



### Bulletin 150 — Smart Motor Controllers — SMC-2™

The SMC-2™ Controller is a compact, multi-functional, versatile solid-state controller used in starting standard three-phase squirrel-cage induction motors. Three standard modes of operation are available within a single controller:

- Soft Start
- Current Limit Start
- Full Voltage Start
- Optional Soft Stop (Requires Interface Module)

The SMC-2™ Controller is available in eight sizes: 5, 9, 16, 24, 35, 54, 68, and 97 A. It is offered in three voltage ranges: 200...230V, 380...460V, and 500...575V, 50/60 Hz.

The SMC-2™ Controller can be used in two configurations: as a series controller and as a motor controller with an interface option.

### Table of Contents

Cat. No. Explanation	6-37
Product Selection	... 6-38
Accessories	..... 6-41
Options	..... 6-41
Specifications	..... 6-42
Approximate Dimensions	..... 6-43
Enclosed Options	... 6-68

### Standards Compliance/Approvals

- CE Marked (Open Type) Per Low Voltage Directive 73/23/EEC, 93/68/EEC
- CSA Certified (Open Type) (File No. LR1234)
- UL Listed (Open Type) (File No. E96956, Guide No. NMFT)

Your order must include 1) cat. no. of the controller selected, 2) if required, suffix code and description of any modifications, and 3) if required, cat. no. of any options or accessories.

### Series Controller

The SMC-2 Controller is designed to operate in series with an electromechanical motor starter. The series mode has the following features:

- Eliminates the need for additional control wiring, simplifying initial installation.
- Works in unison with an existing electromechanical motor starter for easy retrofits.
- Allows easy set-up with digital adjustments eliminating the guesswork of setting analog potentiometers.

### Controller with Interface Option

The SMC-2 Controller with the interface option is designed so it can be operated without an electromechanical motor starter. The SMC-2 Controller with the interface option offers the following features:

- Provides ON/OFF control directly to the controller through an external pilot device. In many applications the interface option may eliminate the need for an additional contactor if electrical isolation or soft stop is not required. This reduces panel space requirements.
- Provides a selectable auxiliary contact, which operates as either an instantaneous or up-to-speed contact, making it available for a wide variety of control schemes.
- Provides a Soft Stop feature that extends stopping time to minimize load shifting or spillage during stopping.

The interface option can be field or factory installed. For devices rated 5...16 A, this is a plug-in module. For devices rated 24...97 A, there is a PC board that replaces the existing board.

### Energy Saver

This built-in feature of the SMC-2 Controller is used to save energy on applications where the motor is lightly loaded or unloaded for long periods of time.

### Protective Module

In applications where the SMC-2 Controller is exposed to high or abnormal line transients, an optional protective module is available and can be mounted on both the line and load side of the unit. The protective module contains MOVs (Metal Oxide Varistors) that protect the SCR from line surges and snubber networks to shunt noise energy away.

Open and Non-Combination

**150 – A05 N B – D1 – 8L4 – NA – 7**

*a*      *b*      *c*      *d*      *e*      *f*      *g*      *h*

Bulletin Number	
Code	Description
150	Solid-State Controller

Controller Ratings									
Code	Amps	Max Hp				Max kW			
		200	230	460	575	220	380	415	500
A05	5	1	1	3	3	1.1	2.2	2.2	3
A09	9	2	2	5	7-1/2	2.2	4	4	5.5
A16	16	3	5	10	10	4	7.5	7.5	7.5
A24	24	5	7-1/2	15	20	5.5	11	11	15
A35	35	10	10	25	30	10	18.5	22	22
A54	54	15	20	40	50	15	22	30	37
A68	68	20	25	50	60	18.5	33	37	45
A97	97	30	30	75	75	25	45	55	63

Enclosure Type	
Code	Description
N	Open
F	NEMA Type 4 (IP65)
J	NEMA Type 12

Input Line Voltage	
Code	Description
A	200...230V AC (+10%, -15%), 50 and 60 Hz, 3-phase
B	380...460V AC (+10%, -15%), 50 and 60 Hz, 3-phase
C	500...575+10%, -15%), 50 and 60 Hz, 3-phase

Overload Relay Selection	
Code	Current Rating
C1	0.32...1.0
D1	1.0...2.9
E1	1.6...5.0
F1	3.7...12
H1	12...32
H2	12...38
J2	14...45
K3	23...75
L4	66...110

Protective Modules			
Line Side		Both Line and Load	
230V AC	8L2	230V AC	8B2
460V AC	8L4	460V AC	8B4
575V AC	8L6	575V AC	8B6

Interface Option	
Code	Control Voltage
NA	200...240V (+10%, -15%), 50 and 60 Hz, single-phase
ND	100...120V (+10%, -15%), 50 and 60 Hz, single-phase

External Reset	
Code	Description
7	For NEMA Type 4 (IP65) or NEMA Type 12 (IP64)

For a listing of available options, please see page 6-68

Combination

**152C – W05 J BD – D1 – ND – 8L4**

*a*      *b*      *c*      *d*      *e*      *f*      *g*

Bulletin Number	
Code	Description
152C	Combination Solid-State Reduced Voltage Controller with Fusible Disconnect and Isolation Contactor
152X	Combination Solid-State Reduced Voltage Controller with Fusible Disconnect, 120V Interface Module and Control Circuit Transformer, without Isolation Contactor

Enclosure Type	
Code	Description
F	NEMA Type 4 (IP65)
J	NEMA Type 12 (IP64)

Input Line Voltage				
AC Line Voltage	Hz	Common	Control Wiring Method	
			120V/60 Hz Secondary	110V/50 Hz Secondary
200	50	H	—	HS
208	60	H	HD	—
230	60	A	AD	—
400	50	I	—	NS
460	60	B	BD	—
500	50	M	—	MS
575	60	C	CD	—

Controller Ratings									
Code	Amps	Max Hp				Max kW			
		200	230	460	575	220	380	415	500
W05	5	1	1	3	3	1.1	2.2	2.2	3
W09	9	2	2	5	7-1/2	2.2	4	4	5.5
W16	16	3	5	10	10	4	7.5	7.5	7.5
W24	24	5	7-1/2	15	20	5.5	11	11	15
W35	35	10	10	25	30	10	18.5	22	22
W54	54	15	20	40	50	15	22	30	37
W68	68	20	25	50	60	18.5	33	37	45
W97	97	30	30	75	75	25	45	55	63

Overload Selection	
Code	Current Rating
See table "e" above for details	

Interface Option	
Code	Control Voltage
NA	200...230V (+10%, -15%), 50 and 60 Hz, single-phase
ND	100...120V (+10%, -15%), 50 and 60 Hz, single-phase

Protective Modules			
Line Side		Both Line and Load	
230V AC	8L2	230V AC	8B2
460V AC	8L4	460V AC	8B4
575V AC	8L6	575V AC	8B6

For a listing of available options, please see page 6-68

- \* IEC overload relays are rated for Class 10 operation.
- † Overload option for 5...16 A only (open type) and non-combination or combination unit (5...97 A units).
- ‡ Protective modules factory installed on 5...54 A units only. 68 and 97 A are field modifications only.
- § When an IEC overload relay is selected, protective modules are limited to line side only. (For 5...16 A rated controllers only.)
- ¶ Interface option provides selectable auxiliary contact and Soft Stop feature.
- ▶ External overload reset available for 5...97 A rated controllers ordered as a non-combination or combination unit with an overload relay.
- ⊗ IEC overload relays are rated for Class 10 operation for 5...97 A rated controllers only. See Table "e" for IEC overload selection. For 24...97 A rated controllers, NEMA overloads are furnished as standard.
- ⊕ Requires control power source.
- ⊖ 97 A Type 4 SMC-2 Smart Motor Controllers include Bulletin 100 bypass contactors wired for 120V AC 50/60 Hz control.

Open Type and Non-Combination Controllers

Open type is a stand-alone SMC-2 Controller. Options which can be added to open type 5...16 A controllers are an interface module, solid-state type overload relay, and protective module(s).

Non-combination is the SMC-2 Controller in an IP65 (Type 4) or IP54 (Type 12) enclosure. It is available with the same options as the Open Type and is also available with an external reset for overloads. See Accessories and Options on page 6-41. For a listing of all available options, please see page 6-68.

Rated Operational Current	kW	Hp	Open Type	Dimension Code*	IP65 — NEMA Type 4 Enclosure	IP54 — NEMA Type 12 Enclosure
			Cat. No.†		Cat. No.†	Cat. No.†
<b>200V AC, 50/60 Hz</b>						
5 A	—	1/3...1	150-A05NA	S	150-A05FA	150-A05JA
9 A	—	1/3...2	150-A09NA	S	150-A09FA	150-A09JA
16 A	—	1/3...3	150-A16NA	T	150-A16FA	150-A16JA
24 A	—	1...5	150-A24NA	U	150-A24FA	150-A24JA
35 A	—	1...10	150-A35NA	U	150-A35FA	150-A35JA
54 A	—	1...15	150-A54NA	U	150-A54FA	150-A54JA
68 A	—	1...20	150-A68NA	V	150-A68FA	150-A68JA
97 A	—	1...30	150-A97NA	V	150-A97FA‡	150-A97JA‡
<b>230V AC, 50/60 Hz</b>						
5 A	1.1	1/3...1	150-A05NA	S	150-A05FA	150-A05JA
9 A	2.2	1/3...2	150-A09NA	S	150-A09FA	150-A09JA
16 A	4	1/3...5	150-A16NA	T	150-A16FA	150-A16JA
24 A	5.5	1...7-1/2	150-A24NA	U	150-A24FA	150-A24JA
35 A	7.5	1...10	150-A35NA	U	150-A35FA	150-A35JA
54 A	15	1...20	150-A54NA	U	150-A54FA	150-A54JA
68 A	18.5	1...25	150-A68NA	V	150-A68FA	150-A68JA
97 A	25	1...30	150-A97NA	V	150-A97FA‡	150-A97JA‡
<b>400...460V AC, 50/60 Hz</b>						
5 A	2.2	1/3...3	150-A05NB	S	150-A05FB	150-A05JB
9 A	4	1/3...5	150-A09NB	S	150-A09FB	150-A09JB
16 A	7.5	1/3...10	150-A16NB	T	150-A16FB	150-A16JB
24 A	11	1...15	150-A24NB	U	150-A24FB	150-A24JB
35 A	22	1...25	150-A35NB	U	150-A35FB	150-A35JB
54 A	30	1...40	150-A54NB	U	150-A54FB	150-A54JB
68 A	37	1...50	150-A68NB	V	150-A68FB	150-A68JB
97 A	55	1...75	150-A97NB	V	150-A97FB‡	150-A97JB‡
<b>500...575V AC, 50/60 Hz</b>						
5 A	3	1/3...3	150-A05NC	S	150-A05FC	150-A05JC
9 A	5.5	1/3...7-1/2	150-A09NC	S	150-A09FC	150-A09JC
16 A	7.5	1/3...10	150-A16NC	T	150-A16FC	150-A16JC
24 A	15	1...20	150-A24NC	U	150-A24FC	150-A24JC
35 A	22	1...30	150-A35NC	U	150-A35FC	150-A35JC
54 A	30	1...50	150-A54NC	U	150-A54FC	150-A54JC
68 A	45	1...60	150-A68NC	V	150-A68FC	150-A68JC
97 A	63	1...75	150-A97NC	V	150-A97FC‡	150-A97JC‡

\* Optional accessories may increase panel dimensions.

† For factory-installed options, add the appropriate suffix from page 6-41.

‡ 97 A (Type 4 and Type 12) controllers include bypass contactors.

Accessories — Page 6-41

Options — Page 6-41

Specifications — Page 6-42

Approximate Dimensions — Page 6-43

**IP65 (Type 4) Combination Controllers†‡§**

Combination controllers can be ordered with or without the isolation contactor. A combination controller with the isolation contactor consists of a rod-operated fusible disconnect, the SMC-2 Controller, and a 3-pole thermal overload relay. For 5...97 A controllers, the current range of the solid-state overload relay must be selected from the chart on page 6-41. Otherwise, a eutectic alloy type overload relay (less elements) will be provided in place of the solid-state overload. Eutectic alloy overloads are standard on enclosed

24...97 A controllers. A combination controller without the isolation contactor consists of a rod operated fusible disconnect, the SMC-2 Controller with an interface option, a control circuit transformer, and a 3-pole thermal overload relay. Again, for 5...97 A controllers, the current range must be selected for a solid-state overload or a eutectic alloy type overload will be provided (less elements).

For a listing of all available options, please see page 6-68.

Rated Operational Current	kW	Hp	Dimension Code	With Isolation Contactor	Without Isolation Contactor
				Cat. No.	Cat. No.
<b>220V AC, 50 Hz</b>					
5 A	1.1	—	S	152C-W05FA♣	152X-W05FA-ND-6P
9 A	2.2	—	T	152C-W09FA♣	152X-W09FA-ND-6P
16 A	4	—	T	152C-W16FA♣	152X-W16FA-ND-6P
24 A	5.5	—	U	152C-W24FA♣	152X-W24FA-ND-6P
35 A	7.5	—	U	152C-W35FA♣	152X-W35FA-ND-6P
54 A	15	—	V	152C-W54FA♣	152X-W54FA-ND-6P
68 A	18.5	—	V	152C-W68FA♣	152X-W68FA-ND-6P
97 A	25	—	V	152C-W97FA♣➤	152X-W97FA-ND-6P➤
<b>400V AC, 50 Hz</b>					
5 A	2.2	—	S	152C-W05FI♣	152X-W05FI-ND-6P
9 A	4	—	T	152C-W09FI♣	152X-W09FI-ND-6P
16 A	7.5	—	T	152C-W16FI♣	152X-W16FI-ND-6P
24 A	11	—	U	152C-W24FI♣	152X-W24FI-ND-6P
35 A	22	—	U	152C-W35FI♣	152X-W35FI-ND-6P
54 A	30	—	V	152C-W54FI♣	152X-W54FI-ND-6P
68 A	37	—	V	152C-W68FI♣	152X-W68FI-ND-6P
97 A	55	—	V	152C-W97FI♣➤	152X-W97FI-ND-6P➤
<b>500V AC, 50 Hz</b>					
5 A	3	—	S	152C-W05FM♣	152X-W05FM-ND-6P
9 A	5.5	—	T	152C-W09FM♣	152X-W09FM-ND-6P
16 A	7.5	—	T	152C-W16FM♣	152X-W16FM-ND-6P
24 A	15	—	U	152C-W24FM♣	152X-W24FM-ND-6P
35 A	22	—	U	152C-W35FM♣	152X-W35FM-ND-6P
54 A	30	—	V	152C-W54FM♣	152X-W54FM-ND-6P
68 A	45	—	V	152C-W68FM♣	152X-W68FM-ND-6P
97 A	63	—	V	152C-W97FM♣➤	152X-W97FM-ND-6P➤

Rated Operational Current	kW	Hp	Dim. Code	With Isolation Contactor	Without Isolation Contactor
				Cat. No.	Cat. No.
<b>200V AC, 60 Hz</b>					
5 A	—	1/3...1	S	152C-W05FH♣	152X-W05FH-ND-6P
9 A	—	1/3...2	T	152C-W09FH♣	152X-W09FH-ND-6P
16 A	—	1/3...3	T	152C-W16FH♣	152X-W16FH-ND-6P
24 A	—	1...5	U	152C-W24FH♣	152X-W24FH-ND-6P
35 A	—	1...10	U	152C-W35FH♣	152X-W35FH-ND-6P
54 A	—	1...15	V	152C-W54FH♣	152X-W54FH-ND-6P
68 A	—	1...20	V	152C-W68FH♣	152X-W68FH-ND-6P
97 A	—	1...30	V	152C-W97FH♣➤	152X-W97FH-ND-6P➤
<b>230V AC, 60 Hz</b>					
5 A	—	1/3...1	S	152C-W05FA♣	152X-W05FA-ND-6P
9 A	—	1/3...2	T	152C-W09FA♣	152X-W09FA-ND-6P
16 A	—	1/3...5	T	152C-W16FA♣	152X-W16FA-ND-6P
24 A	—	1...7-1/2	U	152C-W24FA♣	152X-W24FA-ND-6P
35 A	—	1...10	U	152C-W35FA♣	152X-W35FA-ND-6P
54 A	—	1...20	V	152C-W54FA♣	152X-W54FA-ND-6P
68 A	—	1...25	V	152C-W68FA♣	152X-W68FA-ND-6P
97 A	—	1...30	V	152C-W97FA♣➤	152X-W97FA-ND-6P➤
<b>460V AC, 60 Hz</b>					
5 A	—	1/3...3	S	152C-W05FB♣	152X-W05FB-ND-6P
9 A	—	1/3...5	T	152C-W09FB♣	152X-W09FB-ND-6P
16 A	—	1/3...10	T	152C-W16FB♣	152X-W16FB-ND-6P
24 A	—	1...15	U	152C-W24FB♣	152X-W24FB-ND-6P
35 A	—	1...25	U	152C-W35FB♣	152X-W35FB-ND-6P
54 A	—	1...40	V	152C-W54FB♣	152X-W54FB-ND-6P
68 A	—	1...50	V	152C-W68FB♣	152X-W68FB-ND-6P
97 A	—	1...75	V	152C-W97FB♣➤	152X-W97FB-ND-6P➤
<b>575V AC, 60 Hz</b>					
5 A	—	1/3...3	S	152C-W05FC♣	152X-W05FC-ND-6P
9 A	—	1/3...7-1/2	T	152C-W09FC♣	152X-W09FC-ND-6P
16 A	—	1/3...10	T	152C-W16FC♣	152X-W16FC-ND-6P
24 A	—	1...20	U	152C-W24FC♣	152X-W24FC-ND-6P
35 A	—	1...30	U	152C-W35FC♣	152X-W35FC-ND-6P
54 A	—	1...50	V	152C-W54FC♣	152X-W54FC-ND-6P
68 A	—	1...60	V	152C-W68FC♣	152X-W68FC-ND-6P
97 A	—	1...75	V	152C-W97FC♣➤	152X-W97FC-ND-6P➤

† For 5...97 A controllers, a solid-state overload current range must be selected from the chart on page 6-41 and the suffix added to the cat. no. Otherwise, a eutectic alloy overload will be provided.  
 ‡ Refer to page 6-42 for fuse clip sizing and type information.  
 § Fuses are not included.  
 ♣ For 120V, 60 Hz separate control, add the letter "D" after the 9th character. For 110V, 50 Hz separate control, add the letter "S" after the 9th character. Example: Cat. No. 152C-W05FH becomes Cat. No. 152C-W05FHD for 120V, 60 Hz separate control.  
 ➤ 97 A Type 4 SMC-2 Smart Motor Controllers include Bulletin 100 bypass contactors wired for 120V AC 50/60 Hz control.

Accessories — Page 6-41  
 Options — Page 6-41  
 Specifications — Page 6-42  
 Approximate Dimensions — Page 6-43



IP54 (Type 12) Combination Controllers†‡§

Combination controllers can be ordered with or without the isolation contactor. A combination controller with the isolation contactor consists of a rod operated fusible disconnect, the SMC-2 Controller, and a 3-pole thermal overload relay. For 5...97 A controllers, the current range of the solid-state overload relay must be selected from the chart on page 6-41. Otherwise, a eutectic alloy type overload relay (less elements) will be provided in place of the solid-state overload. Eutectic alloy overloads are standard on enclosed

24...97 A controllers. A combination controller without the isolation contactor consists of a rod-operated fusible disconnect, the SMC-2 Controller with an interface option, a control circuit transformer, and a 3-pole thermal overload relay. Again, for 5...97 A controllers, the current range must be selected for a solid-state overload or a eutectic alloy type overload will be provided (less elements).

For a listing of all available options, please see page 6-68.

Current Rating (A)	kW	Hp	Dimension Code	With Isolation Contactor	Without Isolation Contactor
				Cat. No.	Cat. No.
220V AC, 50 Hz					
5 A	1.1	—	S	152C-W05JA*	152X-W05JA-ND-6P
9 A	2.2	—	T	152C-W09JA*	152X-W09JA-ND-6P
16 A	4	—	T	152C-W16JA*	152X-W16JA-ND-6P
24 A	5.5	—	U	152C-W24JA*	152X-W24JA-ND-6P
35 A	7.5	—	U	152C-W35JA*	152X-W35JA-ND-6P
54 A	15	—	V	152C-W54JA*	152X-W54JA-ND-6P
68 A	18.5	—	V	152C-W68JA*	152X-W68JA-ND-6P
97 A	25	—	V	152C-W97JA*➤	152X-W97JA-ND-6P*➤
400V AC, 50 Hz					
5 A	2.2	—	S	152C-W05JI*	152X-W05JI-ND-6P
9 A	4	—	T	152C-W09JI*	152X-W09JI-ND-6P
16 A	7.5	—	T	152C-W16JI*	152X-W16JI-ND-6P
24 A	11	—	U	152C-W24JI*	152X-W24JI-ND-6P
35 A	22	—	U	152C-W35JI*	152X-W35JI-ND-6P
54 A	30	—	V	152C-W54JI*	152X-W54JI-ND-6P
68 A	37	—	V	152C-W68JI*	152X-W68JI-ND-6P
97 A	55	—	V	152C-W97JI*➤	152X-W97JI-ND-6P*➤
500V AC, 50 Hz					
5 A	3	—	S	152C-W05JM*	152X-W05JM-ND-6P
9 A	5.5	—	T	152C-W09JM*	152X-W09JM-ND-6P
16 A	7.5	—	T	152C-W16JM*	152X-W16JM-ND-6P
24 A	15	—	U	152C-W24JM*	152X-W24JM-ND-6P
35 A	22	—	U	152C-W35JM*	152X-W35JM-ND-6P
54 A	30	—	V	152C-W54JM*	152X-W54JM-ND-6P
68 A	45	—	V	152C-W68JM*	152X-W68JM-ND-6P
97 A	63	—	V	152C-W97JM*➤	152X-W97JM-ND-6P*➤

Current Rating (A)	kW	Hp	Dim. Code	With Isolation Contactor	Without Isolation Contactor
				Cat. No.	Cat. No.
200V AC, 60 Hz					
5 A	—	1/3...1	S	152C-W05JH*	152X-W05JH-ND-6P
9 A	—	1/3...2	T	152C-W09JH*	152X-W09JH-ND-6P
16 A	—	1/3...3	T	152C-W16JH*	152X-W16JH-ND-6P
24 A	—	1...5	U	152C-W24JH*	152X-W24JH-ND-6P
35 A	—	1...10	U	152C-W35JH*	152X-W35JH-ND-6P
54 A	—	1...15	V	152C-W54JH*	152X-W54JH-ND-6P
68 A	—	1...20	V	152C-W68JH*	152X-W68JH-ND-6P
97 A	—	1...30	V	152C-W97JH*➤	152X-W97JH-ND-6P*➤
230V AC, 60 Hz					
5 A	—	1/3...1	S	152C-W05JA*	152X-W05JA-ND-6P
9 A	—	1/3...2	T	152C-W09JA*	152X-W09JA-ND-6P
16 A	—	1/3...5	T	152C-W16JA*	152X-W16JA-ND-6P
24 A	—	1...7-1/2	U	152C-W24JA*	152X-W24JA-ND-6P
35 A	—	1...10	U	152C-W35JA*	152X-W35JA-ND-6P
54 A	—	1...20	V	152C-W54JA*	152X-W54JA-ND-6P
68 A	—	1...25	V	152C-W68JA*	152X-W68JA-ND-6P
97 A	—	1...30	V	152C-W97JA*➤	152X-W97JA-ND-6P*➤
460V AC, 60 Hz					
5 A	—	1/3...3	S	152C-W05JB*	152X-W05JB-ND-6P
9 A	—	1/3...5	T	152C-W09JB*	152X-W09JB-ND-6P
16 A	—	1/3...10	T	152C-W16JB*	152X-W16JB-ND-6P
24 A	—	1...15	U	152C-W24JB*	152X-W24JB-ND-6P
35 A	—	1...25	U	152C-W35JB*	152X-W35JB-ND-6P
54 A	—	1...40	V	152C-W54JB*	152X-W54JB-ND-6P
68 A	—	1...50	V	152C-W68JB*	152X-W68JB-ND-6P
97 A	—	1...75	V	152C-W97JB*➤	152X-W97JB-ND-6P*➤
575V AC, 60 Hz					
5 A	—	1/3...3	S	152C-W05JC*	152X-W05JC-ND-6P
9 A	—	1/3...7-1/2	T	152C-W09JC*	152X-W09JC-ND-6P
16 A	—	1/3...10	T	152C-W16JC*	152X-W16JC-ND-6P
24 A	—	1...20	U	152C-W24JC*	152X-W24JC-ND-6P
35 A	—	1...30	U	152C-W35JC*	152X-W35JC-ND-6P
54 A	—	1...50	V	152C-W54JC*	152X-W54JC-ND-6P
68 A	—	1...60	V	152C-W68JC*	152X-W68JC-ND-6P
97 A	—	1...75	V	152C-W97JC*➤	152X-W97JC-ND-6P*➤



† For 5...97 A controllers, a solid-state overload current range must be selected from the chart on page 6-41 and the suffix added to the cat. no. Otherwise, a eutectic alloy overload will be provided.  
 ‡ Refer to page 6-42 for fuse clip sizing and type information.  
 § Fuses are not included.  
 \* For 120V, 60 Hz separate control, add the letter "D" after the 9th character. For 110V, 50 Hz separate control, add the letter "S" after the 9th character. Example: Cat. No. 152C-W05FH becomes Cat. No. 152C-W05FHD for 120V, 60 Hz separate control.  
 ➤ 97 A Type 12 SMC-2 Smart Motor Controllers include Bulletin 100 bypass contactors wired for 120V AC 50/60 Hz control.

Accessories — Page 6-41  
 Options — Page 6-41  
 Specifications — Page 6-42  
 Approximate Dimensions — Page 6-43

## Accessories

## Protective Module


The Protective Module mounts on the line or load side of the SMC-2 Controller. When the solid-state overload is used on a 5...16 A device, **the Protective Module will mount only on the line side.**

	AC Standard Control Voltage, 50/60 Hz	SMC-2 Current Rating (A)	Field Modification Cat. No.	Factory Modification Suffix No., Line or Load Side*	Factory Modification Suffix No., Both Line and Load Side
 <p>Protective Module for 5...16 A</p>	200...240	5...16	150-N82T	-8L2	-8B2
		24...54	150-N82P		
		68 A	150-N82P6		
		97 A	150-N82P9		
 <p>Protective Module for 24...97 A</p>	380...480	5...16	150-N84T	-8L4	-8B4
		24...54	150-N84P		
		68 A	150-N84P6		
		97 A	150-N84P9		
	500...600	5...16	150-N86T	-8L6	-8B6
		24...54	150-N86P		
		68 A	150-N86P6		
		97 A	150-N86P9		

\* One Protective Module is provided, which will mount on either the line side or the load side. If a solid-state overload relay is used, the Protective Module mounts on the line side only.

## Interface Option for Soft Stop \* and Auxiliary Contact

The interface option provides ON/OFF control through an external device, a selectable auxiliary contact, and the soft stop feature. The interface option for the 24...97 A controller is a Printed Circuit Board (PCB) that replaces the existing board.

	SMC-2 Current Rating (A)	Control Voltage	Line Voltage, Max.	Cat. No.	Factory Modification Suffix No.
 <p>Interface Module for 5...16 A</p>	5...16	120V (+10%, -15%)	200...600	150-ND	-ND
		240V (+10%, -15%)	200...600	150-NA	-NA
	24...97	120V (+10%, -15%)	240	150-N2D†	-ND
			480	150-N4D†	
			600	150-N6D†	
		240V (+10%, -15%)	240	150-N2A†	-NA
	480	150-N4A†			
	600	150-N6A†			

\* When Soft Stop is used without an isolation contactor, and the overload trips, the SMC-2 Controller will Soft Stop, not coast-to-stop.

† Field Kit consists of a new control board for unit.

## Overloads

## Solid-State Overload Relay ‡

Current Rating (A)	Suffix
0.32...1.0	-C1
1.0...2.9	-D1
1.6...5.0	-E1
3.7...12	-F1
12...32	-H1
12...38	-H2
14...45	-J2
23...75	-K3
66...110	-L4

‡ Overload relay option for 5...16 A open type and non-combination controllers 5...97 A. Overload provided as standard for combination units and at no additional cost.

Solid-State overload relays are rated for Class 10 operation only. If an overload is selected for the SMC-2 Controller, the current range must be indicated and the suffix added to the cat. no. (for 5...16 A open type controller and 5...97 A non-combination and combination controllers).

## NEMA Overload Relay

The eutectic alloy overload relay is not available on the 5...16 A non-combination or open type SMC-2 Controllers. To add a eutectic alloy overload relay to a combination controller, consult your local Allen-Bradley distributor.

## External Overload Relay Reset

Add the suffix "-7" to any enclosed SMC-2 Controller (NEMA Type 4 and 12 non-combination or combination controller) containing an overload relay.

Product Selection — Page 6-38

Options — this page

Specifications — Page 6-42

Approximate Dimensions — Page 6-43



**Bulletin 150**  
**Smart Motor Controllers — SMC-2™**

**Specifications**

Electrical Ratings									
Cat. No.	150-A05...	150-A09...	150-A16...	150-A24...	150-A35...	150-A54...	150-A68...	150-A97...	
Rated Operating Current (A)	5	9	16	24	35	54	68	97	
Maximum Heat Dissipation (Watts)	32	45	70	80	120	170	215	285	
Cable Size	Power Terminals	1.5...6 mm <sup>2</sup>	1.5...6 mm <sup>2</sup>	1.5...6 mm <sup>2</sup>	10 mm <sup>2</sup>	10 mm <sup>2</sup>	10 mm <sup>2</sup>	25 mm <sup>2</sup>	50 mm <sup>2</sup>
	Interface Option Terminals	#14...12 AWG	#14...12 AWG	#14...12 AWG	#8 AWG	#8 AWG	#4 AWG	#2 AWG	#1/0 AWG
Rated Operational Voltage (+10%, -15%)	200...240, 380...480, 500...600V AC, 50/60 Hz, 3-phase								
Thermal Capacity	IEC 34 (S1), NEMA MG1								
Interface Option Voltage (+10%, -15%)	100/120V or 200/240V, 50/60 Hz, 1-phase								
Power Requirements	15 VA Maximum								
	Heatsink Fan	—	—	—	—	—	—	45 VA	
Auxiliary Contact Rating	NEMA C300			IEC AC-15					
Electrical Design Specifications/Test Requirements									
Repetitive Peak Inverse Voltage Rating	1200V up to 240V Line, 1400V up to 480V Line, 1600V up to 600V Line								
Selectable Soft Start Times	2, 5, 10, 20, 25, and 30 seconds								
Current Limit Times	15 and 30 seconds								
Selectable Across-the-Line Starting	1/10 second								
Soft Stop Times	5, 10, 15, 25, 35, 45, 55, 110 seconds								
Noise and RF Immunity	Surge Transient Peak 3400V. Showering Arc 1500V								
DV/DT Protection	RC Snubber Network								
Transient Protection (Optional)	Metal Oxide Varistors: (80 joules)								
Mechanical Design Specifications/Test Requirements									
Vibration	2.5 G for 60 minutes								
Shock	30 G for 11 mSecs								
Construction	Power Poles	High temperature thermoplastic moldings							
	Control Metal Parts	Thermoplastic moldings Anodized aluminum, plated brass, or copper							
Terminals	Power Terminals	6.0 mm hole with clamping plate							
	Control Terminals Power Terminal Markings	UNC 6-32 Screw with self-tilting clamp plate CENELEC EN50 012, NEMA							
Functional Design Specifications									
Standard Features	Setup	Wiring Adjustments	The SMC-2 Controller without options is wired in series with a motor starter. The SMC-2 Controller is configured with DIP switches and a rotary digital switch.						
	Starting	Three Modes Protection	Soft Start, Current Limit, Full Voltage in one unit. The controller has pre-start protection from phase loss and shorted SCRs. An LED is provided to indicate the status of the unit. The LED is ON when 3-phase power is applied. A flashing LED indicates one of three conditions: shorted SCR or phase loss during start, or a stalled motor during run.						
	Running	Protection Energy Level	Stall protection available during starting and run condition for additional motor protection. Built-in energy saver available for low load conditions.						
Optional Interface Features	Setup	Wiring	2- and 3-wire control for wider variety of applications. Interface option requires no additional space and can be factory or field installed.						
	Starting	Auxiliary	Selectable auxiliary contact available for either up-to-speed or instantaneous operation.						
	Stopping		Module allows for soft stopping to minimize load shifting. Also adjusted from standard DIP switches.						
Environmental									
Temperature	Operating	0...+50 °C (+32...+122 °F)							
	Storage	-40...+85 °C (-40...+185 °F)							
Altitude	2000 m (6560 ft)								
Humidity	5...95% Relative Humidity (non-condensing)								

**Fuse Clip Sizing and Type for Fusible Combination Controllers \*†**

Horsepower @ 480V	Fuse Clip Size/Type	Fuse Size Range
15	30 A/Class J	0...30
20	60 A/Class J	31...60
25	60 A/Class J	31...60
30	60 A/Class J	31...60
40	100 A/Class J	61...100
50	100 A/Class J	61...100
60	200 A/Class J	101...200
75	200 A/Class J	101...200

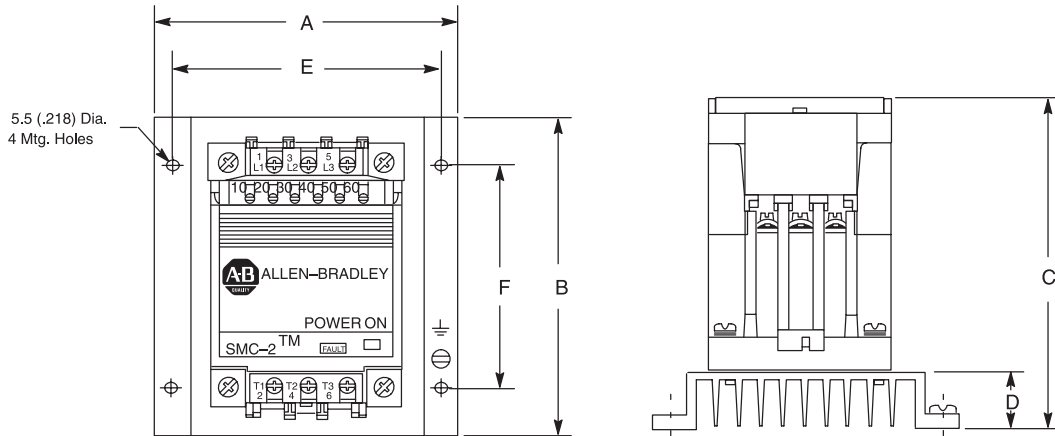
\* Consult NEC Handbook for proper fuse sizing guidelines.

† Optional fuse clip sizes and types are available upon request. Consult factory.

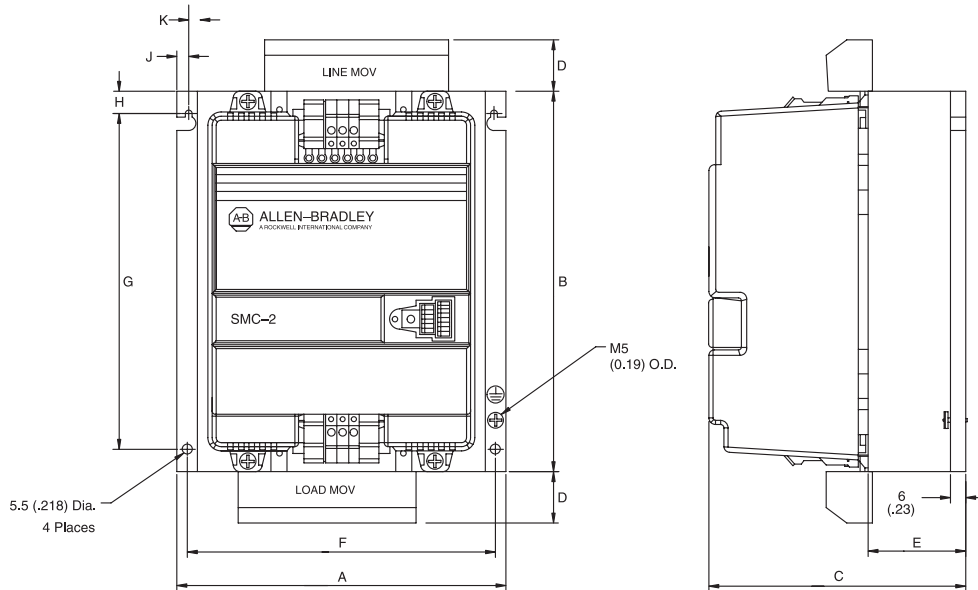
Product Selection — Page 6-38  
Options — Page 6-41

**Open Type**

Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



Controller	A Width	B Height	C Depth	D	E	F	Approx. Ship. Wt.
5 A	122 (4-13/16)	127 (5)	134 (5-9/32)	24 (61/64)	110 (4-11/32)	90 (3-35/64)	2 kg (4.5 lbs)
9 A	122 (4-13/16)	180 (7-3/32)	134 (5-9/32)	24 (61/64)	110 (4-11/32)	140 (5-33/64)	2.25 kg (5 lbs)
16 A	154 (6-5/64)	180 (7-3/32)	160 (6-5/16)	50 (1-31/32)	140 (5-33/64)	140 (5-33/64)	3.15 kg (7 lbs)



Controller	A Width	B Height	C Depth	D	E	F	G	H	J	K	Approx. Ship. Wt.
24...35 A	214 (8-27/64)	250 (9-27/32)	160 (6-19/64)	34 (1-11/32)	60 (2-23/64)	200 (7-7/8)	220 (8-21/32)	15 (19/32)	7 (17/64)	8 (21/64)	4.5 kg (10 lbs)
54 A...68 A	244 (9-39/64)	290 (11-27/64)	190 (7-31/64)	34 (1-11/32)	90 (3-35/64)	230 (9-1/16)	250 (9-27/32)	20 (51/64)	7 (17/64)	8 (21/64)	6.8 kg (15 lbs)

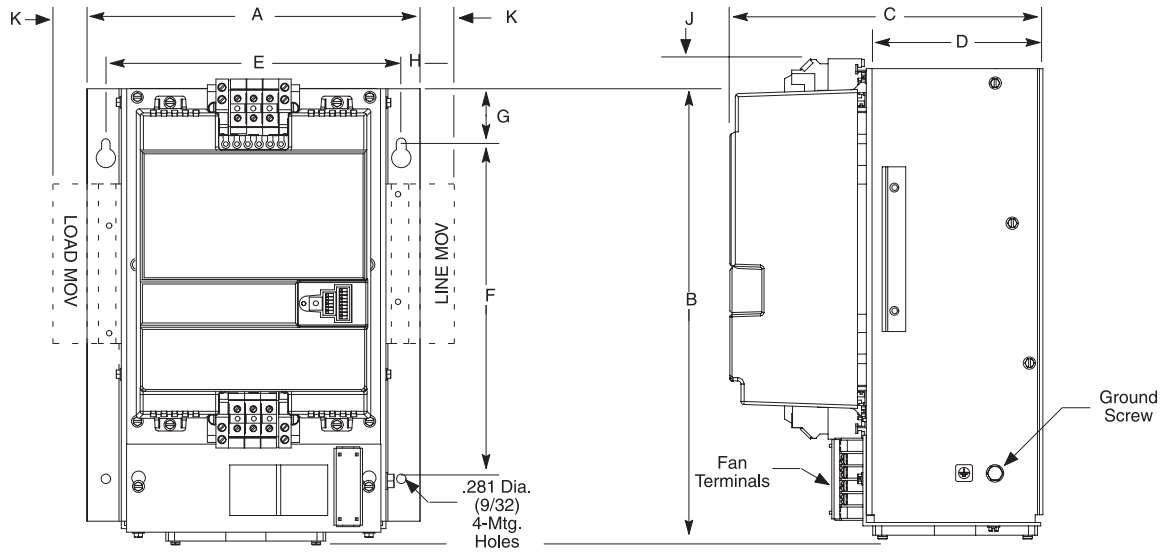


# Smart Motor Controllers — SMC-2™

## Approximate Dimensions, Continued

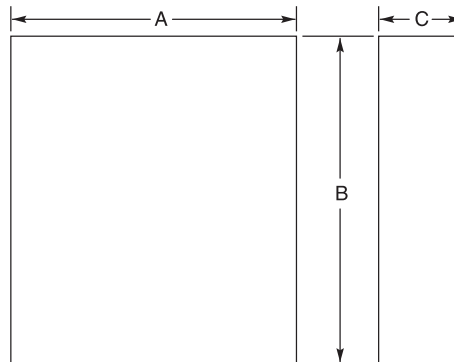
### Open Type, Continued

Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



Controller	A Width	B Height	C Depth	D	E	F	G	H	J	K	Approx. Ship. Wt.
97 A	248 (9-25/32)	336 (13-15/64)	230 (9-3/64)	128 (5-3/64)	220 (8-43/64)	250 (9-55/64)	40 (1-5/8)	14 (35/64)	9.5 (3/8)	25.4 (1)	10.5 kg (23 lbs)

### Enclosed Type\*



Dimension Code	Non-Combination Controllers			Combination Controllers with Fusible Disconnect		
	A Width	B Height	C Depth	A Width	B Height	C Depth
S	154 (6-5/64)	290 (11-27/64)	140 (5-33/64)	400 (16)	350 (14)	210 (8)
T	154 (6-5/64)	290 (11-27/64)	171 (6-47/64)	406 (16)	610 (24)	230 (9)
U	244 (9-39/64)	410 (16-9/64)	218 (8-37/64)	610 (24)	762 (30)	276 (12)
V	610 (24)	762 (30)	276 (12)	762 (30)	965 (38)	302 (14)

\* Any option(s) added to enclosed controllers may change size of enclosure.