CB   |
| J40                                                         | 400 A, Class J  | D17  | 175 A, CB   |
| J60                                                         | 600 A, Class J  | D25  | 250 A, CB   |
| L80                                                         | 800 A, Class L  | D40  | 400 A, CB   |
| L12                                                         | 1200 A, Class L | D60  | 600 A, CB   |
| L16                                                         | 1600 A, Class L | D80  | 800 A, CB   |
| D16                                                         | 160 A, DIN      | E12  | 1200 A, CB  |
| D25                                                         | 250 A, DIN      |      |             |
| D40                                                         | 400 A, DIN      |      |             |
| D63                                                         | 630 A, DIN      |      |             |
| D80                                                         | 800 A, DIN      |      |             |
| N12                                                         | 1250 A, DIN     |      |             |

| g                     |                                                        |      |                                                                               |      |                                                                |
|-----------------------|--------------------------------------------------------|------|-------------------------------------------------------------------------------|------|----------------------------------------------------------------|
| Options               |                                                        |      |                                                                               |      |                                                                |
| Code                  | Description                                            | Code | Description                                                                   | Code | Description                                                    |
| 1                     | Start-Stop Push-Button                                 | 8L   | Line-Mounted Protective Module                                                | TB10 | 10 Spare Terminal Blocks                                       |
| 1E                    | On - Off Push-Button                                   | 8M   | Load-Mounted Protective Module                                                | TB20 | 20 Spare Terminal Blocks                                       |
| 3                     | Hand-Off-Auto Selector Switch                          | 8B   | Line- and Load-Mounted Protective Modules                                     | P10  | 100 mm Mounting foot, sheet metal                              |
| 3E                    | On - Off Selector Switch                               | BP   | Bypass Starter                                                                | P20  | 200 mm Mounting foot, sheet metal                              |
| 3H                    | Hand-Auto Selector Switch                              | NB   | NEMA Bypass Starter                                                           | F10  | 100 mm Mounting foot, high-strength plastic                    |
| 3B                    | SMC-Off-Bypass Selector Switch                         | IC   | Isolation Contactor                                                           | F20  | 200 mm Mounting foot, high-strength plastic                    |
| 13                    | Start-Stop Push-Button & Hand-Off-Auto Selector Switch | NI   | NEMA Isolation Contactor                                                      | 416  | Plug-in Control Relay 2-pole                                   |
| 4 ____ <sup>(1)</sup> | Pilot Lights                                           | 989  | 1 N.O 1 N.C Auxiliary Contact on Circuit Breaker or Fusible Disconnect Switch | 417  | Plug-in Control Relay On Delay                                 |
| 5 ____ <sup>(1)</sup> | Push to test Pilot Lights                              | HC6  | SMC-50 Human Interface Module-Door mounted type 4/12                          | 418  | Plug-in Control Relay Off Delay                                |
| 1XA                   | Soft Stop Push Button                                  | 20S  | Communication: RS-485                                                         | 425  | Hour Meter                                                     |
| 1XB                   | Pump Stop Push Button                                  | 20D  | Communication: DeviceNet                                                      | 428  | Ammeter                                                        |
| 1XC                   | Slow Speed Push Button                                 | 20E  | Communication: Ethernet/IP                                                    | 429  | Ground Fault Relay                                             |
| 1XD                   | Brake Push Button                                      | 20C  | Communication: Control Net                                                    | 430  | Under Voltage Relay                                            |
| 6P                    | Control Circuit Transformer                            | 20P  | Communication: ProfiBUS                                                       | 22   | Control Circuit Fusing                                         |
| 6XP                   | 1 Factor Additional VA                                 | PC   | Pump Control                                                                  | OPS  | Bul. 509 NEMA Size 1 starter and Bul. 592 solid-state overload |
| 6YP                   | 2 Factor Additional VA                                 | BC   | Braking Control                                                               |      |                                                                |

(1) Pilot Lights require configuration. See [Table 14](#)

**Table 14 - Pilot Light Configuration**

| <b>4</b> | <b>R</b> | <b>G</b> | <b>X</b> | <b>W</b> |
|----------|----------|----------|----------|----------|
| a        | b        | c        | d        | e        |

| <b>a</b>      |                           | <b>b</b>             |                    | <b>c</b>              |                    | <b>d</b>                |                    | <b>e</b>                   |                    |
|---------------|---------------------------|----------------------|--------------------|-----------------------|--------------------|-------------------------|--------------------|----------------------------|--------------------|
| <b>Option</b> |                           | <b>ON Indication</b> |                    | <b>OFF Indication</b> |                    | <b>Fault Indication</b> |                    | <b>Power ON Indication</b> |                    |
| <b>Code</b>   | <b>Description</b>        | <b>Code</b>          | <b>Description</b> | <b>Code</b>           | <b>Description</b> | <b>Code</b>             | <b>Description</b> | <b>Code</b>                | <b>Description</b> |
| 4             | Pilot Light               | R                    | 108                | R                     | 108                | A                       | Amber              | W                          | White              |
| 5             | Push to test Pilot Lights | G                    | 135                | G                     | 135                | X                       | none               |                            |                    |
|               |                           | X                    | none               | X                     | none               |                         |                    |                            |                    |

Note: The final character in the configuration string cannot be "X".

## Product Selection

- NOTE: Refer to and use Selection Wizards to ensure the SMC controller selection meets the application requirements. For additional assistance, please visit [www.ab.com](http://www.ab.com) or contact Industrial Controls Technical Support by email at [raictechsupport@ra.rockwell.com](mailto:raictechsupport@ra.rockwell.com) or by phone at 440-646-5800.

Enclosed soft starters can be user configured by selecting a power center, snap-together kits, transformers, and/or any applicable controller accessories.

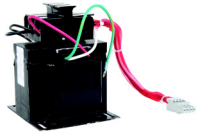
### Power Centers for SMC-50 Controllers with External Bypass

| Motor Current [A] | Rated Hp [Hp] |      |            |            | Non-combination Starters Cat. No. | Combination Starters Cat. No. |                       |
|-------------------|---------------|------|------------|------------|-----------------------------------|-------------------------------|-----------------------|
|                   | 200...208V    | 230V | 400...460V | 500...575V |                                   | with Fusible Disconnect       | with Circuit Breaker  |
| 90                | 25            | 30   | 60         | 75         | 150S-C90JCD-3B-BP                 | 152S-C90JCD-J20-3B-BP         | 153S-C90JCD-D12-3B-BP |
| 110               | 30            | 40   | 75         | 100        | 150S-D11JCD-3B-BP                 | 152S-D11JCD-J20-3B-BP         | 153S-D11JCD-D17-3B-BP |
| 140               | 40            | 50   | 100        | 125        | 150S-D14JCD-3B-BP                 | 152S-D14JCD-J20-3B-BP         | 153S-D14JCD-D25-3B-BP |
| 180               | 60            | 60   | 150        | 150        | 150S-D18JCD-3B-BP                 | 152S-D18JCD-J40-3B-BP         | 153S-D18JCD-D25-3B-BP |
| 210               | 60            | 75   | 150        | 150        | 150S-D21JCD-3B-BP                 | 152S-D21JCD-J40-3B-BP         | 153S-D21JCD-D25-3B-BP |
| 260               | 75            | 100  | 200        | 250        | 150S-D26JCD-3B-BP                 | 152S-D26JCD-J40-3B-BP         | 153S-D26JCD-D40-3B-BP |
| 320               | 100           | 125  | 250        | 300        | 150S-D32JCD-3B-BP                 | 152S-D32JCD-J60-3B-BP         | 153S-D32JCD-D40-3B-BP |
| 361               | 125           | 150  | 300        | 350        | 150S-D36JCD-3B-BP                 | 152S-D36JCD-J60-3B-BP         | 153S-D36JCD-D80-3B-BP |
| 420               | 150           | 150  | 350        | 400        | 150S-D42JCD-3B-BP                 | 152S-D42JCD-J60-3B-BP         | 153S-D42JCD-D80-3B-BP |
| 520               | 150           | 200  | 450        | 500        | 150S-D52JCD-3B-BP                 | 152S-D52JCD-L80-3B-BP         | 153S-D52JCD-D80-3B-BP |

### Power Centers for SMC-50 Controllers with Internal Bypass

| Motor Current [A] | Rated Hp [Hp] |      |            |            | Non-combination Starters Cat. No. | Combination Starters Cat. No. |                      |
|-------------------|---------------|------|------------|------------|-----------------------------------|-------------------------------|----------------------|
|                   | 200...208V    | 230V | 400...460V | 500...575V |                                   | with Fusible Disconnect       | with Circuit Breaker |
| 108               | 30            | 40   | 75         | 100        | 150S-D10JCD                       | 152S-D10JCD-J20               | 153S-D10JCD-D17      |
| 135               | 40            | 50   | 100        | 125        | 150S-D13JCD                       | 152S-D13JCD-J20               | 153S-D13JCD-D25      |
| 201               | 60            | 75   | 150        | 150        | 150S-D20JCD                       | 152S-D20JCD-J40               | 153S-D20JCD-D25      |
| 251               | 75            | 100  | 200        | 200        | 150S-D25JCD                       | 152S-D25JCD-J40               | 153S-D25JCD-D40      |
| 317               | 100           | 125  | 250        | 300        | 150S-D31JCD                       | 152S-D31JCD-J60               | 153S-D31JCD-D40      |
| 361               | 125           | 150  | 300        | 350        | 150S-D36JCD                       | 152S-D36JCD-J60               | 153S-D36JCD-D80      |
| 480               | 150           | 200  | 400        | 500        | 150S-D48JCD                       | 152S-D48JCD-L80               | 153S-D48JCD-D80      |

Transformers

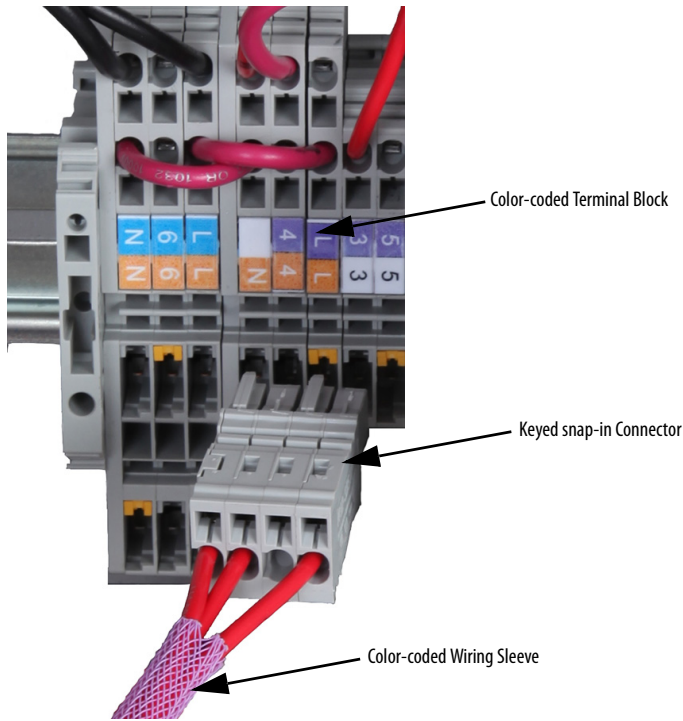
|                                                                                   | Controller Current [A]           | Capacity       | VA  | 208V x 120V Cat. No. | 240V x 120VCat. No. | 460V x 120VCat. No. | 575V x 120VCat. No. |
|-----------------------------------------------------------------------------------|----------------------------------|----------------|-----|----------------------|---------------------|---------------------|---------------------|
|  | 90, 110, 140, 180, 210, 260, 320 | Standard       | 350 | 1497-HD350           | 1497-AD350          | 1497-BD350          | 1497-CD350          |
|                                                                                   |                                  | Extra Capacity | 500 | 1497-HD500           | 1497-AD500          | 1497-BD500          | 1497-CD500          |
|                                                                                   | 361, 420, 520                    | Standard       | 500 | 1497-HD500           | 1497-AD500          | 1497-BD500          | 1497-CD500          |

Snap-together Wiring

- Note: This option applies only to controllers with current ratings greater than 90 A.

Component wiring is color coded by function. The wiring sleeve color corresponds to a colored label on the terminal block. Keyed connectors snap these components into the terminal block. This greatly reduced assembly time is ideal for the quick installation of pilot devices and control circuit transformers, and significantly reduces wiring errors. [Figure 31](#) shows an example of this feature.

Figure 31 - Snap-together Wiring Example



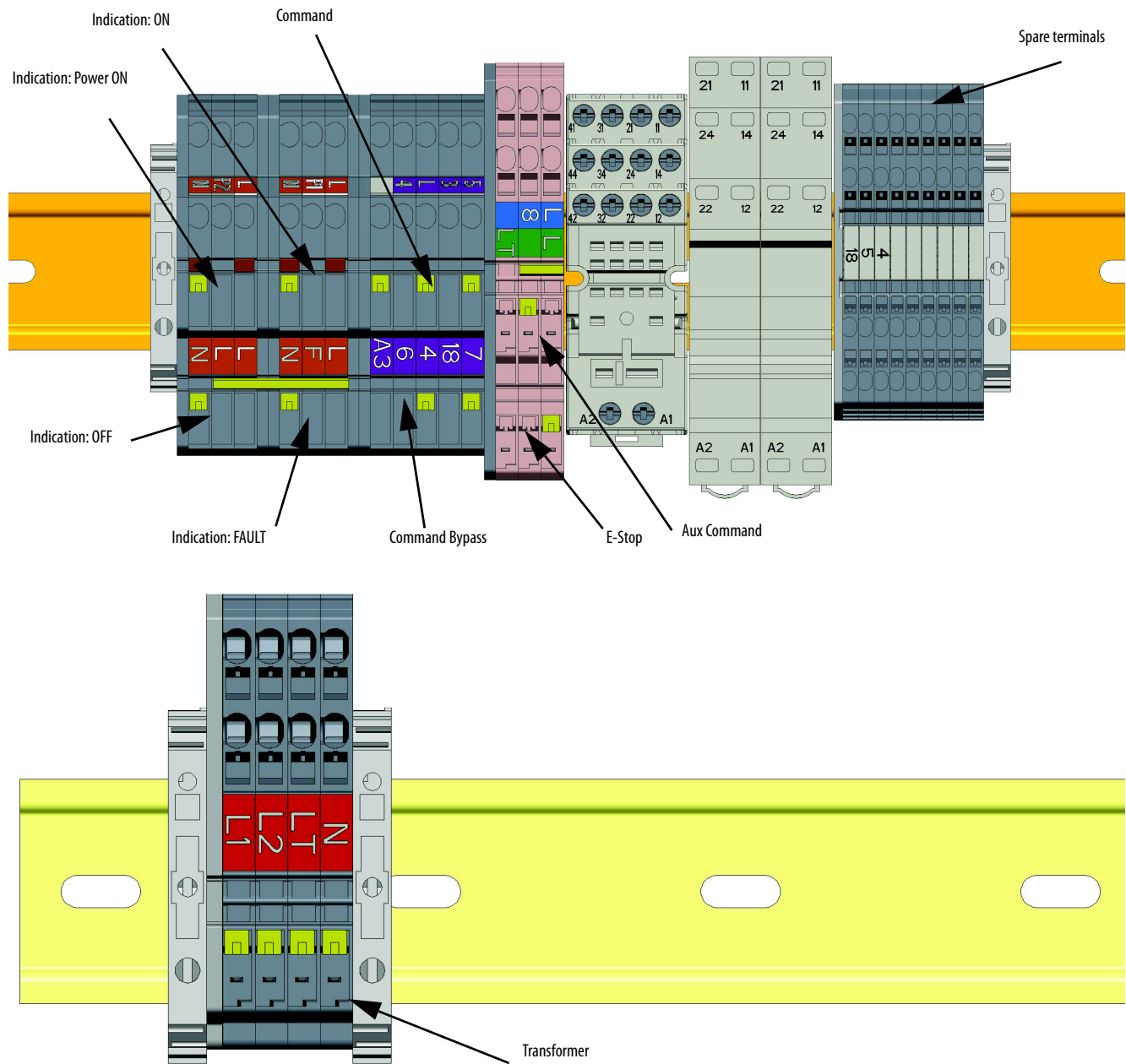
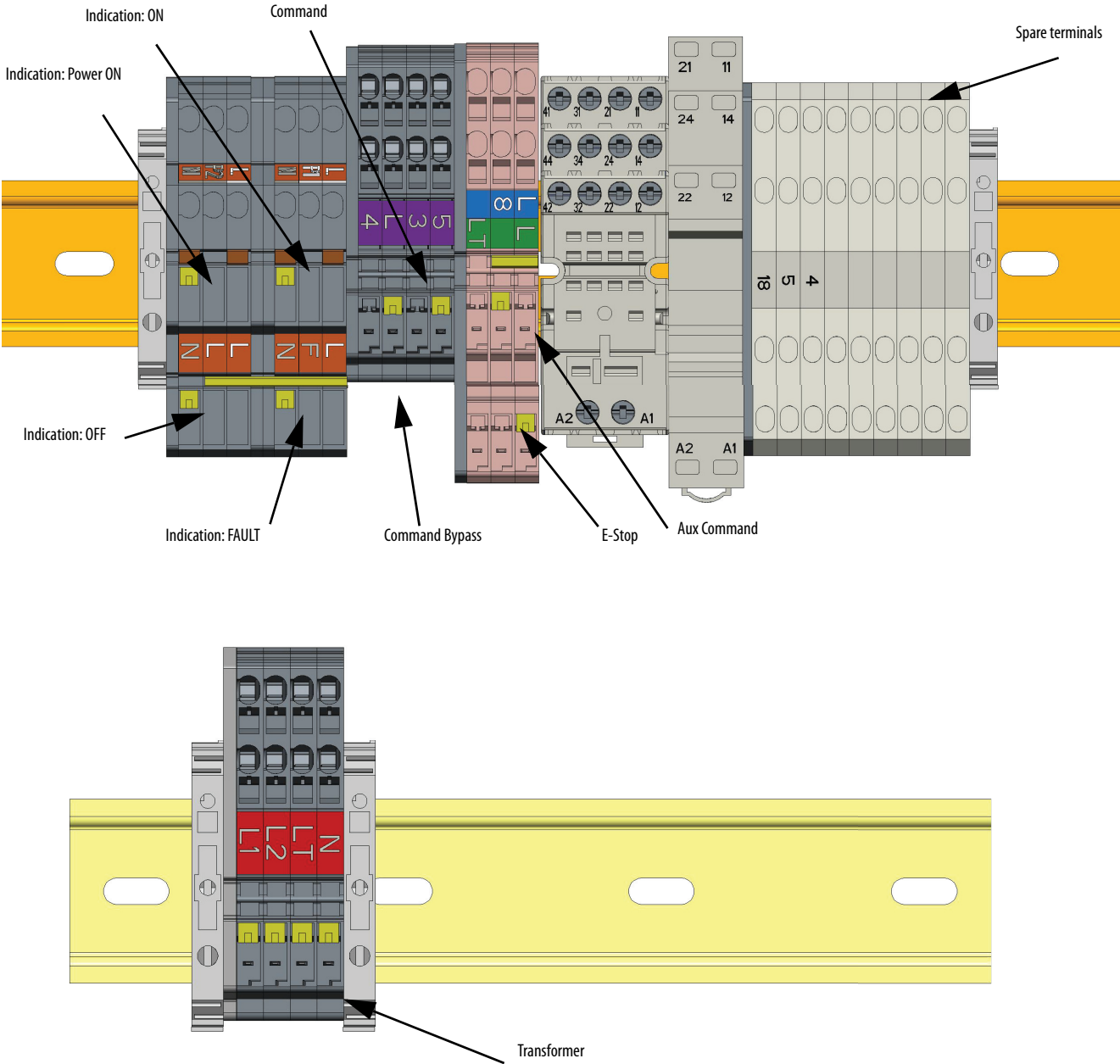
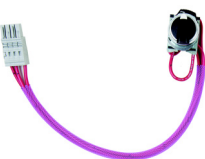
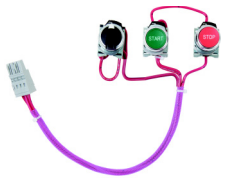
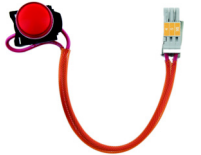
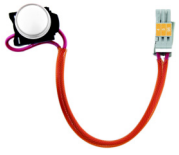
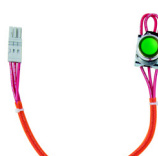
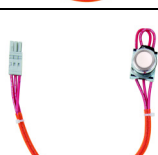
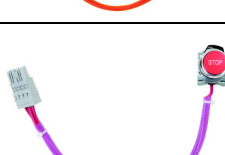
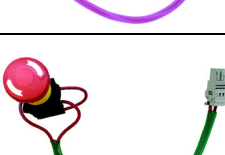
**Figure 32 - SMC-50 Controller with External Bypass Snap-together Wiring**

Figure 33 - SMC-50 Controller with Internal Bypass Snap-together Wiring



|                                                                                     | Description                                                                                                       | Cat. No.  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------|
|  | Start-Stop Snap-together Push Button Kit, Metal Bezel 22.5 mm (internal bypass units only)                        | 198-SSPBM |
|  | 3-Position Hand-Off-Auto Snap-together Selector Switch Kit Metal Bezel 22.5 mm (internal bypass units only)       | 198-3SSM  |
|                                                                                     | 2-Position On-Off or Hand-Auto Snap-together Selector Switch Kit Metal Bezel 22.5 mm (internal bypass units only) | 198-2SSM  |

|                                                                                     | Description                                                                                                                 | Cat. No.   |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------|
|    | 3-Position Hand-Off-Auto Selector Switch & Start-Stop Pushbutton Kit Metal Bezel 22.5 mm (external bypass units only)       | 198-3SSPBM |
|                                                                                     | 2-Position Hand-Auto or On-Off Selector Switch & Start-Stop Pushbutton Kit Metal Bezel 22.5 mm (external bypass units only) | 198-2SSPBM |
|    | Red Universal LED Pilot Light Snap-together Kit 22.5 mm                                                                     | 198-RUPL   |
|    | Green Universal LED Pilot Light Snap-together Kit 22.5 mm                                                                   | 198-GUPL   |
|    | White or Amber Universal LED Pilot Light Snap-together Kit 22.5 mm                                                          | 198-WUPL   |
|   | Red Universal LED Push to Test Pilot Light Snap-together Kit 22.5 mm                                                        | 198-RUPPLM |
|  | Green Universal LED Push to Test Pilot Light Snap-together Kit 22.5 mm                                                      | 198-GUPPLM |
|  | White or Amber Universal LED Push to Test Pilot Light Kit Snap-together 22.5 mm                                             | 198-WUPPLM |
|  | Stop Push Button Snap-together Kit N.C. 22.5 mm, Momentary                                                                  | 198-PBM    |
|  | Emergency Stop Snap-together Kit                                                                                            | 198-ESP    |

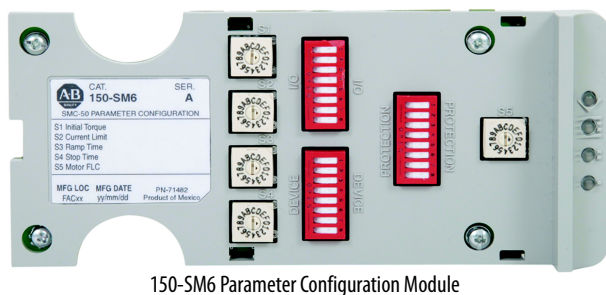
## Accessories

### Option Modules

Option modules can be used to add or expand the functionality of the SMC-50 Control Module. Option modules are installed into the control module's three expansion ports, 7 through 9.

- NOTE: If network communication is required, a Cat. No. 20-COMM-X communication adapter must be inserted in expansion port 9.

#### Parameter Configuration Option Module (Cat. No.150-SM6)



The Parameter Configuration Option Module inserts into any one of the SMC-50 controller's three option ports (Port 7, 8 or 9). The 150-SM6 features three sets of 8-position ON/OFF DIP switches and five sets of 16-position rotary switches. These switches allow for configuration of several key motor parameters (e.g., start and stop modes, ramp time, motor FLA, etc.) for limited setup of simple applications. In addition, the 150-SM6 features three diagnostic LED status indicators to display key alarms and faults. Only one 150-SM6 is allowed per SMC-50 controller.

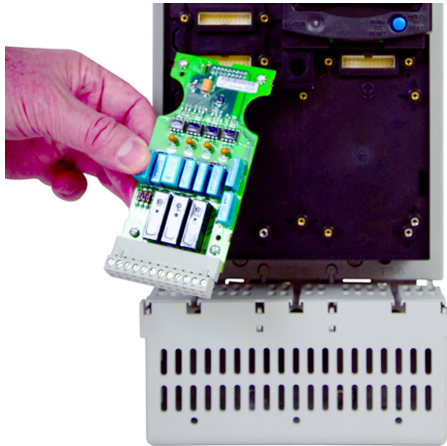
- NOTE: After parameter configuration is complete, you can remove the 150-SM6 from the SMC-50 controller. This allows one module to configure multiple SMC-50s.

When using a Cat. No. 150-SM6 PCM to configure the SMC-50 controller, it should be noted that the following features, functions, and modes are not configurable:

- Full voltage start
- Torque ramp start
- External brake stop
- Option card I/O configuration (Cat. No. 150-SM... option modules)
- External bypass
- Specialized output relay configuration (e.g., network control, DeviceLogix, auxiliary control)
- Specialized operation modes/features
  - Dual ramp, motor winding heater, emergency run
  - Overload select (Class)
  - Adjustment of slow speed set point

Parameters that are not defined and therefore are not configurable by the Cat. No. 150-SM6 PCM can be configured through other means (Human Interface Module (HIM), Connected Components Workbench Software, DriveExplorer or DriveExecutive software), if necessary.

### Standard Input Modules<sup>(1)</sup>



SMC-50 Smart Motor Controller with 150-SM4

The SMC-50 controller comes standard with two 24V DC inputs. The control functionality of each input is user-configurable as follows: Start, Coast, Stop Option (e.g., Soft Stop, Pump Stop), Start/Coast, Start/Stop, Slow Speed, Overload Select, Fault Input (N.O.), Fault Input (N.C.), Clear Fault, Emergency Run, Dual Ramp Profile Select, and Start Motor Heater function. The status of any input is readable via communications.

### Optional Input Modules<sup>(1)</sup>

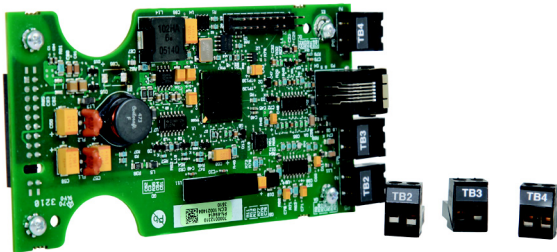
A Cat. No. 150-SM4 Digital I/O option module contains four 120/240V AC inputs and can be inserted into any of the three control module option ports (three modules maximum per control module). The control functionality of each input is user configurable and identical to the standard inputs. The status of any input is readable via communications.

A Cat. No. 150-SM3 Analog I/O option module provides two analog inputs (voltage or current) and can be inserted into any of the three control module option ports (three modules maximum per control module). The control functionality of each input is user configurable. The status of any input is readable via communications.

### Standard and Optional Output Modules<sup>(1)</sup>

The SMC-50 controller comes standard with two relay outputs. By adding a Cat. No. 150-SM4 Digital I/O Option Module, three additional relay outputs are provided (three option modules maximum per control module). The control functionality of each relay output is user-configurable as follows: Normal (Start Enabled), Up-To-Speed, Fault, Alarm, External Bypass, External brake, Auxiliary Control, and Network 1-4. Each output also includes a user-configurable on and off delay timer (10.0 seconds maximum) and the ability to invert the state of the contact. Network control of each output is also provided. By adding a Cat. No. 150-SM3 Analog I/O module, two analog outputs (voltage or current) are provided.

### Optional PTC, Ground Fault<sup>(2)</sup>, & Current Transformer Interface Capability Modules<sup>(3)</sup>



150-SM2 Option Module

The Cat. No. 150-SM2 Option Module features PTC, ground fault, and external current transformer interface capability. The PTC feature enables connection to external PTC temperature sensors to monitor motor winding temperature and feedback data to the SMC-50. A SMC-50 controller Alarm and/or Fault can be configured to trip if the PTC setpoint is exceeded. The ground fault feature enables controller detection and enunciation of a possible system ground fault which could indicate a pending motor winding failure (for example, insulation breakdown). A Bulletin 825-CBCT External Ground Fault (Core Balance) Sensor is also required to interface with the 150-SM2 to fully enable this feature.

When the SMC-50 controller is used in the external bypass mode with the contacts of the external bypass contactor closed, the user has the option of using the SMC-50 controller's internal or external current sensing capabilities. If using external current sensing so that metering, alarm/fault, etc. conditions are reported to the controller during run operation, an external Bulletin 825-MCM Converter Module is required to interface with the 150-SM2 Option Module.

(1) All standard and optional I/O Terminal Blocks are removable

(2) The ground fault sensing feature of the SMC-50 controller is intended for monitoring purposes only. It is not to be used as a ground fault circuit interrupter for personnel protection as defined by Article 100 of the NEC. The sensing feature has not been evaluated to UL 1053.

(3) All standard and optional I/O Terminal Blocks are removable

## Option Modules

|                                                                                   | Description                                                                                                                                                  | Compatible Control Module Ports | Maximum No. of Option Modules of this Type Per Controller | Cat. No. |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------|----------|
|  | PTC, Ground Fault, & Current Feedback Option Module<br>See <a href="#">page 51</a> for more information                                                      | 7 & 8                           | 1                                                         | 150-SM2  |
|  | Analog I/O Option Module: 2 analog inputs (voltage or current) and 2 analog outputs (voltage or current)<br>See <a href="#">page 51</a> for more information | 7, 8, 9                         | 3                                                         | 150-SM3  |
|  | Digital I/O Option Module: 4 100...240V AC inputs and 3 relay outputs<br>See <a href="#">page 51</a> for more information                                    | 7, 8, 9                         | 3                                                         | 150-SM4  |
|  | Parameter Configuration Module — DIP and rotary dial<br>See <a href="#">page 50</a> for more information                                                     | 7, 8, 9                         | 1                                                         | 150-SM6  |

## Converter Modules

| Description                                                                         |                                                 | For Use With                                                                                                             | Rated Current [A]     | Cat. No.                 |
|-------------------------------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------|
|  | Three-Phase Current Monitoring Module           | Used with a Cat. No. 150-SM2 to provide current feedback to the SMC-50 controller when in external bypass configuration. | 30...180              | 825-MCM180               |
|                                                                                     |                                                 |                                                                                                                          | 181...520             | 825-MCM20 <sup>(2)</sup> |
| Connection Cable (Replacement) Cat. No. 150-SM2 to Bul. 825-MCM Connection          |                                                 |                                                                                                                          |                       | 825-MCA                  |
|  | Core Balance Ground Fault Sensor <sup>(1)</sup> | Used with a Cat. No. 150-SM2 to provide ground current feedback.                                                         | Turns Ratio:<br>100:1 | 825-CBCT                 |

(1) The ground fault sensing feature of the SMC-50 controller is intended for monitoring purposes only. It is not to be used as a ground fault circuit interrupter for personnel protection as defined by Article 100 of the NEC. The sensing feature has not been evaluated to UL 1053.

(2) Requires user-supplied current transformers with 5 A secondary.

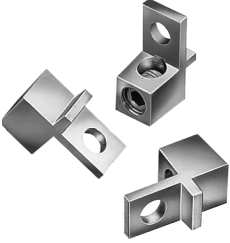
## Protective Modules

The same protective module mounts on the line or load side of the SMC-50 controller. Use of protective modules is highly recommended. For applications requiring both line and load side protection, you must order two protective modules.

- Note: You must not place protective modules on the load (motor) side of an SMC-50 controller when using an inside-the-delta connection or with pump, braking, or linear speed acceleration/deceleration control.

|  | Current Rating        | Description            | Cat. No. |
|-------------------------------------------------------------------------------------|-----------------------|------------------------|----------|
|                                                                                     | 90...520<br>108...480 | 480V Protective Module | 150-F84L |
|                                                                                     |                       | 600V Protective Module | 150-F86L |

## Terminal Lug Kits

|                                                                                   | For Use With Controller Type                            |                                           | Current Range [A] | Wire Size Range                                                    | Total No. of Terminal Lugs Possible Each Side |           | Pkg. Qty. | Cat. No.  |
|-----------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------|-------------------|--------------------------------------------------------------------|-----------------------------------------------|-----------|-----------|-----------|
|                                                                                   |                                                         |                                           |                   |                                                                    | Line Side                                     | Load Side |           |           |
|  | Integrated Bypass                                       | 150-S108...<br>150-S135...                | 108...135         | #6...250 MCM AWG<br>16 mm <sup>2</sup> ...120 mm <sup>2</sup>      | 3                                             | 3         | 3         | 199-LF1   |
|                                                                                   |                                                         | 150-S201...<br>150-S251...                | 201...251         | #6...250 MCM AWG<br>16 mm <sup>2</sup> ...120 mm <sup>2</sup>      | 6                                             | 6         | 3         | 199-LF1   |
|                                                                                   |                                                         | 150-S317...<br>150-S361...<br>150-S480... | 317...480         | #4...500 MCM AWG<br>25 mm <sup>2</sup> ...240 mm <sup>2</sup>      | 6                                             | 6         | 3         | 199-LG1   |
|                                                                                   | Solid-State<br>(No External Bypass)                     | 150-SB...                                 | 90...180          | #6...250 MCM AWG<br>16 mm <sup>2</sup> ...120 mm <sup>2</sup>      | 3                                             | 3         | 3         | 199-LF1   |
|                                                                                   |                                                         | 150-SC...                                 | 210...320         | #6...250 MCM AWG<br>16 mm <sup>2</sup> ...120 mm <sup>2</sup>      | 6                                             | 6         | 3         | 199-LF1   |
|                                                                                   |                                                         | 150-SD...                                 | 361...520         | #4...500 MCM AWG<br>25 mm <sup>2</sup> ...240 mm <sup>2</sup>      | 6                                             | 6         | 3         | 199-LG1   |
|                                                                                   | Solid-State<br>(With External Bypass)                   | 150-SB...                                 | 90...180          | (2) 1/0...250 MCM AWG<br>50 mm <sup>2</sup> ...120 mm <sup>2</sup> | 3                                             | 3         | 3         | 1494R-N14 |
|                                                                                   |                                                         | 150-SC...                                 | 210...320         | #6...250 MCM AWG<br>16 mm <sup>2</sup> ...120 mm <sup>2</sup>      | 6 (6 additional needed for bypass kit)        | 6         | 3         | 199-LF1   |
|                                                                                   |                                                         | 150-SD...                                 | 361...520         | #4...500 MCM AWG<br>25 mm <sup>2</sup> ...240 mm <sup>2</sup>      | 6 (6 additional needed for bypass kit)        | 6         | 3         | 199-LG1   |
|                                                                                   | Integrated Bypass —<br>(Inside-the-Delta Terminal Lugs) | 150-S108...<br>150-S135...                | 187...234         | #4...500 MCM AWG<br>25 mm <sup>2</sup> ...240 mm <sup>2</sup>      | 3                                             | —         | 3         | 1494R-N15 |
|                                                                                   |                                                         | 150-S201...<br>150-S251...                | 348...435         | (2) 1/0...250 MCM AWG<br>50 mm <sup>2</sup> ...120 mm <sup>2</sup> | 6                                             | —         | 3         | 1494R-N14 |
|                                                                                   |                                                         | 150-S317...<br>150-S361...<br>150-S480... | 549...831         | (3) 3/0...500 MCM AWG<br>95 mm <sup>2</sup> ...240 mm <sup>2</sup> | 3                                             | —         | 3         | 150-LG5MC |

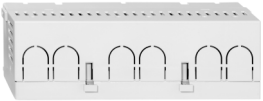
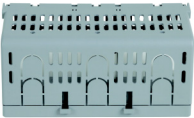
## Distribution Blocks

|                                                                                     | For Use With Controller Type |           | Current Range [A] | Wire Size Range                                   |                                                   | Total No. Distribution Blocks Needed |           | Pkg. Qty. | Cat. No.                                      |
|-------------------------------------------------------------------------------------|------------------------------|-----------|-------------------|---------------------------------------------------|---------------------------------------------------|--------------------------------------|-----------|-----------|-----------------------------------------------|
|                                                                                     |                              |           |                   | Line Side                                         | Load Side                                         | Line Side                            | Load Side |           |                                               |
|  | Solid-state                  | 150-SB... | 155...311         | (2) #4 AWG...500 MCM<br>25...240 mm <sup>2</sup>  | (2) #4 AWG...500 MCM<br>25...240 mm <sup>2</sup>  | 3                                    | —         | 1         | 1492-BG                                       |
|                                                                                     |                              | 150-SC... | 363...554         | (2) 1/0 AWG...750 MCM<br>54...400 mm <sup>2</sup> | (6) 6 AWG...250 MCM<br>16...120 mm <sup>2</sup>   | 1                                    | 6         | 1         | Marathon Special Products<br>Cat. No. 1353703 |
|                                                                                     |                              | 150-SD... | 625...900         | (4) 1/0 AWG...750 MCM<br>54...400 mm <sup>2</sup> | (4) 1/0 AWG...750 MCM<br>54...400 mm <sup>2</sup> | 3                                    | 6         | 1         | Marathon Special Products<br>Cat. No. 1352702 |

## External Bypass Kits

| For Use With Controller Type       |           | Current Range [A] | Cat. No. |
|------------------------------------|-----------|-------------------|----------|
| Solid-state (with external bypass) | 150-SC... | 210...320         | 150-SCBK |
|                                    | 150-SD... | 361...520         | 150-SDBK |

## IEC Line or Load Terminal Covers

|                                                                                     | Description                                                                                                                    | For Use With                          | Pkg. Quantity | Cat. No. |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------|----------|
|  | <ul style="list-style-type: none"> <li>Dead front protection</li> <li>IP2X finger safe when used with 250 MCM cable</li> </ul> | 150-S108..., 150-S135...              | 1             | 150-TC1  |
|                                                                                     |                                                                                                                                | 150-S201..., 150-S251...              | 1             | 150-TC2  |
|                                                                                     | <ul style="list-style-type: none"> <li>Dead front protection</li> <li>IP2X finger safe when used with 500 MCM cable</li> </ul> | 150-S317..., 150-S361..., 150-S480... | 1             | 150-TC3  |
|  | <ul style="list-style-type: none"> <li>Dead front protection</li> <li>IP2X finger safe when used with 250 MCM cable</li> </ul> | 150-SB... (90...180 A units only)     | 1             | 150-STCB |

**Capacitor Module**

|                                                                                   | Description                                         | For Use With                      | Cat. No.  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------|-----------|
|  | Required for EMC directive compliance (EN60947-4-2) | 150-SB... (90...180 A units only) | 150-SMCAP |

**Human Interface Modules (HIMs) and Communication Modules**

|                                                                                    |                                                                                                                                          | Description                                                                           | Cat. No.                                                                                             |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
|   | SMC-50 Controller — Bezel-mounted                                                                                                        | Enhanced, LCD, Full Numeric Keypad                                                    | 20-HIM-A6                                                                                            |
|                                                                                    | Door-mounted HIM                                                                                                                         | Remote (panel mount) LCD Display, Full Numeric Keypad (version of Cat. No. 20-HIM-A6) | 20-HIM-C6S <sup>(2)</sup>                                                                            |
|                                                                                    | HIM Interface Cables                                                                                                                     | HIM Interface Cable, 1 m (39 in)                                                      | 20-HIM-H10 <sup>(3)</sup>                                                                            |
|                                                                                    |                                                                                                                                          | Cable Kit (Male-Female) 0.33 m (1.1 ft)                                               | 1202-H03                                                                                             |
|                                                                                    |                                                                                                                                          | Cable Kit (Male-Female) 1 m (3.3 ft)                                                  | 1202-H10                                                                                             |
|                                                                                    |                                                                                                                                          | Cable Kit (Male-Female) 3 m (9.8 ft)                                                  | 1202-H30                                                                                             |
|                                                                                    |                                                                                                                                          | Cable Kit (Male-Female) 9 m (29.5 ft)                                                 | 1202-H90                                                                                             |
|                                                                                    |                                                                                                                                          | DPI/SCANport™ One to Two Port Splitter Cable                                          | 1203-S03                                                                                             |
| Description (IP30/Type 1)                                                          |                                                                                                                                          | For Use With                                                                          |                                                                                                      |
|  | Communication Modules (installed into the physical space assigned to control module expansion port 9; connected to DPI port 4 via cable) | RS485 DF1 Communication Adapter                                                       | 20-COMM-S                                                                                            |
|                                                                                    |                                                                                                                                          | PROFIBUS™ DP Communication Adapter                                                    | 20-COMM-P                                                                                            |
|                                                                                    |                                                                                                                                          | ControlNet™ Communication Adapter (Coax)                                              | 20-COMM-C                                                                                            |
|                                                                                    |                                                                                                                                          | Interbus™ Communication Adapter                                                       | 20-COMM-I                                                                                            |
|                                                                                    |                                                                                                                                          | Modbus/TCP Communication Adapter                                                      | 20-COMM-M                                                                                            |
|                                                                                    |                                                                                                                                          | DeviceNet™ Communication Adapter                                                      | 20-COMM-D                                                                                            |
|                                                                                    |                                                                                                                                          | EtherNet/IP™ Communication Adapter                                                    | 20-COMM-E                                                                                            |
|                                                                                    |                                                                                                                                          | Dual-port EtherNet/IP™ Communication Adapter                                          | 20-COMM-ER                                                                                           |
|                                                                                    |                                                                                                                                          | HVAC Communication Adapter                                                            | 20-COMM-H                                                                                            |
|                                                                                    |                                                                                                                                          | ControlNet™ Communication Adapter (Fiber)                                             | 20-COMM-Q                                                                                            |
| Connected Components Workbench™ Software                                           |                                                                                                                                          | Programming Software                                                                  | Available for download at <a href="http://www.rockwellautomation.com">www.rockwellautomation.com</a> |
| DriveExecutive™                                                                    |                                                                                                                                          |                                                                                       | 9303-4DTE01ENE                                                                                       |
| DriveTools™ SP <sup>(1)</sup>                                                      |                                                                                                                                          |                                                                                       | 9303-4DTS01ENE                                                                                       |
| AnaCANda™ RS-232 to DPI                                                            |                                                                                                                                          | Serial                                                                                | 1203-SSS <sup>(4)</sup>                                                                              |
| DPI to USB                                                                         |                                                                                                                                          | USB                                                                                   | 1203-USB <sup>(5)</sup>                                                                              |

(1) Includes DriveExecutive™ and DriveObserver™

(2) A 3 m (9.8 ft.) Cat. No. 1202-C30 cable is provided.

(3) A cable is required if 20-HIM-A6 is connected to the SMC-50 DPI Port #2 and used as a handheld device.

(4) Includes Cat. No. 1203-SFC and 1202-C10 cables.

(5) Includes Cat. No. 20-HIM-H10 and 22-HIM-H10 cables.

## Enclosure Accessories

|                                                                                   | Description                                                                                                                  | Construction Material | For Use With Enclosure Width | Cat. No.    |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------|-------------|
|  | <b>Perforated frame strip</b> <ul style="list-style-type: none"> <li>Mounting rail for door or panel installation</li> </ul> | Sheet steel           | 400 mm                       | 198-DS400   |
|                                                                                   |                                                                                                                              |                       | 600 mm                       | 198-DS600   |
|                                                                                   |                                                                                                                              |                       | 1000 mm                      | 198-DS1000  |
|  | <b>Enclosure mounting foot</b> <ul style="list-style-type: none"> <li>100 mm height</li> </ul>                               | High-strength plastic | 400 mm                       | 198-FB100 A |
|                                                                                   |                                                                                                                              |                       | 600 mm                       | 198-FB100B  |
|                                                                                   |                                                                                                                              |                       | 1000 mm                      | 198-FB100C  |
|                                                                                   |                                                                                                                              | Sheet steel           | 400 mm                       | 198-PL100 A |
|                                                                                   |                                                                                                                              |                       | 600 mm                       | 198-PL100B  |
|                                                                                   |                                                                                                                              |                       | 1000 mm                      | 198-PL100C  |
|                                                                                   | <b>Enclosure mounting foot</b> <ul style="list-style-type: none"> <li>200 mm height</li> </ul>                               | Sheet steel           | 400 mm                       | 198-PL200 A |
|                                                                                   |                                                                                                                              |                       | 600 mm                       | 198-PL200B  |
|                                                                                   |                                                                                                                              |                       | 1000 mm                      | 198-PL200C  |

## Standards Compliance and Certifications

| Standards Compliance—<br>Open Controllers | Certifications—Open Controllers                       | Standards Compliance—<br>Enclosed Controllers | Certifications—Enclosed Controllers |
|-------------------------------------------|-------------------------------------------------------|-----------------------------------------------|-------------------------------------|
| UL 508                                    | cULus Listed (Open Type) (File No. E96956)            | UL 508A                                       | cULus Listed                        |
| EN 60947-4-2                              | CE Marked per EMC Directive and Low Voltage Directive |                                               |                                     |
|                                           | CCC <sup>(1)</sup>                                    |                                               |                                     |
|                                           | C-Tick <sup>(1)</sup>                                 |                                               |                                     |
|                                           | EAC <sup>(1)</sup>                                    |                                               |                                     |
|                                           | KCC <sup>(1)</sup>                                    |                                               |                                     |
|                                           | ABS <sup>(1)</sup>                                    |                                               |                                     |

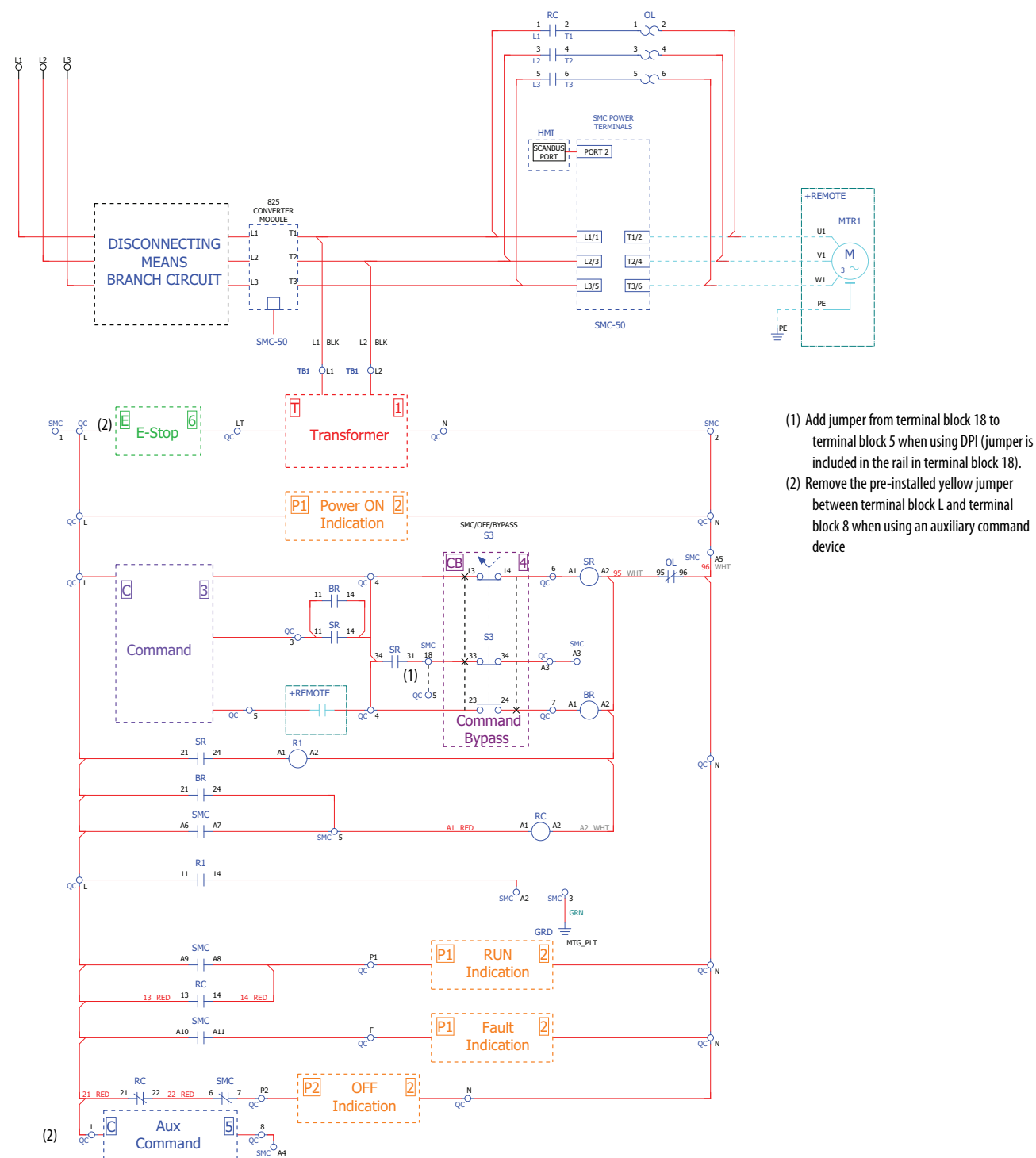
(1) For updated certification status of controllers with 24V DC control power, consult your local Rockwell Automation sales office or Allen-Bradley distributor.

## Wiring Diagrams

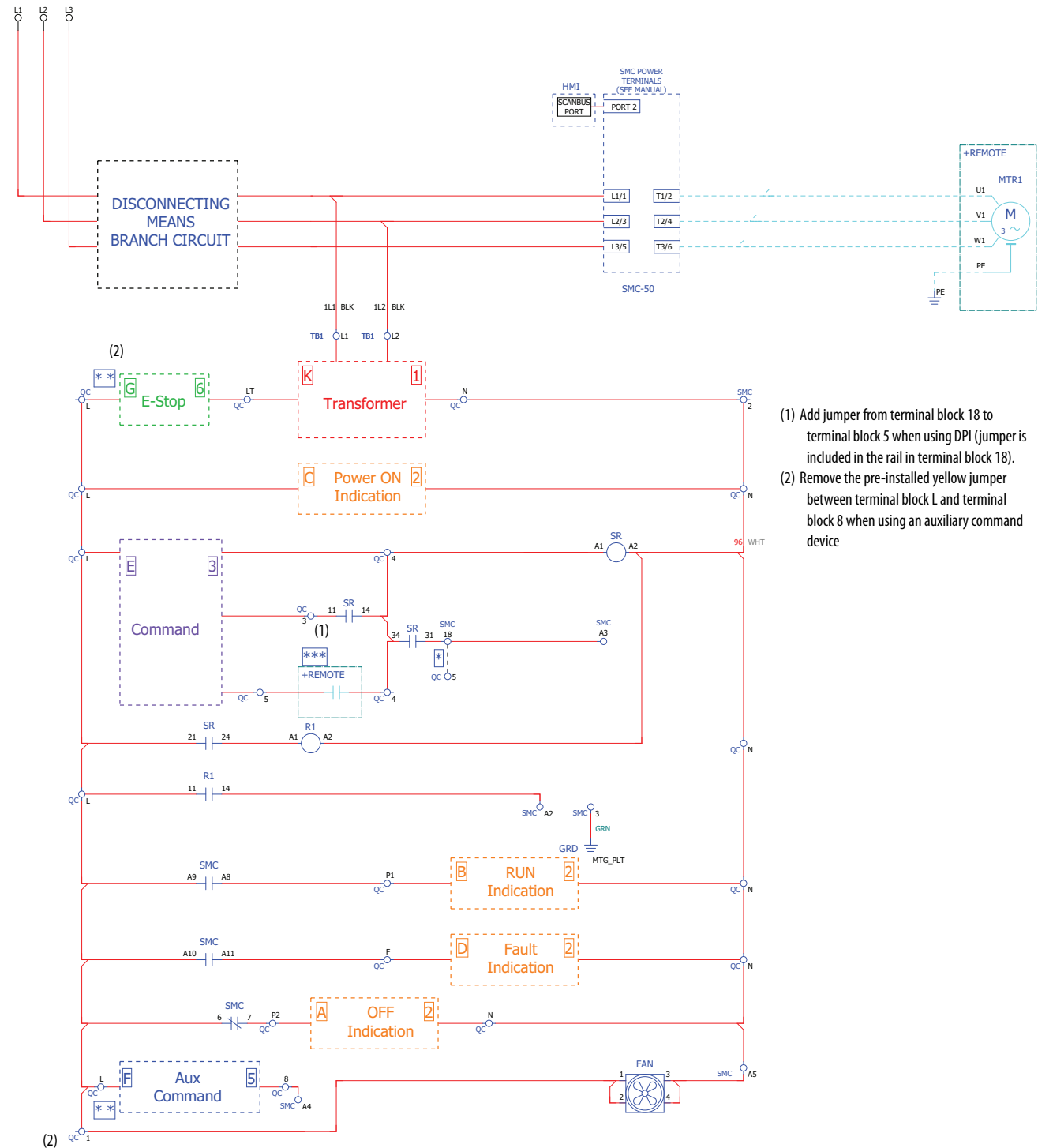
The diagrams in this section illustrate basic SMC controller wiring. For specific wiring diagrams, please consult your local Rockwell Automation sales office or Allen-Bradley distributor.

### Notes:

- Use 75 °C Cu wire only
- Line fuses are customer supplied on controllers with factory-supplied disconnect switch. Refer to NEC when selecting short-circuit protection.
- Additional control circuit overcurrent protection is required for non-combination starters. Refer to NEC.

**Figure 34 - SMC-50 Controller with External Bypass Basic Wiring Diagram**

- For wiring diagrams for snap-together kits, please see the following figures:
  - Command kits: [Figure 36](#), [Figure 37](#), and [Figure 38](#); Auxiliary Command kits: [Figure 39](#), [Figure 40](#), and [Figure 41](#)
  - Command bypass kit: [Figure 42](#)
  - Emergency Stop (E-Stop) kit: [Figure 43](#)
  - Indication kit: [Figure 44](#)
  - Transformer kit: [Figure 45](#)
- For additional wiring diagram notes, please see [Table 15](#), [Table 16](#), and [Table 17](#)

**Figure 35 - SMC-50 Controller with Internal Bypass Basic Wiring Diagram**

- For wiring diagrams for snap-together kits, please see the following figures:
  - Command kits: [Figure 36](#), [Figure 37](#), and [Figure 38](#); Auxiliary Command kits: [Figure 39](#), [Figure 40](#), and [Figure 41](#)
  - Command bypass kit: [Figure 42](#)
  - Emergency Stop (E-Stop) kit: [Figure 43](#)
  - Indication kit: [Figure 44](#)
  - Transformer kit: [Figure 45](#)

- For additional wiring diagram notes, please see [Table 18](#), [Table 19](#), and [Table 20](#)

**Table 15 - SMC-50 Controller with External Bypass Factory Pre-programmed Parameters**

| Parameter   | Value                           |
|-------------|---------------------------------|
| A2          | Start                           |
| A3          | Coast                           |
| A4          | Option Stop                     |
| 56          | Disable 0                       |
| 57          | Disable 0                       |
| 172         | Aux1 Config to Ext Bypass 4     |
| 176         | Aux2 Config to Fault Normal (0) |
| 177         | Enabled (1)                     |
| 230 (upper) | XXXX XXXX 0000 0010             |
| 230 (lower) | 0000 0000 0000 0001             |

**Table 16 - SMC-50 Controller with External Bypass I/O (Cat. No. 150-SM4) Device Parameters**

With HIM and Communication Card installed on Port 00

| Parameter | Value                      |
|-----------|----------------------------|
| 148       | X000 0000 0001 0100        |
| 3         | Input 2 (A2) Start 1       |
| 4         | Input 3 (A3) Coast 2       |
| 5         | Input 4 (A4) Stop Option 3 |
| 6         | Aux1Cfg Ext Bypass 4       |
| 10        | Aux2Cfg Normal 0           |
| Set 14    | Aux3Cfg Fault 2            |

**Table 17 - SMC-50 Controller with External Bypass Relay Functions**

| Relay No. | Function                                                             |
|-----------|----------------------------------------------------------------------|
| R1        | Prevent race condition between A3 and A2                             |
| BR 11-14  | Hold-in contact with Start-Stop for bypass                           |
| SR 11-14  | Hold-in contact with Start-Stop for SR Relay (Starts SMC controller) |
| SR 31-34  | Starts SMC controller with pilot device (no DPI present)             |
| R1 11-14  | SMC controller start command                                         |

**Table 18 - SMC-50 Controller with Internal Bypass Factory Pre-programmed Parameters**

| Parameter   | Value                           |
|-------------|---------------------------------|
| A2          | Start                           |
| A3          | Coast                           |
| A4          | Option Stop                     |
| 56          | Disable 0                       |
| 57          | Disable 0                       |
| 172         | Aux1 Config to Normal           |
| 176         | Aux2 Config to Fault Normal (0) |
| 177         | Enabled (1)                     |
| 230 (upper) | XXXX XXXX 0000 0010             |
| 230 (lower) | 0000 0000 0000 0001             |

**Table 19 - SMC-50 Controller with Internal Bypass I/O (Cat. No. 150-SM4) Device Parameters**

With HIM and Communication Card installed on Port 00

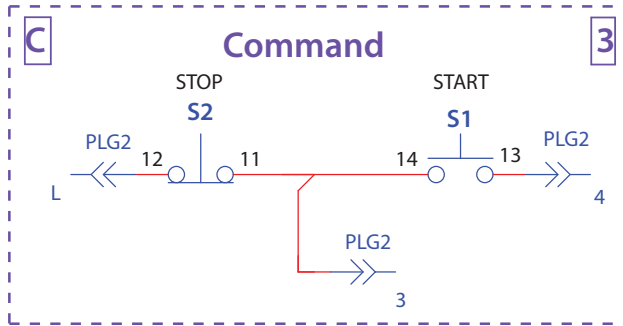
| Parameter | Value                      |
|-----------|----------------------------|
| 148       | X000 0000 0001 0100        |
| 3         | Input 2 (A2) Start 1       |
| 4         | Input 3 (A3) Coast 2       |
| 5         | Input 4 (A4) Stop Option 3 |
| 6         | Aux1Cfg Normal             |
| 10        | Aux2Cfg Normal 0           |
| Set 14    | Aux3Cfg Fault 2            |

**Table 20 - SMC-50 Controller with Internal Bypass Relay Functions**

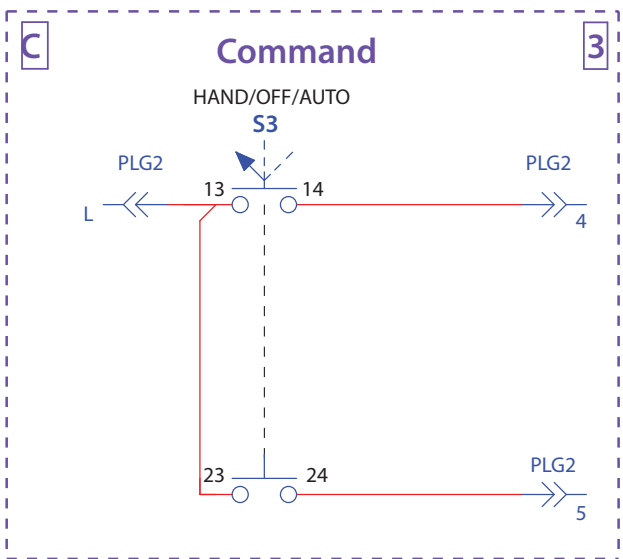
| Relay No. | Function                                                             |
|-----------|----------------------------------------------------------------------|
| R1        | Prevent race condition between A3 and A2                             |
| SR 11-14  | Hold-in contact with Start-Stop for SR Relay (Starts SMC controller) |
| SR 31-34  | Starts SMC controller with pilot device (no DPI present)             |
| R1 11-14  | SMC controller start command                                         |

# Wiring Diagrams for Snap-together Kits

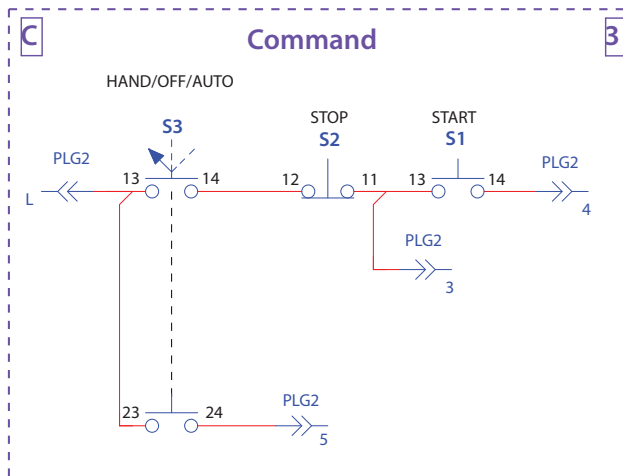
**Figure 36 - Start-Stop Command Kit Wiring Diagram**



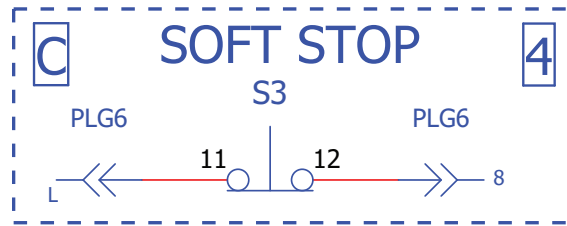
**Figure 37 - Hand-OFF-Auto Command Kit Wiring Diagram**



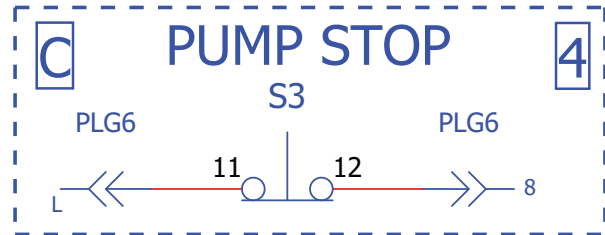
**Figure 38 - Hand-OFF-Auto and Start-Stop Command Kit Wiring Diagram**



**Figure 39 - Soft Stop Auxiliary Command Kit Wiring Diagram**



**Figure 40 - Pump Stop Auxiliary Command Kit Wiring Diagram**



**Figure 41 - Brake Auxiliary Command Kit Wiring Diagram**

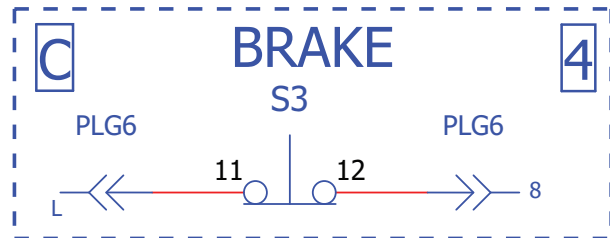


Figure 42 - Command Bypass Kit Wiring Diagram

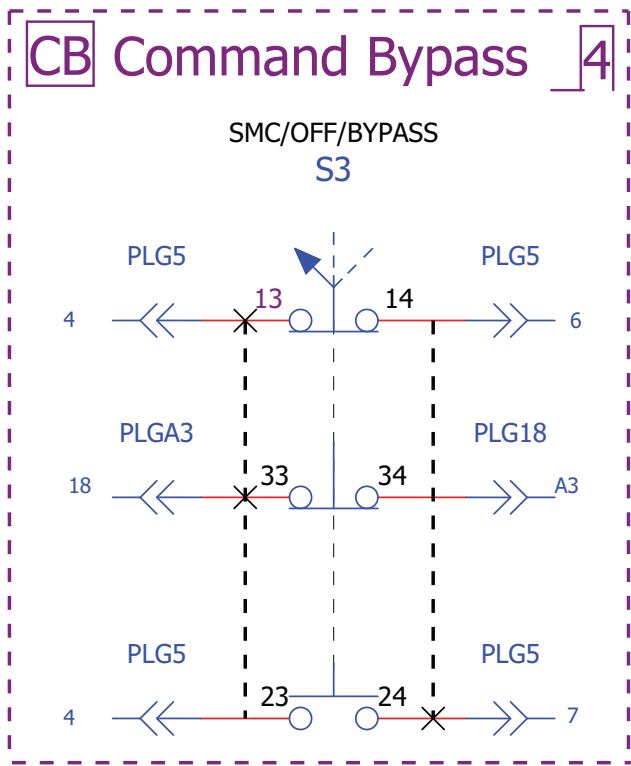


Figure 45 - Transformer Kit Wiring Diagram

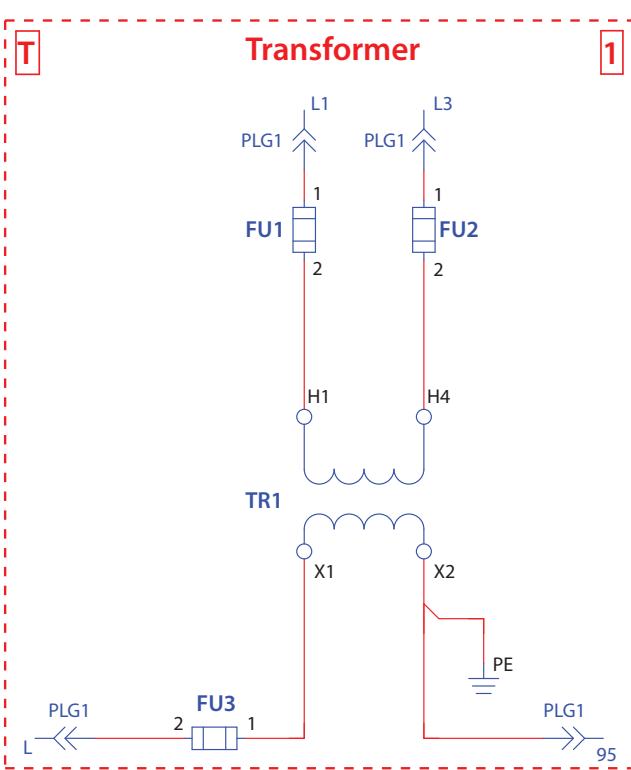


Figure 43 - E-Stop Kit Wiring Diagram

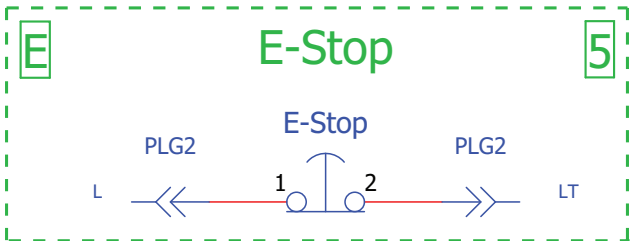
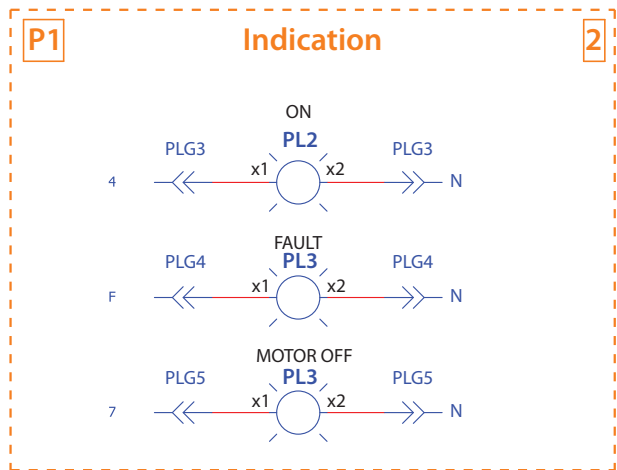


Figure 44 - Indication Kit Wiring Diagram



## Short-circuit Current Ratings

Determining the short circuit current ratings (SCCR) of a complex system can be very challenging, especially if proper considerations are not made during the initial stages of the component selection process.

The SCCR in this section provide coordinated high fault branch circuit for enclosed soft starters and is based on compliance to IEC and UL standards. For comprehensive SCCR information, please consult the Rockwell Automation Global SCCR Selection Tool at <http://www.rockwellautomation.com/global/support/global-sccr.page>.

- Note: Ratings provided are for standard options only; does not include isolation contactor configurations

**Table 21 - Non-combination Enclosed Soft Starters with SMC-50 Solid-state Controllers with External Bypass**

| Controller Rating [A] | Short Circuit Current Rating                                                                                                                                                                                                                                          |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 90                    | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 200 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 350 A circuit breaker; 10 kA rms symmetrical, 600V maximum when protected by a maximum 350 A circuit breaker   |
| 110                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 225 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 300 A circuit breaker; 10 kA rms symmetrical, 600V maximum when protected by a maximum 300 A circuit breaker   |
| 140                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 300 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 400 A circuit breaker; 10 kA rms symmetrical, 600V maximum when protected by a maximum 400 A circuit breaker   |
| 180                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 400 A circuit breaker; 10 kA rms symmetrical, 600V maximum when protected by a maximum 400 A circuit breaker   |
| 210                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 450 A Class J Fuse; 42 kA rms symmetrical, 480V maximum when protected by a maximum 600 A circuit breaker; 18 kA rms symmetrical, 600V maximum when protected by a maximum 600 A circuit breaker   |
| 260                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse; 42 kA rms symmetrical, 480V maximum when protected by a maximum 700 A circuit breaker; 18 kA rms symmetrical, 600V maximum when protected by a maximum 700 A circuit breaker   |
| 320                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 700 A Class L Fuse; 42 kA rms symmetrical, 480V maximum when protected by a maximum 800 A circuit breaker; 18 kA rms symmetrical, 600V maximum when protected by a maximum 800 A circuit breaker   |
| 361                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse; 42 kA rms symmetrical, 480V maximum when protected by a maximum 1000 A circuit breaker; 25 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A circuit breaker |
| 420                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse; 42 kA rms symmetrical, 480V maximum when protected by a maximum 1200 A circuit breaker; 25 kA rms symmetrical, 600V maximum when protected by a maximum 1200 A circuit breaker |
| 520                   | • 42 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A Class L Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 1200 A circuit breaker; 30 kA rms symmetrical, 600V maximum when protected by a maximum 1200 A circuit breaker |

**Table 22 - Non-combination Enclosed Soft Starters with SMC-50 Controllers with Internal Bypass**

| Controller Rating [A] | Short Circuit Current Rating                                                                                                                                                                                                                                         |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 108                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 200 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 300 A circuit breaker; 10 kA rms symmetrical, 600V maximum when protected by a maximum 300 A circuit breaker   |
| 135                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 225 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 400 A circuit breaker; 10 kA rms symmetrical, 600V maximum when protected by a maximum 400 A circuit breaker   |
| 201                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 350 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 600 A circuit breaker; 18 kA rms symmetrical, 600V maximum when protected by a maximum 600 A circuit breaker   |
| 251                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 700 A circuit breaker; 18 kA rms symmetrical, 600V maximum when protected by a maximum 700 A circuit breaker   |
| 317                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 800 A circuit breaker; 30 kA rms symmetrical, 600V maximum when protected by a maximum 800 A circuit breaker   |
| 361                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 600 A Class J Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 1000 A circuit breaker; 30 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A circuit breaker |
| 480                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse; 65 kA rms symmetrical, 480V maximum when protected by a maximum 1200 A circuit breaker; 42 kA rms symmetrical, 600V maximum when protected by a maximum 1200 A circuit breaker |

**Table 23 - Non-combination Enclosed Soft Starters with SMC-50 Controllers with Internal Bypass and Circuit Breaker**

| Controller Rating [A] | Short Circuit Current Rating                                               |
|-----------------------|----------------------------------------------------------------------------|
| 108                   | • 25 kA rms symmetrical, 480V maximum; 10 kA rms symmetrical, 600V maximum |
| 135                   | • 25 kA rms symmetrical, 480V maximum; 10 kA rms symmetrical, 600V maximum |
| 201                   | • 25 kA rms symmetrical, 480V maximum; 14 kA rms symmetrical, 600V maximum |
| 251                   | • 35 kA rms symmetrical, 480V maximum; 18 kA rms symmetrical, 600V maximum |
| 317                   | • 50 kA rms symmetrical, 480V maximum; 25 kA rms symmetrical, 600V maximum |
| 361                   | • 50 kA rms symmetrical, 480V maximum; 25 kA rms symmetrical, 600V maximum |
| 480                   | • 50 kA rms symmetrical, 480V maximum; 25 kA rms symmetrical, 600V maximum |

**Table 24 - Non-combination Enclosed Soft Starters with SMC-50 Controllers with Internal Bypass and Fusible Disconnect**

| Controller Rating [A] | Short Circuit Current Rating                                                         |
|-----------------------|--------------------------------------------------------------------------------------|
| 108                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 200 A Class J Fuse |
| 135                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 225 A Class J Fuse |
| 201                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 350 A Class J Fuse |
| 251                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse |
| 317                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse |
| 361                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 600 A Class J Fuse |
| 480                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse |

**Table 25 - Combination Enclosed Soft Starters with SMC-50 Solid-state Controllers with External Bypass and Circuit Breakers**

| Controller Rating [A] | Short Circuit Current Rating                                               |
|-----------------------|----------------------------------------------------------------------------|
| 90...180              | • 25 kA rms symmetrical, 480V maximum; 10 kA rms symmetrical, 600V maximum |
| 210                   | • 25 kA rms symmetrical, 480V maximum; 14 kA rms symmetrical, 600V maximum |
| 260                   | • 35 kA rms symmetrical, 480V maximum; 18 kA rms symmetrical, 600V maximum |
| 320                   | • 35 kA rms symmetrical, 480V maximum; 18 kA rms symmetrical, 600V maximum |
| 361...420             | • 42 kA rms symmetrical, 480V maximum; 25 kA rms symmetrical, 600V maximum |
| 520                   | • 50 kA rms symmetrical, 480V maximum; 30 kA rms symmetrical, 600V maximum |

**Table 26 - Combination Enclosed Soft Starters with SMC-50 Solid-state Controllers with External Bypass and Fusible Disconnect**

| Controller Rating [A] | Short Circuit Current Rating                                                          |
|-----------------------|---------------------------------------------------------------------------------------|
| 90                    | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 200 A Class J Fuse |
| 110                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 225 A Class J Fuse |
| 140                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 300 A Class J Fuse |
| 180                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse |
| 210                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 450 A Class J Fuse |
| 260                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse |
| 320                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 700 A Class L Fuse |
| 361                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse |
| 420                   | • 100 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse |
| 520                   | • 42 kA rms symmetrical, 600V maximum when protected by a maximum 1000 A Class L Fuse |

**Table 27 - Combination Enclosed Soft Starters with SMC-50 with Internal Bypass and Fusible Disconnect**

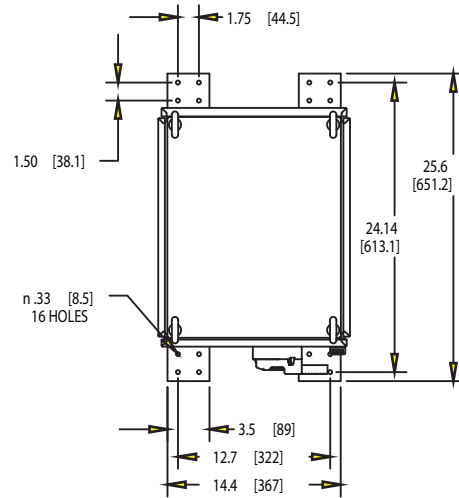
| Controller Rating [A] | Short Circuit Current Rating                                                         |
|-----------------------|--------------------------------------------------------------------------------------|
| 108                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 200 A Class J Fuse |
| 135                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 225 A Class J Fuse |
| 201                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 350 A Class J Fuse |
| 251                   | • 70 kA rms symmetrical, 600V maximum when protected by a maximum 400 A Class J Fuse |
| 317                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 500 A Class J Fuse |
| 361                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 600 A Class J Fuse |
| 480                   | • 69 kA rms symmetrical, 600V maximum when protected by a maximum 800 A Class L Fuse |

## Approximate Dimensions

Examples given in this section include standard options. Use ProposalWorks to obtain dimensions for Smart Motor Controllers with all available options. ProposalWorks is available from <http://www.rockwellautomation.com/global/e-tools/overview.page>.

Dimensions are in millimeters (inches) unless otherwise noted. Dimensions are not to be used for manufacturing purposes.

**Figure 46 - Enclosure for SMC Controllers—1400 mm x 400 mm x 500 mm**



Shipping Bracket dimensions. Can be used for customer mounting or removed. Not included if mounting foot is factory installed. Handle may vary by controller size.

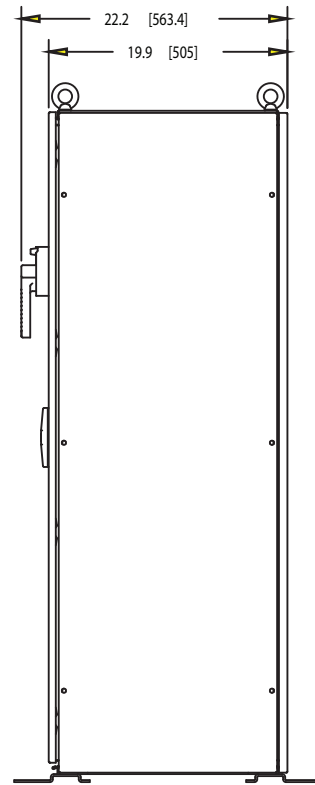
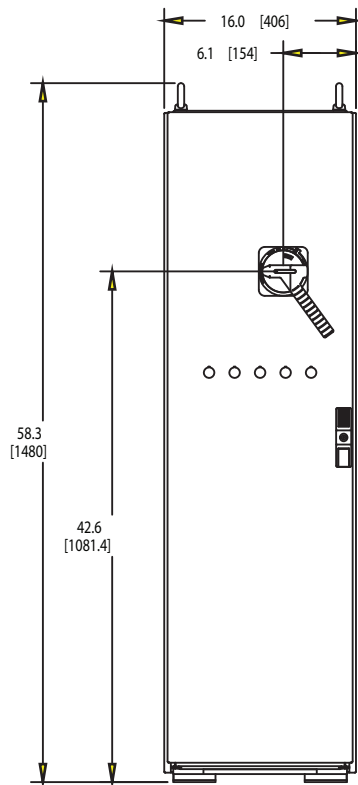
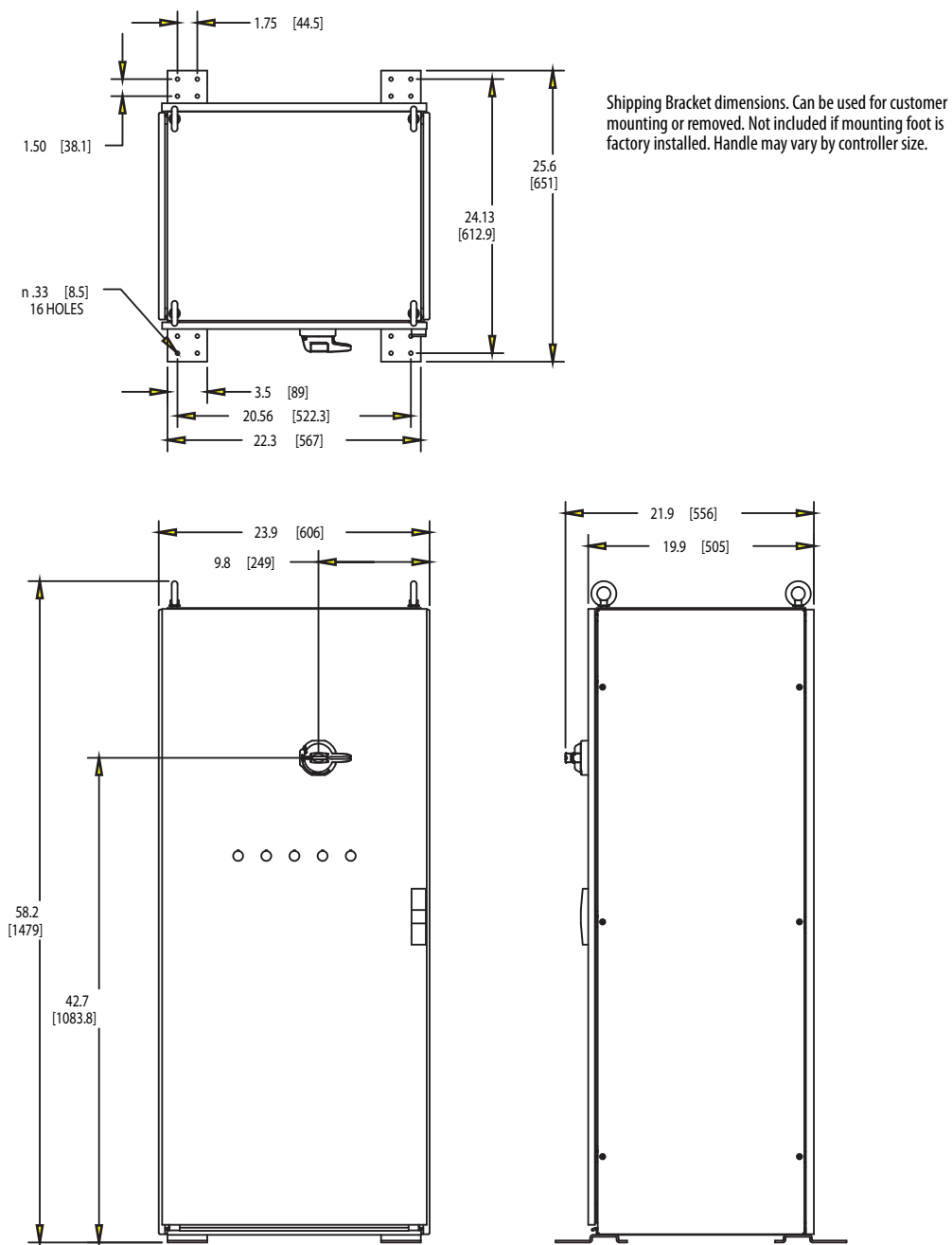


Figure 47 - Enclosure for SMC Controllers—1400 mm x 600 mm x 500 mm



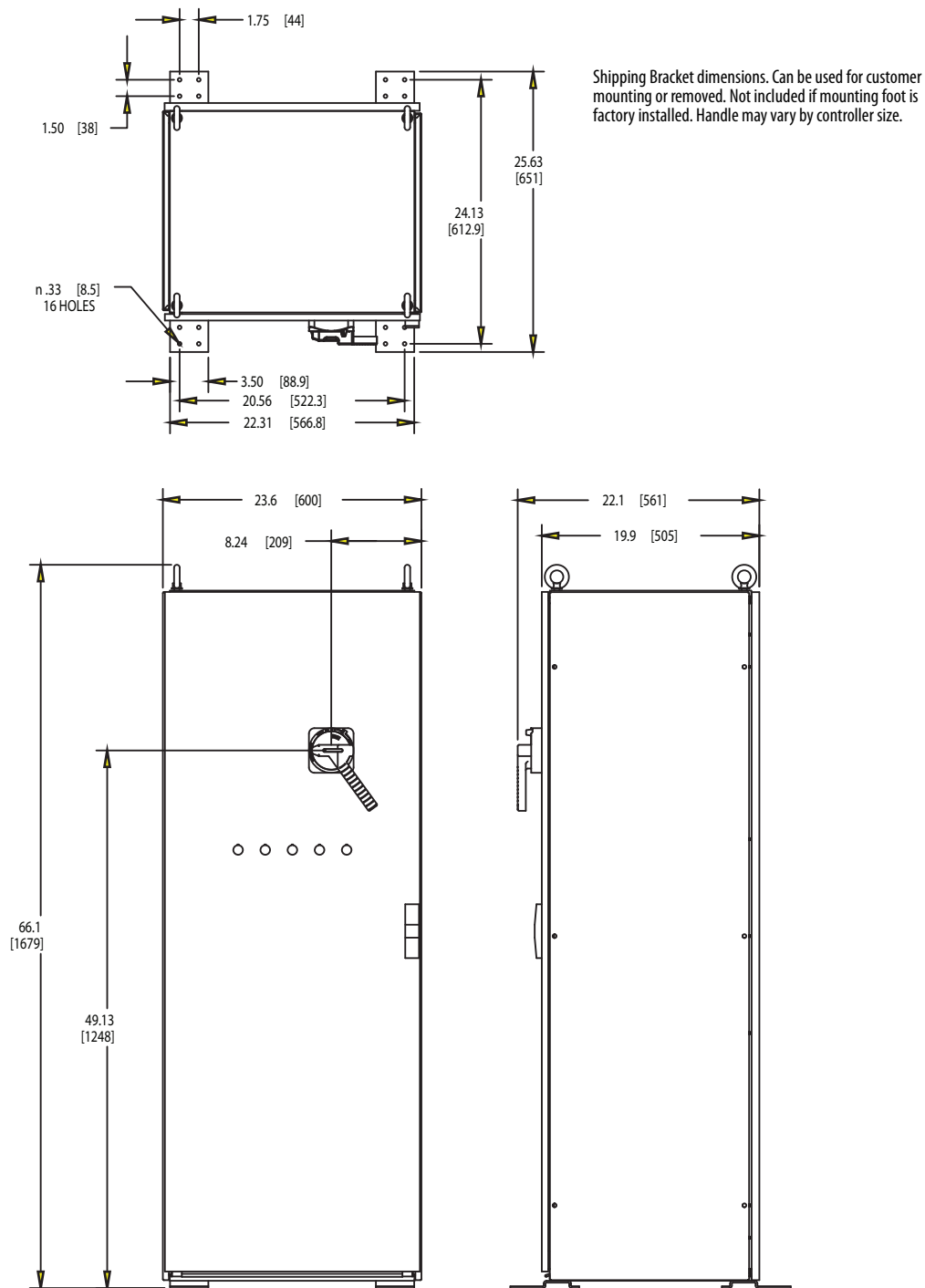
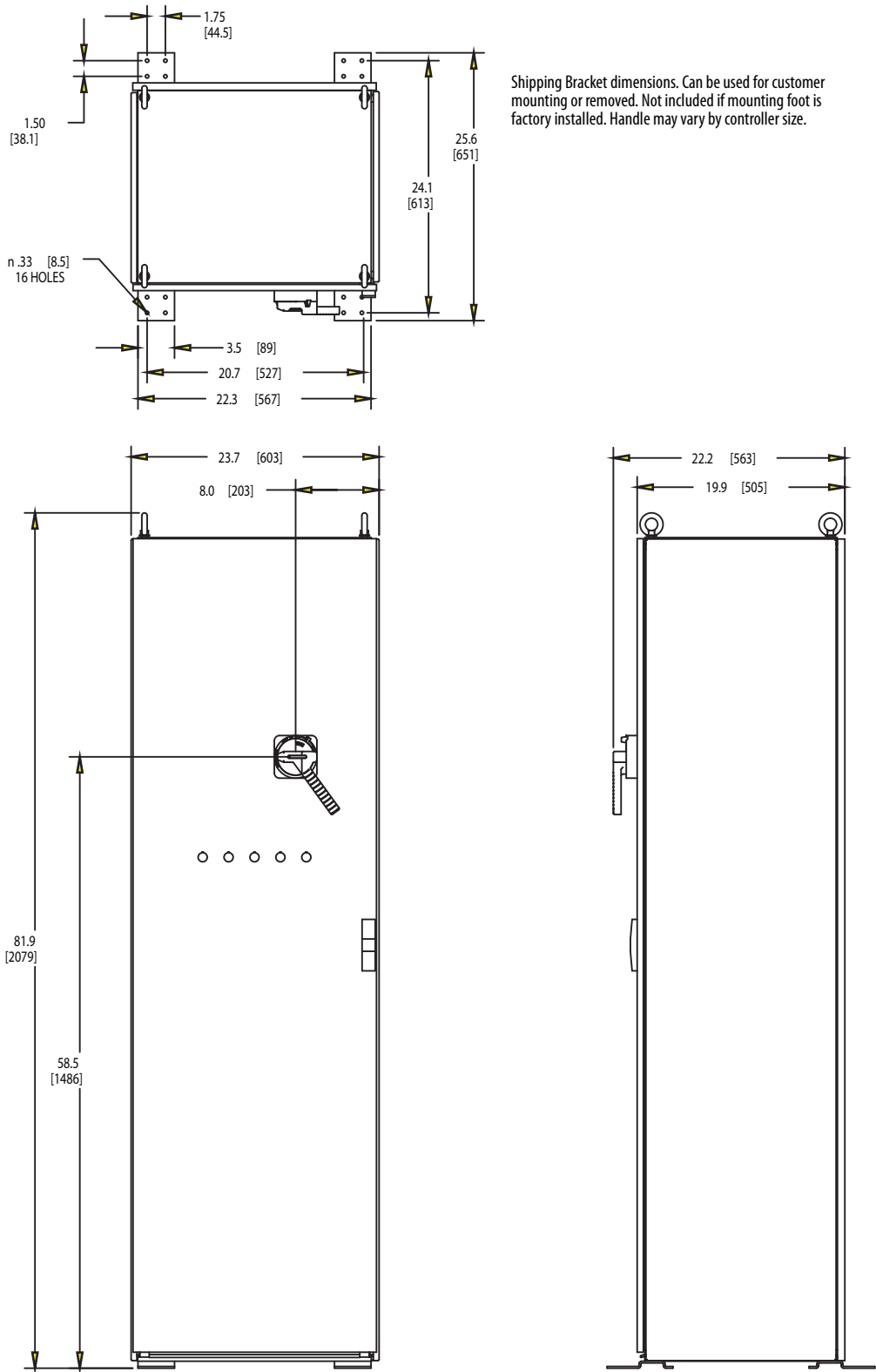
**Figure 48 - Enclosure for SMC Controllers—1600 mm x 600 mm x 500 mm**

Figure 49 - Enclosure for SMC Controllers—2000 mm x 600 mm x 500 mm



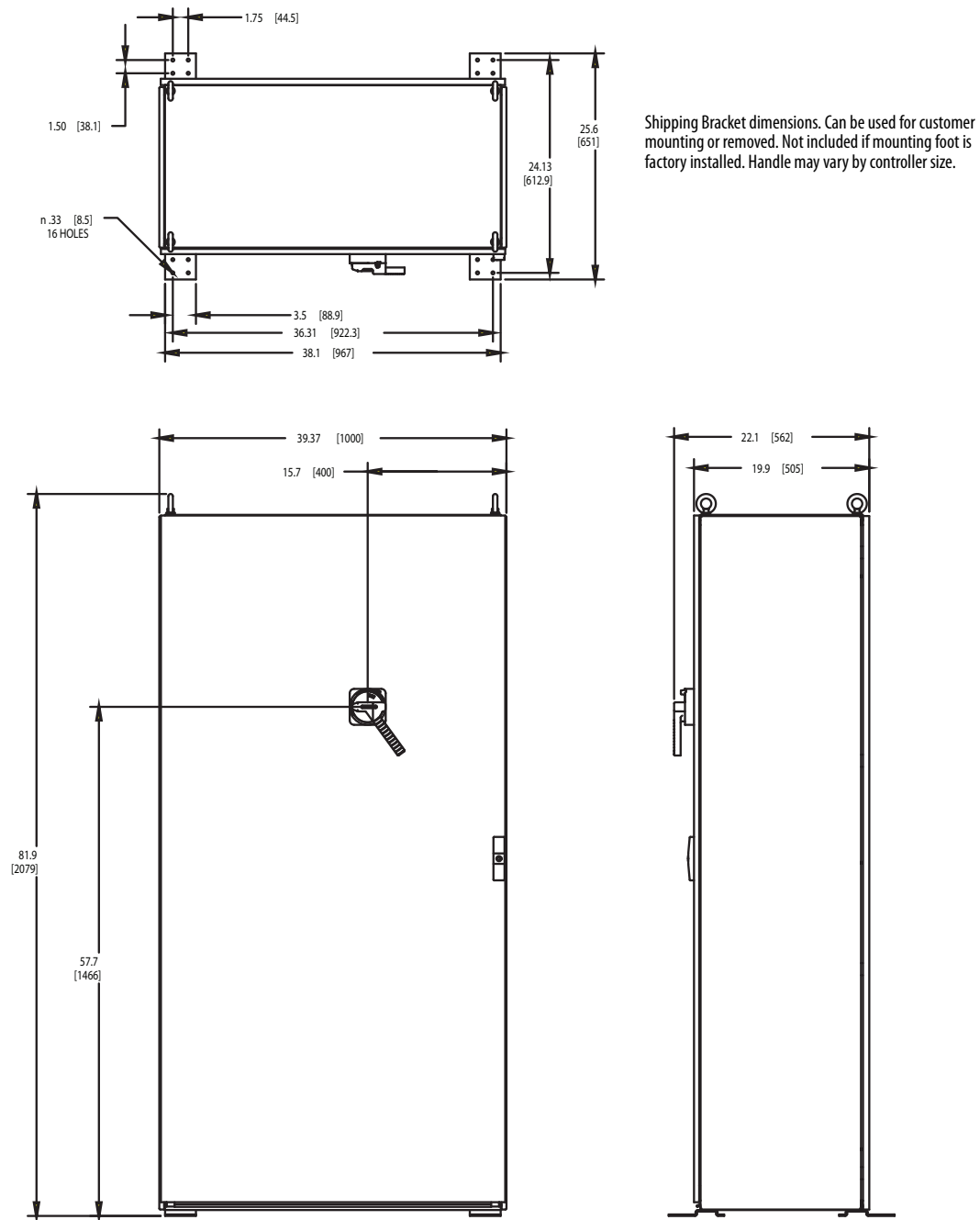
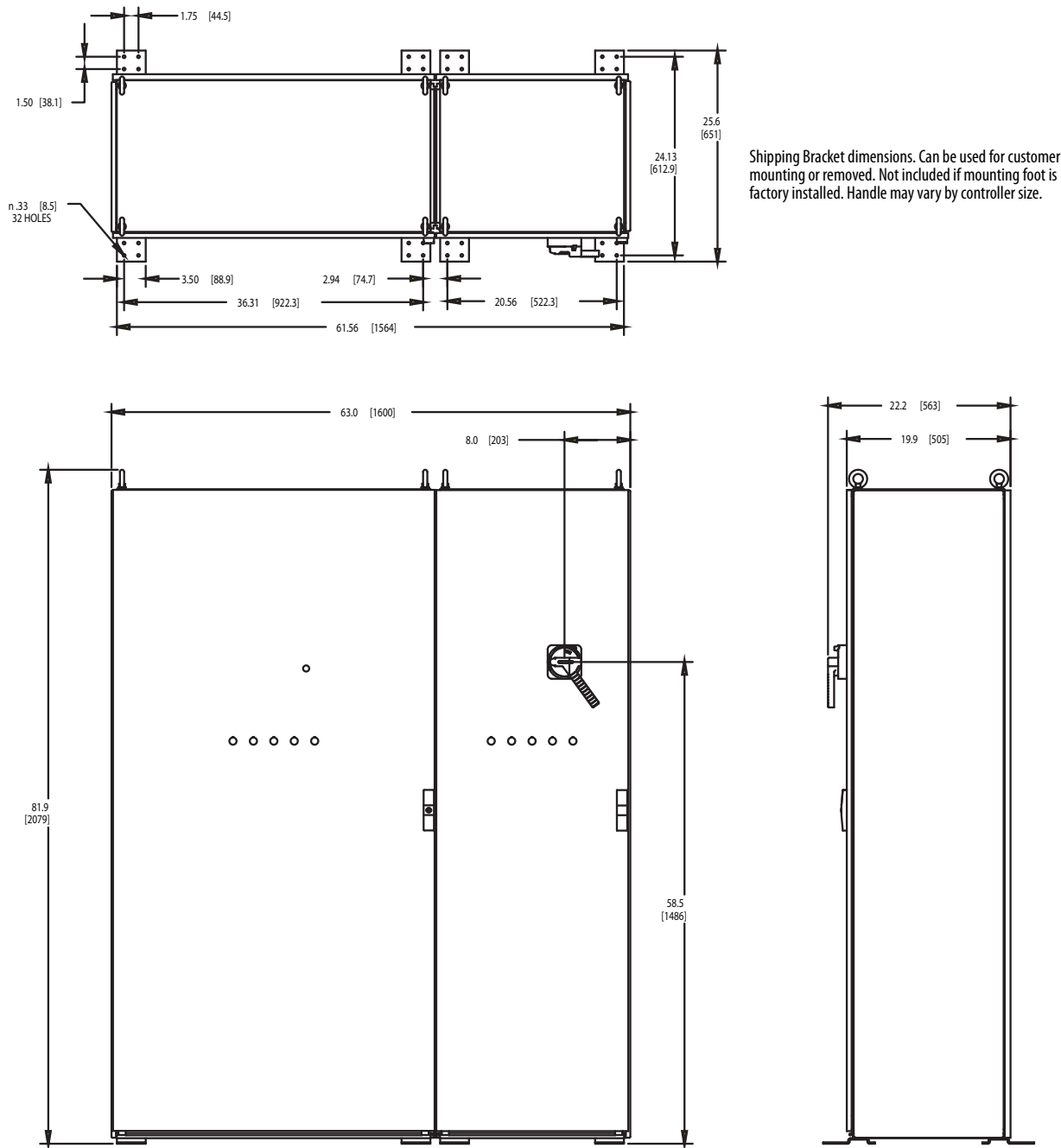
**Figure 50 - Enclosure for SMC Controllers—2000 mm x 1000 mm x 500 mm**

Figure 51 - Enclosure for SMC Controllers—2000 mm x 1600 mm x 500 mm



**Table 28 - SMC-50 Controller with External Bypass Enclosure Dimensions**

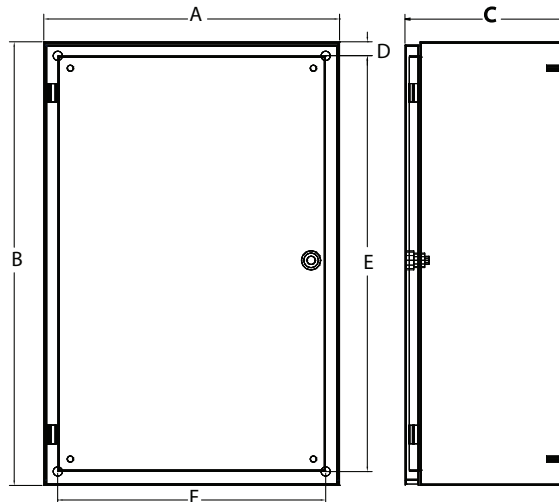
| Non-combination Controllers |                                                                            | Combination Controllers |                                                                            |                      |                                                                            |
|-----------------------------|----------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------|
|                             |                                                                            | With Fusible Disconnect |                                                                            | With Circuit Breaker |                                                                            |
| Cat. No.                    | Dimensions (H x W x D)                                                     | Cat. No.                | Dimensions (H x W x D)                                                     | Cat. No.             | Dimensions (H x W x D)                                                     |
| 150S-C90J...                | 1400 x 600 x 500<br>(55.1 x 23.6 x 19.7)<br>see <a href="#">Figure 47</a>  | 152S-C90J...            | 1400 x 600 x 500<br>(55.1 x 23.6 x 19.7)<br>see <a href="#">Figure 47</a>  | 153S-C90J...         | 1400 x 600 x 500<br>(55.1 x 23.6 x 19.7)<br>see <a href="#">Figure 47</a>  |
| 150S-D11J...                |                                                                            | 152S-D11J...            |                                                                            | 153S-D11J...         |                                                                            |
| 150S-D14J...                |                                                                            | 152S-D14J...            |                                                                            | 153S-D14J...         |                                                                            |
| 150S-D18J...                |                                                                            | 152S-D18J...            |                                                                            | 153S-D18J...         |                                                                            |
| 150S-D21J...                |                                                                            | 152S-D21J...            | 1600 x 600 x 500<br>(63.0 x 23.6 x 19.7)<br>see <a href="#">Figure 48</a>  | 153S-D21J...         | 1600 x 600 x 500<br>(63.0 x 23.6 x 19.7)<br>see <a href="#">Figure 48</a>  |
| 150S-D26J...                |                                                                            | 152S-D26J...            |                                                                            | 153S-D26J...         |                                                                            |
| 150S-D32J...                |                                                                            | 152S-D32J...            |                                                                            | 153S-D32J...         |                                                                            |
| 150S-D36J...                | 2000 x 1000 x 500<br>(78.7 x 39.4 x 19.7)<br>see <a href="#">Figure 50</a> | 152S-D36J...            | 2000 x 1000 x 500<br>(78.7 x 39.4 x 19.7)<br>see <a href="#">Figure 50</a> | 153S-D36J...         | 2000 x 1000 x 500<br>(78.7 x 39.4 x 19.7)<br>see <a href="#">Figure 50</a> |
| 150S-D42J...                |                                                                            | 152S-D42J...            |                                                                            | 153S-D42J...         |                                                                            |
| 150S-D52J...                |                                                                            | 152S-D52J...            |                                                                            | 153S-D52J...         |                                                                            |

**Table 29 - SMC-50 Controller with Internal Bypass Enclosure Dimensions**

| Non-combination Controllers |                                                                            | Combination Controllers |                                                                           |                      |                                                                           |
|-----------------------------|----------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------|
|                             |                                                                            | With Fusible Disconnect |                                                                           | With Circuit Breaker |                                                                           |
| Cat. No.                    | Dimensions (H x W x D)                                                     | Cat. No.                | Dimensions (H x W x D)                                                    | Cat. No.             | Dimensions (H x W x D)                                                    |
| 150S-D10J...                | 1400 x 400 x 500<br>(55.1 x 15.7 x 19.7)<br>see <a href="#">Figure 46</a>  | 152S-D10J...            | 1400 x 400 x 500<br>(55.1 x 15.7 x 19.7)<br>see <a href="#">Figure 46</a> | 153S-D10J...         | 1400 x 400 x 500<br>(55.1 x 15.7 x 19.7)<br>see <a href="#">Figure 46</a> |
| 150S-D13J...                |                                                                            | 152S-D13J...            |                                                                           | 153S-D13J...         |                                                                           |
| 150S-D20J...                |                                                                            | 152S-D20J...            | 1400 x 600 x 500<br>(55.1 x 23.6 x 19.7)<br>see <a href="#">Figure 47</a> | 153S-D20J...         |                                                                           |
| 150S-D25J...                |                                                                            | 152S-D25J...            |                                                                           | 153S-D25J...         |                                                                           |
| 150S-D31J...                |                                                                            | 152S-D31J...            | 2000 x 600 x 500<br>(78.7 x 23.6 x 19.7)<br>see <a href="#">Figure 49</a> | 153S-D31J...         | 2000 x 600 x 500<br>(78.7 x 23.6 x 19.7)<br>see <a href="#">Figure 49</a> |
| 150S-D36J...                |                                                                            | 152S-D36J...            |                                                                           | 153S-D36J...         |                                                                           |
| 150S-D48J...                |                                                                            | 152S-D48J...            |                                                                           | 153S-D48J...         |                                                                           |
| 150S-D62J...                | 2000 x 1000 x 500<br>(78.7 x 39.4 x 19.7)<br>see <a href="#">Figure 50</a> | 152S-D62J...            | 2000 x 1600 x 500<br>(78.7 x 63 x 19.7)<br>see <a href="#">Figure 51</a>  | 153S-D62J...         | 2000 x 1600 x 500<br>(78.7 x 63 x 19.7)<br>see <a href="#">Figure 51</a>  |
| 150S-D78J...                |                                                                            | 152S-D78J...            |                                                                           | 153S-D78J...         |                                                                           |

**Figure 52 - Wall-mounted Enclosure Dimensions**

- Wall-mounted controllers do not include Snap-together wiring



## Rockwell Automation Support

Use the following resources to access support information.

|                                                         |                                                                                                                       |                                                                                                                                                    |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Technical Support Center</b>                         | Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.                     | <a href="http://www.rockwellautomation.com/knowledgebase">www.rockwellautomation.com/knowledgebase</a>                                             |
| <b>Local Technical Support Phone Numbers</b>            | Locate the phone number for your country.                                                                             | <a href="http://www.rockwellautomation.com/global/support/get-support-now.page">www.rockwellautomation.com/global/support/get-support-now.page</a> |
| <b>Direct Dial Codes</b>                                | Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer. | <a href="http://www.rockwellautomation.com/global/support/direct-dial.page">www.rockwellautomation.com/global/support/direct-dial.page</a>         |
| <b>Literature Library</b>                               | Installation Instructions, Manuals, Brochures, and Technical Data.                                                    | <a href="http://www.rockwellautomation.com/literature">www.rockwellautomation.com/literature</a>                                                   |
| <b>Product Compatibility and Download Center (PCDC)</b> | Get help determining how products interact, check features and capabilities, and find associated firmware.            | <a href="http://www.rockwellautomation.com/global/support/pcdc.page">www.rockwellautomation.com/global/support/pcdc.page</a>                       |

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