ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Rockwell / Allen-Bradley 190E-MND2-CB40S* at our website: *Click HERE*



Bulletin 190 Eco and Compact Combination Starters

- Current range: 0.1...43 A
- Bulletin 190E/191E modular Eco starters
- Bulletin 190S/191S Pre-wired compact starters
- Uses Bulletin 140M motor protection circuit breakers (MPCBs) and Bulletin 100-C or 100-K contactors
- cULus Listed for control and protection of motor loads
- Type 1 or Type 2 Coordination
- Mounts to top hat rail(s) or screw mounts

Your order must include: cat. no. of the starter selected and, if required, cat. no. of any accessories.

Table of Contents

Product Selection 2-358
Factory-Installed Modifications 2-370

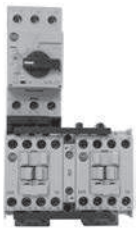
Standards Compliance

IEC/EN 60947-1, -2, -4-1, -5
IEC/EN 60204-1
CSA 22.2, No. 14
UL 508

Certifications

cULus Listed (File No. E125316, Guide NKJH, NKJH7)
CE Marked

2

							
	Eco Starter with 100-K Miniature Contactor	**Eco Starter with 100-C IEC Contactor**	**Reversing Eco Starter with 100-K Miniature Contactor**	**Reversing Eco Starter with 100-C IEC Contactor**	**Compact Combination Starter (25 A)**	**Compact Combination Starter (45 A)**	**Reversing Compact Combination Starter (25 A)**
AC Coils	✓	✓	✓	✓	✓	✓	✓
DC Coils	✓	24V DC only	✓	24V DC only	✓	✓	24V DC only
Standards Compliance	See this page						
cULus Listed							
CE	✓	✓	✓	✓	✓	✓	✓
IEC 60947	✓	✓	✓	✓	✓	✓	✓
Type 2 Coordination	See pages 2-362 and page 2-368						
Components	140M-C	140M-C,-D	140M-C	140M-C,-D	140M-C,-D	140M-F	140M-C,-D
MPCB							
Contactor	100-K	100-C	104-K	104-C	100-C	100-C	104-C

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Cat. No. Explanation

Examples given in this section are for reference purposes. This basic explanation should not be used for product selection; not all combinations will produce a valid catalog number.

190E	–	A	N	D	2	–	C	A16	X	–	TE
a		*b*	*c*	*d*	*e*		*f*	*g*	*h*		*i*

a

Bulletin Number	
Starter Type	
Code	Description
190E	DOL Starter with MPCB
191E	Rev Starter with MPCB

b

Contactor Size	
Code	Description
A	100-C09
B	100-C12
C	100-C16
D	100-C23
KM	100-K05
KN	100-K09
KP	100-K12

c

Style	
Code	Description
N	Open Style — 35 mm top hat rail mount (1)

d

AC Coil Voltages for Contactor Size A-D	
Code	Description
Q	12V AC, 60 Hz
R	12V AC, 50 Hz
J	24V AC, 60 Hz
K	24V AC, 50 Hz
KJ	24V AC, 50/60 Hz
V	32V AC, 50 Hz/36V AC, 60 Hz
W	36V AC, 50 Hz
X	42V AC, 50 Hz/48V AC, 60 Hz
Y	48V AC, 50 Hz
KY	48V AC, 50/60 Hz
KP	100V AC, 50 Hz/100...110V AC, 60 Hz
D	110V AC, 50 Hz/120V AC, 60 Hz
KD	100V AC, 50/60 Hz
P	120V AC, 50 Hz
KL	200...230V AC, 50/60 Hz
H	208V AC, 60 Hz
L	208...240V AC, 60 Hz
A	220V AC, 50 Hz /240V AC, 60 Hz
F	220...230V AC, 50 Hz
KF	230V AC, 50/60 Hz
VA	230...240V AC, 50 Hz
T	240V AC, 50 Hz/277V AC, 60 Hz
E	380V AC, 60 Hz
N	380...400V AC, 50 Hz/440V AC, 60 Hz
KN	400V AC, 50/60 Hz
G	400...415V AC, 50 Hz
B	440V AC, 50 Hz/480V AC, 60 Hz
M	500V AC, 50 Hz
C	550V AC, 50 Hz/600V AC, 60 Hz

d, continued

DC Coil Voltages for Contactor Size A...D	
Code	Description
EJ	24V DC electronic
AC Coil Voltages for Contactor Size KM...KP	
Code	Description
KJ	24V AC, 50/60 Hz
D	110V AC, 50 Hz/120V AC, 60 Hz
KF	230V AC, 50/60 Hz
KA	240V AC, 50/60 Hz
KN	400V AC, 50/60 Hz
B	440V AC, 50 Hz/480V AC, 60 Hz
VC	525V AC, 50 Hz/600V AC, 60 Hz
DC Coil Voltage for Contactor Sizes KM...KP	
Code	Description
ZQ	12V DC
ZJ	24V DC
DJ	24V DC with integrated diode
ZD	110V DC
ZS	125V DC
ZA	220V DC
ZT	250V DC

e

Contactor Aux. Contacts	
Code	Description
1	1 N.C. (190E, or 191E-KM...KP)
2	1 N.O. (190E, or 191E-KM...KP)
3	1 N.O. + 1 N.C. (191E-A...D)

f

Circuit Breaker Frame Size	
Code	Description
C	C Frame
D	D Frame

g

Circuit Breaker Current Range	
Code	Description
A16	0.1...0.16 A
A25	0.16...0.25 A
A40	0.25...0.4 A
A63	0.4...0.63 A
B10	0.63...1.0 A
B16	1.0...1.6 A
B25	1.6...2.5 A
B40	2.5...4.0 A
B63	4.0...6.3 A
C10	6.3...10 A
C16	10...16 A
C20	16...20 A
C25	20...25 A

h

Circuit Breaker Aux. and Trip Contacts for 140M	
Bottom Front	
Code	Description
X	Without Aux. Trip Contacts
A	1 N.C. Aux. Contact
B	1 N.O. Aux. Contact
C	1 N.O. + 1 N.C. Aux. Contact
D	2 N.O. Aux. Contact
R	1 N.O. (SC+OL) + 1 N.C. Aux. Contact
S	1 N.O. (SC+OL) + 1 N.O. Aux. Contact

i

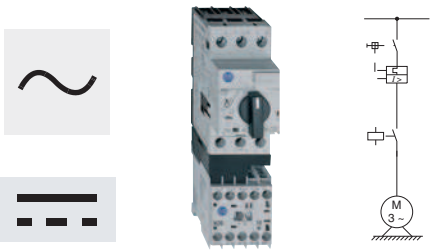
Modifications, Accessories	
Circuit Breaker Accessories	
Code	Description
TE	Spacing Adapter
KN	Lockable Twist Knob, Black
KY	Lockable Twist Knob, Red/Yellow
Additional CB Auxiliaries (Side Mount)	
Code	Description
A02	2 N.C.
A20	2 N.O.
A11	1 N.O. + 1 N.C.
Additional CB Trip Contacts (Side Mount)	
Code	Description
R00	1 N.O. Thermal-Mag + 1 N.O. Mag Only
R01	1 N.O. Thermal-Mag + 1 N.C. Mag Only
R10	1 N.C. Thermal-Mag + 1 N.O. Mag Only
R11	1 N.C. Thermal-Mag + 1 N.C. Mag Only
M11	1 N.O. Mag Only + 1 N.C. Mag Only
Coil Accessories	
Code	Description
JE	Electronic Interface(s)
D	Surge Suppressor Diode
R	Surge Suppressor RC
V	Surge Suppressor Varistor
Additional Contactor Auxiliaries (Side Mount)	
Code	Description
S01	1 N.C.
S10	1 N.O.
S11	1 N.O. + 1 N.C.
S20	2 N.O.
Additional Contactor Auxiliaries (Front Mount)	
Code	Description
F11	1 N.O. + 1 N.C.
F20	2 N.O.
F22	2 N.O. + 2 N.C.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Bulletin 190E Direct On-Line Eco Starters

Note: Verify that the motor protection circuit breaker can be set to the rated motor current!

- 190E/191E Modular Eco Starter using Bulletin 140M Motor Protection Circuit Breaker and Bulletin 100-K/104-K Mini Contactors and Bulletin 100-C/104-C MCS Contactors
- Mounting Options:
  Snap Fixing on (1) 35 mm top hat rail



Group Motor, Type E and Type F Combination Motor Controllers (UL/CSA)

The 190E/191E motor controllers can be used in a variety of applications. These starters can be used in a group motor application or as a stand-alone product without any additional short-circuit protection in the motor branch circuits.

Most of the 140M-C/D motor protection circuit breakers used in the 190E/191E starters are UL Listed as a manual Type E self-protected combination motor controller. Although there are many tests involved, one of the critical tests a self-protected combination motor controller must pass is to perform 6000 electrical ops. and an additional 4000 mechanical ops. after a short circuit.

By definition, a Type F combination motor controller consists of a Type E manual self protected combination motor controller and a magnetic or solid-state motor controller (such as a 100-C contactor or an SMC). As with a manual Type E self-protected combination motor controller, additional short-circuit protection is not required for the individual motor circuits.

A combination of a 140M manual self protected combination motor controller and 100-C contactor can be listed as a Type E self-protected combination motor controller. In this case, the 140M and 100-C must pass the additional 6000 electrical and 4000 mechanical operational test. In some cases, this may require over sizing of the 140M motor protection circuit breaker or the 100-C contactor to achieve weld-free performance and meet the additional life requirements.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

UL/CSA in Group Motor Installations

Motor Current Adjustment Range [A]	UL/CSA Hp Ratings (60 Hz)				Max. Fuse or Circuit Breaker per NEC [A]	Max. Short-Circuit Current [kA]				DOL Starter	Reversing Starter
	Hp Ratings as a UL508 Motor Controller in Group Motor Installations♣					Type 1 Coordination		Type 2 Coordination			
	200V	230V	460V	575V		480V	600V	480V	600V	Cat. No.	Cat. No.
C-Frame with 100-K/104-K Mini Contactors											
0.10…0.16	—	—	—	—	450	65	47	65	—	190E-KMN⊗2-CA16X	191E-KMN⊗1-CA16X
0.16…0.25	—	—	—	—	450	65	47	65	—	190E-KMN⊗2-CA25X	191E-KMN⊗1-CA25X
0.25…0.40	—	—	—	—	450	65	47	65	—	190E-KMN⊗2-CA40X	191E-KMN⊗1-CA40X
0.40…0.63	—	—	—	—	450	65	47	65	—	190E-KMN⊗2-CA63X	191E-KMN⊗1-CA63X
0.63…1.00	—	—	1/2	3/4	450	65	47	65	—	190E-KMN⊗2-CB10X	191E-KMN⊗1-CB10X
1.00…1.60	—	—	1/2…1	3/4…1	450	65	47	65	—	190E-KMN⊗2-CB16X	191E-KMN⊗1-CB16X
1.60…2.50	1/2	1/2…3/4	3/4…1-1/2	1…2	450	65	30	—	—	190E-KMN⊗2-CB25X	191E-KMN⊗1-CB25X
2.50…4.00	1/2…1	3/4…1	1-1/2…3	2…3	450	65	30	—	—	190E-KMN⊗2-CB40X	191E-KMN⊗1-CB40X
4.00…6.30	1…1-1/2	1…2	3…5	5	450	65	30	—	—	190E-KNN⊗2-CB63X	191E-KNN⊗1-CB63X
6.30…9.00	1-1/2…2	2	5	5	450	65	30	—	—	190E-KNN⊗2-CC10X	191E-KNN⊗1-CC10X
6.30…10.0	1-1/2…3	2…3	5…7-1/2	7-1/2	450	65	30	—	—	190E-KPN⊗2-CC10X	191E-KPN⊗1-CC10X
10.0…11.0	3	3	7-1/2	7-1/2	450	30	30	—	—	190E-KPN⊗2-CC16X	191E-KPN⊗1-CC16X
C-Frame with 100-C/104-C Contactors											
0.10…0.16	—	—	—	—	450	65	47	65	47	**190E-AN⊗2-CA16X**	**191E-AN⊗3-CA16X**
0.16…0.25	—	—	—	—	450	65	47	65	47	**190E-AN⊗2-CA25X**	**191E-AN⊗3-CA25X**
0.25…0.40	—	—	—	—	450	65	47	65	47	**190E-AN⊗2-CA40X**	**191E-AN⊗3-CA40X**
0.40…0.63	—	—	—	—	450	65	47	65	47	**190E-AN⊗2-CA63X**	**191E-AN⊗3-CA63X**
0.63…1.00	—	—	1/2	3/4	450	65	47	65	47	**190E-AN⊗2-CB10X**	**191E-AN⊗3-CB10X**
1.00…1.60	—	—	1/2…1	3/4...1	450	65	47	65	47	**190E-AN⊗2-CB16X**	**191E-AN⊗3-CB16X**
1.60…2.50	1/2	1/2...3/4	3/4…1-1/2	1…2	450	65	30	65	10	**190E-AN⊗2-CB25X**	**191E-AN⊗3-CB25X**
2.50…4.00	1/2…1	3/4...1	1-1/2…3	2…3	450	65	30	50	—	**190E-AN⊗2-CB40X**	**191E-AN⊗3-CB40X**
4.00…6.30	1...1-1/2	1…2	3...5	5	450	65	30	50	—	**190E-AN⊗2-CB63X**	**191E-AN⊗3-CB63X**
6.30…9.00	1-1/2…2	2	5	7-1/2	450	65	30	50	—	**190E-AN⊗2-CC10X**	**191E-AN⊗3-CC10X**
6.30…10.0	1-1/2…3	2...3	5...7-1/2	7-1/2...10	450	65	30	50	—	**190E-BN⊗2-CC10X**	**191E-BN⊗3-CC10X**
10.0…12.0	3	3	7-1/2	10	450	30	30	—	—	**190E-BN⊗2-CC16X**	**191E-BN⊗3-CC16X**
10.0…16.0	3...5	5	7-1/2…10	10...15	450	30	30	—	—	**190E-DN⊗2-CC16X**	**191E-DN⊗3-CC16X**
14.5…20.0	5	5...7-1/2	15	15	450	30	30	—	—	**190E-DN⊗2-CC20X**	**191E-DN⊗3-CC20X**
18.0…23.0	5	7-1/2	15	15	450	30	30	—	—	**190E-DN⊗2-CC25X**	**191E-DN⊗3-CC25X**
D-Frame with 100-C/104-C Contactors											
1.60…2.50	1/2	1/2...3/4	3/4…1-1/2	1…2	450	65	30	65	10	**190E-AN⊗2-DB25X**	**191E-AN⊗3-DB25X**
1.60…2.50	1/2	1/2...3/4	3/4…1-1/2	1…2	450	65	30	65	30	**190E-DN⊗2-DB25X**	**191E-DN⊗3-DB25X**
2.50…4.00	1/2…1	3/4...1	1-1/2…3	2…3	450	65	30	65	—	**190E-AN⊗2-DB40X**	**191E-AN⊗3-DB40X**
2.50…4.00	1/2…1	3/4...1	1-1/2…3	2…3	450	65	30	65	30	**190E-DN⊗2-DB40X**	**191E-DN⊗3-DB40X**
4.00…6.30	1…1-1/2	1…2	3…5	5	450	65	30	65	—	**190E-AN⊗2-DB63X**	**191E-AN⊗3-DB63X**
6.30…9.00	1-1/2…2	2	5	7-1/2	450	65	30	65	—	**190E-AN⊗2-DC10X**	**191E-AN⊗3-DC10X**
6.30…10.0	1-1/2…3	2...3	5…7-1/2	7-1/2…10	450	65	30	65	—	**190E-BN⊗2-DC10X**	**191E-BN⊗3-DC10X**
6.30…10.0	1-1/2…3	2...3	5…7-1/2	7-1/2…10	450	65	30	65	—	**190E-CN⊗2-DC10X**	**191E-CN⊗3-DC10X**
10.0…12.0	3	3	7-1/2	10	450	65	30	65	—	**190E-BN⊗2-DC16X**	**191E-BN⊗3-DC16X**
10.0…16.0	3…5	5	7-1/2…10	10	450	65	30	65	—	**190E-CN⊗2-DC16X**	**191E-CN⊗3-DC16X**
10.0…16.0	3…5	5	7-1/2…10	10…15	450	65	30	65	—	**190E-DN⊗2-DC16X**	**191E-DN⊗3-DC16X**
14.5…20.0	5	5...7-1/2	15	15	450	65	30	65	—	**190E-DN⊗2-DC20X**	**191E-DN⊗3-DC20X**
18.0…23.0	5	7-1/2	15	15	450	65	30	65	—	**190E-DN⊗2-DC25X**	**191E-DN⊗3-DC25X**

♣ Hp ratings shown in the table are for reference. Final selection of the starter depends upon the actual motor full-load current.

⊗Coil voltage code—see page 2-363

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

UL/CSA as a UL508 Type F Combination Motor Controller

Motor Current Adjustment Range [A]	UL/CSA Hp Ratings (60 Hz)				Max. Short-Circuit Current [kA]				DOL Starter	Reversing Starter
	Hp Ratings as a UL508 Type F Combination Motor Controller♣				Type 1 Coordination		Type 2 Coordination			
	200V	230V	460V	575V	480Y/277V	600Y/347V	480Y/277V	600Y/347V	Cat. No.	Cat. No.
C-Frame with Bulletin 100-K/104-K Mini Contactors										
0.10…0.16	—	—	—	—	65	47	65	—	190E-KMN⊗2-CA16X-TE	191E-KMN⊗1-CA16X-TE
0.16…0.25	—	—	—	—	65	47	65	—	190E-KMN⊗2-CA25X-TE	191E-KMN⊗1-CA25X-TE
0.25…0.40	—	—	—	—	65	47	65	—	190E-KMN⊗2-CA40X-TE	191E-KMN⊗1-CA40X-TE
0.40…0.63	—	—	—	—	65	47	65	—	190E-KMN⊗2-CA63X-TE	191E-KMN⊗1-CA63X-TE
0.63…1.00	—	—	1/2	3/4	65	47	65	—	190E-KMN⊗2-CB10X-TE	191E-KMN⊗1-CB10X-TE
1.00…1.60	—	—	1/2…1	3/4…1	65	47	65	—	190E-KMN⊗2-CB16X-TE	191E-KMN⊗1-CB16X-TE
1.60…2.50	1/2	1/2…3/4	3/4…1-1/2	3/4...2	65	30	—	—	190E-KMN⊗2-CB25X-TE	191E-KMN⊗1-CB25X-TE
2.50…4.00	1/2…1	3/4…1	1-1/2…3	2…3	65	30	—	—	190E-KMN⊗2-CB40X-TE	191E-KMN⊗1-CB40X-TE
4.00…6.30	1…1-1/2	1…2	3…5	—	65	❖	—	❖	190E-KNN⊗2-CB63X-TE	191E-KNN⊗1-CB63X-TE
6.30…9.00	1-1/2…2	2	5	—	65	❖	—	❖	190E-KNN⊗2-CC10X-TE	191E-KNN⊗1-CC10X-TE
6.30…10.0	1-1/2…3	2...3	5…7-1/2	—	65	❖	—	❖	190E-KPN⊗2-CC10X-TE	191E-KPN⊗1-CC10X-TE
10.0…11.0	3	3	7-1/2	—	30	❖	—	❖	190E-KPN⊗2-CC16X-TE	191E-KPN⊗1-CC16X-TE
C-Frame with Bulletin 100-C/104-C Contactors										
0.10…0.16	—	—	—	—	65	47	65	47	**190E-AN⊗2-CA16X-TE**	**191E-AN⊗3-CA16X-TE**
0.16…0.25	—	—	—	—	65	47	65	47	**190E-AN⊗2-CA25X-TE**	**191E-AN⊗3-CA25X-TE**
0.25…0.40	—	—	—	—	65	47	65	47	**190E-AN⊗2-CA40X-TE**	**191E-AN⊗3-CA40X-TE**
0.40…0.63	—	—	—	—	65	47	65	47	**190E-AN⊗2-CA63X-TE**	**191E-AN⊗3-CA63X-TE**
0.63…1.00	—	—	1/2	3/4	65	47	65	47	**190E-AN⊗2-CB10X-TE**	**191E-AN⊗3-CB10X-TE**
1.00…1.60	—	—	1/2…1	3/4...1	65	47	65	47	**190E-AN⊗2-CB16X-TE**	**191E-AN⊗3-CB16X-TE**
1.60…2.50	1/2	1/2...3/4	3/4…1-1/2	1…2	65	30	65	10	**190E-AN⊗2-CB25X-TE**	**191E-AN⊗3-CB25X-TE**
2.50…4.00	1/2…1	3/4...1	1-1/2…3	2…3	65	30	—	—	**190E-AN⊗2-CB40X-TE**	**191E-AN⊗3-CB40X-TE**
4.00…6.30	1...1-1/2	1…2	3...5	—	65	❖	—	❖	**190E-AN⊗2-CB63X-TE**	**191E-AN⊗3-CB63X-TE**
6.30…9.00	1-1/2…2	2	5	—	65	❖	—	❖	**190E-AN⊗2-CC10X-TE**	**191E-AN⊗3-CC10X-TE**
6.30…10.0	1-1/2…3	2...3	5...7-1/2	—	65	❖	—	❖	**190E-BN⊗2-CC10X-TE**	**191E-BN⊗3-CC10X-TE**
10.0…12.0	3	3	7-1/2	—	30	❖	—	❖	**190E-BN⊗2-CC16X-TE**	**191E-BN⊗3-CC16X-TE**
10.0…16.0	3...5	5	7-1/2…10	—	30	❖	—	❖	**190E-CN⊗2-CC16X-TE**	**191E-CN⊗3-CC16X-TE**
10.0…16.0	3...5	5	7-1/2…10	—	30	❖	—	❖	**190E-DN⊗2-CC16X-TE**	**191E-DN⊗3-CC16X-TE**
14.5…20.0	5	5...7-1/2	15	—	10	❖	—	❖	**190E-DN⊗2-CC20X-TE**	**191E-DN⊗3-CC20X-TE**
18.0…23.0	—	—	—	—	❖	❖	❖	❖	**190E-DN⊗2-CC25X-TE**	**191E-DN⊗3-CC25X-TE**
D-Frame with Bulletin 100-C/104-C Contactors										
1.60…2.50	1/2	1/2...3/4	3/4…1-1/2	1…2	65	30	65	10	**190E-AN⊗2-DB25X-TE**	**191E-AN⊗3-DB25X-TE**
1.60…2.50	1/2	1/2...3/4	3/4…1-1/2	1…2	65	30	65	30	**190E-DN⊗2-DB25X-TE**	**191E-DN⊗3-DB25X-TE**
2.50…4.00	1/2…1	3/4...1	1-1/2…3	2…3	65	30	65	—	**190E-AN⊗2-DB40X-TE**	**191E-AN⊗3-DB40X-TE**
2.50…4.00	1/2…1	3/4...1	1-1/2…3	2…3	65	30	65	30	**190E-DN⊗2-DB40X-TE**	**191E-DN⊗3-DB40X-TE**
4.00…6.30	1…1-1/2	1…2	3…5	5	65	30	65	—	**190E-AN⊗2-DB63X-TE**	**191E-AN⊗3-DB63X-TE**
6.30…9.00	1-1/2…2	2	5	7-1/2	65	30	65	—	**190E-AN⊗2-DC10X-TE**	**191E-AN⊗3-DC10X-TE**
6.30…10.0	1-1/2…3	2...3	5…7-1/2	7-1/2…10	65	30	65	—	**190E-BN⊗2-DC10X-TE**	**191E-BN⊗3-DC10X-TE**
6.30…10.0	1-1/2…3	2...3	5…7-1/2	7-1/2…10	65	30	65	—	**190E-CN⊗2-DC10X-TE**	**191E-CN⊗3-DC10X-TE**
10.0…12.0	3	3	7-1/2	10	65	30	65	—	**190E-BN⊗2-DC16X-TE**	**191E-BN⊗3-DC16X-TE**
10.0…16.0	3…5	5	7-1/2…10	10	65	30	65	—	**190E-CN⊗2-DC16X-TE**	**191E-CN⊗3-DC16X-TE**
10.0…16.0	3…5	5	7-1/2…10	10…15	65	30	65	—	**190E-DN⊗2-DC16X-TE**	**191E-DN⊗3-DC16X-TE**
14.5…20.0	5	5...7-1/2	15	—	65	❖	65	❖	**190E-DN⊗2-DC20X-TE**	**191E-DN⊗3-DC20X-TE**
18.0…23.0	5	7-1/2	15	—	65	❖	65	❖	**190E-DN⊗2-DC25X-TE**	**191E-DN⊗3-DC25X-TE**

♣ Hp ratings shown in the table are for reference. Final selection of the starter depends upon the actual motor full-load current.
❖ This starter is not valid for application at this horsepower and voltage.

⊗Coil voltage code—see page 2-363

Allen-Bradley
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

UL/CSA as a UL508 Self-Protected Type E Combination Motor Controller

Motor Current Adjustment Range [A]	UL/CSA Hp Ratings (60 Hz) Hp Ratings as a UL508 Self-Protected Type E Combination Motor Controller♣				Max. Short-Circuit Current [kA]		DOL Starter	Reversing Starter
	200V	230V	460V	575V	480Y/277V	600Y/347V	Cat. No.	Cat. No.
C-Frame with Bulletin 100-K/104-K Mini Contactors								
0.10…0.16	—	—	—	—	❖	❖	190E-KMN⊗2-CA16X-TE	191E-KMN⊗1-CA16X-TE
0.16…0.25	—	—	—	—	❖	❖	190E-KMN⊗2-CA25X-TE	191E-KMN⊗1-CA25X-TE
0.25…0.40	—	—	—	—	❖	❖	190E-KMN⊗2-CA40X-TE	191E-KMN⊗1-CA40X-TE
0.40…0.63	—	—	—	—	❖	❖	190E-KMN⊗2-CA63X-TE	191E-KMN⊗1-CA63X-TE
0.63…1.00	—	—	—	—	❖	❖	190E-KMN⊗2-CB10X-TE	191E-KMN⊗1-CB10X-TE
1.00…1.60	—	—	—	—	❖	❖	190E-KMN⊗2-CB16X-TE	191E-KMN⊗1-CB16X-TE
1.60…2.50	—	—	—	—	❖	❖	190E-KMN⊗2-CB25X-TE	191E-KMN⊗1-CB25X-TE
2.50…4.00	—	—	—	—	❖	❖	190E-KMN⊗2-CB40X-TE	191E-KMN⊗1-CB40X-TE
4.00…6.30	—	—	—	—	❖	❖	190E-KNN⊗2-CB63X-TE	191E-KNN⊗1-CB63X-TE
6.30…9.00	—	—	—	—	❖	❖	190E-KNN⊗2-CC10X-TE	191E-KNN⊗1-CC10X-TE
6.30…10.0	—	—	—	—	❖	❖	190E-KPN⊗2-CC10X-TE	191E-KPN⊗1-CC10X-TE
10.0…11.0	—	—	—	—	❖	❖	190E-KPN⊗2-CC16X-TE	191E-KPN⊗1-CC16X-TE
C-Frame with Bulletin 100-C/104-C Contactors								
0.10…0.16	—	—	—	—	65	47	**190E-AN⊗2-CA16X-TE**	**191E-AN⊗3-CA16X-TE**
0.16…0.25	—	—	—	—	65	47	**190E-AN⊗2-CA25X-TE**	**191E-AN⊗3-CA25X-TE**
0.25…0.40	—	—	—	—	65	47	**190E-AN⊗2-CA40X-TE**	**191E-AN⊗3-CA40X-TE**
0.40…0.63	—	—	—	—	65	47	**190E-AN⊗2-CA63X-TE**	**191E-AN⊗3-CA63X-TE**
0.63…1.00	—	—	1/2	3/4	65	47	**190E-AN⊗2-CB10X-TE**	**191E-AN⊗3-CB10X-TE**
1.00…1.60	—	—	1/2…1	3/4...1	65	47	**190E-AN⊗2-CB16X-TE**	**191E-AN⊗3-CB16X-TE**
1.60…2.50	1/2	1/2...3/4	3/4…1-1/2	—	65	❖	**190E-AN⊗2-CB25X-TE**	**191E-AN⊗3-CB25X-TE**
2.50…4.00	—	—	—	—	❖	❖	**190E-AN⊗2-CB40X-TE**	**191E-AN⊗3-CB40X-TE**
4.00…6.30	—	—	—	—	❖	❖	**190E-AN⊗2-CB63X-TE**	**191E-AN⊗3-CB63X-TE**
6.30…9.00	—	—	—	—	❖	❖	**190E-AN⊗2-CC10X-TE**	**191E-AN⊗3-CC10X-TE**
6.30…10.0	—	—	—	—	❖	❖	**190E-BN⊗2-CC10X-TE**	**191E-BN⊗3-CC10X-TE**
10.0…12.0	—	—	—	—	❖	❖	**190E-BN⊗2-CC16X-TE**	**191E-BN⊗3-CC16X-TE**
10.0…16.0	—	—	—	—	❖	❖	**190E-CN⊗2-CC16X-TE**	**191E-CN⊗3-CC16X-TE**
10.0…16.0	—	—	—	—	❖	❖	**190E-DN⊗2-CC16X-TE**	**191E-DN⊗3-CC16X-TE**
14.5…20.0	—	—	—	—	❖	❖	**190E-DN⊗2-CC20X-TE**	**191E-DN⊗3-CC20X-TE**
18.0…23.0	—	—	—	—	❖	❖	**190E-DN⊗2-CC25X-TE**	**191E-DN⊗3-CC25X-TE**
D-Frame with Bulletin 100-C/104-C Contactors								
1.60…2.50	1/2	1/2...3/4	3/4…1-1/2	—	65	❖	**190E-AN⊗2-DB25X-TE**	**191E-AN⊗3-DB25X-TE**
1.60…2.50	1/2	1/2...3/4	3/4…1-1/2	1…2	65	30	**190E-DN⊗2-DB25X-TE**	**191E-DN⊗3-DB25X-TE**
2.50…4.00	—	—	—	—	❖	❖	**190E-AN⊗2-DB40X-TE**	**191E-AN⊗3-DB40X-TE**
2.50…4.00	1/2…1	3/4...1	1-1/2…3	2…3	65	30	**190E-DN⊗2-DB40X-TE**	**191E-DN⊗3-DB40X-TE**
4.00…6.30	—	—	—	—	❖	❖	**190E-AN⊗2-DB63X-TE**	**191E-AN⊗3-DB63X-TE**
6.30…9.00	—	—	—	—	❖	❖	**190E-AN⊗2-DC10X-TE**	**191E-AN⊗3-DC10X-TE**
6.30…10.0	—	—	—	—	❖	❖	**190E-BN⊗2-DC10X-TE**	**191E-BN⊗3-DC10X-TE**
6.30…10.0	—	—	—	—	❖	❖	**190E-CN⊗2-DC10X-TE**	**191E-CN⊗3-DC10X-TE**
10.0…12.0	—	—	—	—	❖	❖	**190E-BN⊗2-DC16X-TE**	**191E-BN⊗3-DC16X-TE**
10.0…16.0	—	—	—	—	❖	❖	**190E-CN⊗2-DC16X-TE**	**191E-CN⊗3-DC16X-TE**
10.0…16.0	—	—	—	—	❖	❖	**190E-DN⊗2-DC16X-TE**	**191E-DN⊗3-DC16X-TE**
14.5…20.0	—	—	—	—	❖	❖	**190E-DN⊗2-DC20X-TE**	**191E-DN⊗3-DC20X-TE**
18.0…23.0	—	—	—	—	❖	❖	**190E-DN⊗2-DC25X-TE**	**191E-DN⊗3-DC25X-TE**

♣ Hp ratings shown in the table are for reference. Final selection of the starter depends upon the actual motor full-load current.
❖ This starter is not valid for application at this horsepower and voltage.

⊗Coil voltage code—see page 2-363

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

2

IEC Type 1 and Type 2 Short-Circuit Coordination

Motor Current Adjustment Range [A]	IEC kW Ratings for Standard Motors, 1500 rpm Max. kW, 50 Hz♣				Max. Short-Circuit Current [kA] Type 1 Coordination				Max. Short-Circuit Current [kA] Type 2 Coordination				DOL Starter	Reversing Starter
	230V	400V	500V	690V	230V	400V	500V	690V	230V	400V	500V	690V	Cat. No.	Cat. No.
C-Frame with Bulletin 100-K/104-K Mini Contactors														
0.10…0.16	—	0.02	—	—	100	65	65	65	65	65	—	—	190E-KMN⊗2-CA16X	191E-KMN⊗1-CA16X
0.16…0.25	0.02	0.06	0.06	—	100	65	65	65	65	65	—	—	190E-KMN⊗2-CA25X	191E-KMN⊗1-CA25X
0.25…0.40	0.06	0.09	0.12	—	100	65	65	65	65	65	—	—	190E-KMN⊗2-CA40X	191E-KMN⊗1-CA40X
0.40…0.63	0.09	0.18	0.18	—	100	65	65	65	65	65	—	—	190E-KMN⊗2-CA63X	191E-KMN⊗1-CA63X
0.63…1.00	0.12	0.25	0.37	—	100	65	65	65	65	65	—	—	190E-KMN⊗2-CB10X	191E-KMN⊗1-CB10X
1.00…1.60	0.25	0.55	0.75	—	100	65	65	10	65	65	—	—	190E-KMN⊗2-CB16X	191E-KMN⊗1-CB16X
1.60…2.50	0.55	0.75	1.1	—	100	65	65	8	50	50	—	—	190E-KMN⊗2-CB25X	191E-KMN⊗1-CB25X
2.50…4.00	0.75	1.5	2.2	—	100	65	65	8	—	—	—	—	190E-KMN⊗2-CB40X	191E-KMN⊗1-CB40X
4.00…6.30	1.5	2.2	2.2	—	100	65	65	4	—	—	—	—	190E-KNN⊗2-CB63X	191E-KNN⊗1-CB63X
6.30…9.00	2.2	4	4	—	100	65	65	4	—	—	—	—	190E-KNN⊗2-CC10X	191E-KNN⊗1-CC10X
6.30…10.0	2.2	4	4	—	100	65	65	4	—	—	—	—	190E-KPN⊗2-CC10X	191E-KPN⊗1-CC10X
10.0…11.0	4	5.5	—	—	100	50	50	3	—	—	—	—	190E-KPN⊗2-CC16X	191E-KPN⊗1-CC16X
C-Frame with Bulletin 100-C/104-C Contactors														
0.10…0.16	—	—	0.06	0.06	100	100	65	50	100	100	65	50	**190E-AN⊗2-CA16X**	**191E-AN⊗3-CA16X**
0.16…0.25	0.02	0.06	0.06	0.12	100	100	65	50	100	100	65	50	**190E-AN⊗2-CA25X**	**191E-AN⊗3-CA25X**
0.25…0.40	0.06	0.09	0.12	0.18	100	100	65	50	100	100	65	50	**190E-AN⊗2-CA40X**	**191E-AN⊗3-CA40X**
0.40…0.63	0.09	0.18	0.18	0.37	100	100	65	50	100	100	65	50	**190E-AN⊗2-CA63X**	**191E-AN⊗3-CA63X**
0.63…1.00	0.12	0.25	0.37	0.55	100	100	65	50	100	100	65	50	**190E-AN⊗2-CB10X**	**191E-AN⊗3-CB10X**
1.00…1.60	0.25	0.55	0.75	1.1	100	100	65	50	100	100	65	50	**190E-AN⊗2-CB16X**	**191E-AN⊗3-CB16X**
1.60…2.50	0.55	0.75	1.1	1.8	100	65	50	8	65	50	50	8	**190E-AN⊗2-CB25X**	**191E-AN⊗3-CB25X**
2.50…4.00	0.75	1.5	2.2	3	100	50	50	8	50	50	—	—	**190E-AN⊗2-CB40X**	**191E-AN⊗3-CB40X**
4.00…6.30	1.5	2.2	3	4	100	50	50	4	50	50	—	—	**190E-AN⊗2-CB63X**	**191E-AN⊗3-CB63X**
6.30…9.00	2.2	4	4	—	100	65	50	—	50	50	—	—	**190E-AN⊗2-CC10X**	**191E-AN⊗3-CC10X**
6.30…10.0	2.2	4	5.5	5.5	100	65	50	4	50	50	50	—	**190E-BN⊗2-CC10X**	**191E-BN⊗3-CC10X**
6.30…10.0	2.2	4	5.5	7.5	100	65	50	4	50	50	50	—	**190E-CN⊗2-CC10X**	**191E-CN⊗3-CC10X**
10.0…12.0	4	5.5	—	—	100	65	—	—	50	50	—	—	**190E-BN⊗2-CC16X**	**191E-BN⊗3-CC16X**
10.0…16.0	4	7.5	7.5	—	100	50	10	—	50	—	—	—	**190E-CN⊗2-CC16X**	**191E-CN⊗3-CC16X**
10.0…16.0	4	7.5	10	10	100	50	10	3	50	50	—	—	**190E-DN⊗2-CC16X**	**191E-DN⊗3-CC16X**
14.5…20.0	4	10	11	—	50	15	6	—	15	—	—	—	**190E-DN⊗2-CC20X**	**191E-DN⊗3-CC20X**
18.0…23.0	6.3	11	13	—	50	15	6	—	15	—	—	—	**190E-DN⊗2-CC25X**	**191E-DN⊗3-CC25X**
D-Frame with Bulletin 100-C/104-C Contactors														
1.60…2.50	0.55	0.75	1.1	1.8	100	100	50	10	100	100	50	10	**190E-AN⊗2-DB25X**	**191E-AN⊗3-DB25X**
1.60…2.50	0.55	0.75	1.1	1.8	100	100	50	10	100	100	50	10	**190E-DN⊗2-DB25X**	**191E-DN⊗3-DB25X**
2.50…4.00	0.75	1.5	2.2	3	100	100	50	10	100	100	50	—	**190E-AN⊗2-DB40X**	**191E-AN⊗3-DB40X**
2.50…4.00	0.75	1.5	2.2	3	100	100	50	50	100	100	50	50	**190E-DN⊗2-DB40X**	**191E-DN⊗3-DB40X**
4.00…6.30	1.5	2.2	3	4	100	100	50	50	100	100	50	—	**190E-AN⊗2-DB63X**	**191E-AN⊗3-DB63X**
6.30…9.00	2.2	4	4	—	100	65	50	—	100	65	—	—	**190E-AN⊗2-DC10X**	**191E-AN⊗3-DC10X**
6.30…10.0	2.2	4	5.5	5.5	100	100	65	50	100	100	65	—	**190E-BN⊗2-DC10X**	**191E-BN⊗3-DC10X**
6.30…10.0	2.2	4	5.5	7.5	100	100	65	50	100	100	65	50	**190E-CN⊗2-DC10X**	**191E-CN⊗3-DC10X**
10.0…12.0	4	5.5	—	—	100	65	—	—	65	65	—	—	**190E-BN⊗2-DC16X**	**191E-BN⊗3-DC16X**
10.0…16.0	4	7.5	7.5	—	100	65	50	—	65	65	50	—	**190E-CN⊗2-DC16X**	**191E-CN⊗3-DC16X**
10.0…16.0	4	7.5	10	10	100	65	50	6	65	65	50	—	**190E-DN⊗2-DC16X**	**191E-DN⊗3-DC16X**
14.5…20.0	4	10	11	—	65	65	25	—	65	65	25	—	**190E-DN⊗2-DC20X**	**191E-DN⊗3-DC20X**
18.0…23.0	6.3	11	13	—	65	50	25	—	65	50	25	—	**190E-DN⊗2-DC25X**	**191E-DN⊗3-DC25X**

♣ kW ratings shown in the table are for reference. Final selection of the starter depends upon the actual motor full-load current.

⊗Coil voltage code—see page 2-363

Allen-Bradley
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Bulletin 190E/191E Eco Starters with Bulletin 100-K/104-K Mini Contactors

⊗ Coil Voltage Codes for AC or DC Control

Voltage [V]	24	110	120	230	240	400	480	600
50 Hz	—	D	—	—	—	—	—	—
60 Hz	—	—	D	—	—	—	B	VC
50/60 Hz	KJ	—	—	KF	KA	KN	—	—

Voltage [V]	12	24	110	125	220	250
DC	ZQ	ZJ	ZD	ZS	ZA	ZT
DC w/ Diode	—	DJ	—	—	—	—

Bulletin 190E/191E Eco Starters with Bulletin 100-C/104-C MCS Contactors

⊗ Coil Voltage Codes for AC or DC Control

Voltage [V]	12	24	32	36	42	48	100	100... 110	110	120	127	200	200... 220	200... 230	208	208... 240
50 Hz	R	K	V	W	X	Y	KP	—	D	P	S	KG	L	—	—	—
60 Hz	Q	J	—	V	—	X	—	KP	—	D	—	—	KG	—	H	L
50/60 Hz	—	KJ	—	—	—	KY	KP	—	KD	—	—	KG	—	KL	—	—

Voltage [V]	220... 230	230	230... 240	240	277	347	380	380... 400	400	400... 415	440	480	500	550	600
50 Hz	F	—	VA	T	—	—	—	N	—	G	B	—	M	C	—
60 Hz	—	—	—	A	T	I	E	—	—	—	N	B	—	—	C
50/60 Hz	—	KF	—	KA	—	—	—	—	KN	—	KB	—	—	—	—

Voltage [V]	24
DC	EJ

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Bulletin 190E/191E/190S/191S Factory-Installed Modifications

Note: For modifications change **(option code ∗) and — add** (option code ❄) **for desired features to cat. no.**

∗ Change option code **X** to desired auxiliary contact: 190E-KMND2-CA16**X**

Bulletin 140M Auxiliary and Trip Contacts		190E	191E	190S	191S
X	Without Auxiliary and Trip Contacts	Standard	Standard	NA	NA
A	Auxiliary Contact 1 N.C.	Available	Available	NA	NA
B	Auxiliary Contact 1 N.O.	Available	Available	NA	NA
C	Auxiliary Contact 1 N.O. + 1 N.C.	Available	Available	Standard	Standard
D	Auxiliary Contact 2 N.O.	Available	Available	Available	Available
E	Auxiliary Contact 2 N.C.	Available	Available	Available	Avaiable
R	1 N.O. Trip + 1 N.C. Auxiliary Contact	Available	Available	Available	Available
S	1 N.O. Trip + 1 N.O. Auxiliary Contact	Available	Available	Available	Available

❄ Add desired option codes AFTER auxiliary contact option code: 190S-AND2-CA16X-**KY**

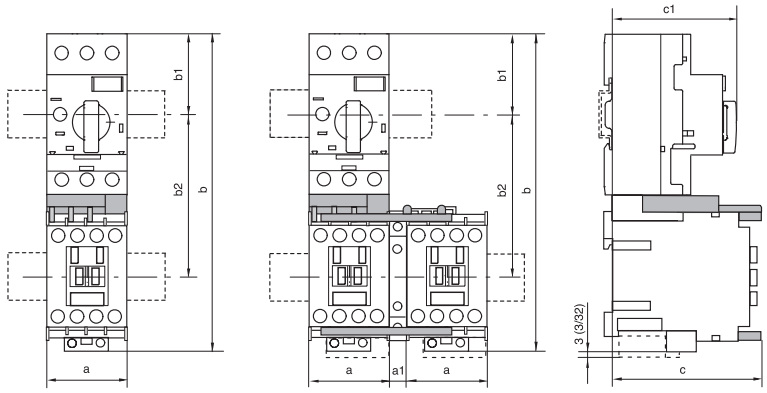
Modifications, Accessories		190E	191E	190S	191S
JE ‡	Electronic Interfaces (100-C)	Available	Available	Available	Available
R ‡	Surge Suppressor RC (100-C)	Available	Available	Available	Available
V ‡	Surge Suppressor Varistor (100-C)	Available	Available	Available	Available
D ‡	Surge Suppressor Diode (100-C)	Available	Available	Available	Available
KN	Lockable Twist Knob (140M) - Black	Available	Available	Available	Available
KY	Lockable Twist Knob (140M) - Red/Yellow	Available	Available	Available	Available
TE	Spacing Adapter for UL508 Type E and Type F	Available	Available	Available	Available
Additional Contactor Auxiliaries (Side Mount) §					
S01 ‡	1 N.C.	Available	Available	Available	Available
S10 ‡	1 N.O.	Available	Available	Available	Available
S11 ‡	1 N.O. + 1 N.C.	Available	Available	Available	Available
S20 ‡	2 N.O.	Available	Available	Available	Available
Additional Contactor Auxiliaries (Front Mount)					
F11 ‡	1 N.O. + 1 N.C.	Available	Available	NA	NA
F20 ‡	2 N.O.	Available	Available	NA	NA
F22 ‡	2 N.O. + 2 N.C.	Available	Available	NA	NA
Additional Bulletin 140M Auxiliaries (Side Mount)					
A02	2 N.C.	Available	Available	Available	Available
A20	2 N.O.	Available	Available	Available	Available
A11	1 N.O. + 1 N.C.	Available	Available	Available	Available
Additional Bulletin 140M Trip Contacts (Side Mount)					
R00	1 N.O. Thermal-Mag + 1 N.O. Mag Only	Available	Available	Available	Available
R01	1 N.O. Thermal-Mag + 1 N.C. Mag Only	Available	Available	Available	Available
R10	1 N.C. Thermal-Mag + 1 N.O. Mag Only	Available	Available	Available	Available
R11	1 N.C. Thermal-Mag + 1 N.C. Mag Only	Available	Available	Available	Available
M11	1 N.O. Mag Only + 1 N.C. Mag Only	Available	Available	Available	Available

‡ 191E and 191S Reversing Eco Starters will have two of these accessories installed (one on each contactor).
§ Not available on 190E/191E Eco starters with 100-K/104-K mini contactors.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

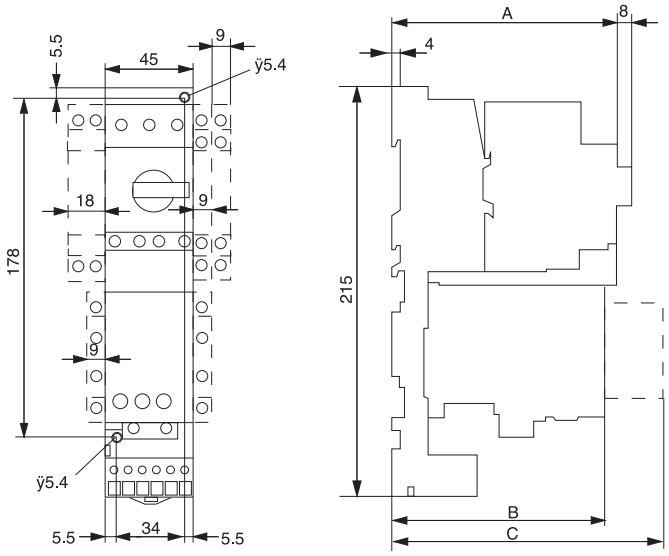
Dimensions are shown in millimeters. Dimensions are not intended to be used for manufacturing purposes.

190E/191E-A…D



Cat. No.	a	a1	b	b1	b2	c	c1
190E Eco Starters							
190E-AN…190E-DN	45 (1-25/32)	0	178 (7)	45 (1-25/32)	—	83.5 (3-19/64)	70 (2-49/64)
191E Reversing Eco Starters							
191E-AN…191E-DN	45 (1-25/32)	9 (23/64)	178 (7)	45 (1-25/32)	—	83.5 (3-19/64)	70 (2-49/64)

190S-A…D



		A [mm]	B [mm]
190S-AN, -ANEJ, 190S-BN, -BNEJ, 190S-CN, -CNEJ, 190S-DN, -DNEJ	140M-C	112	107
	140M-D	122	
190S-ANZ, -ANDJ, 190S-BNZ, -BNDJ, 190S-CNZ, -CNDJ	140M-C	134.5	132.5
	140M-D	144.5	
190S-DNZ, -DNDJ	140M-C	157	150
	140M-D	167	

	C [mm]
100-FA, 100-FC 100-FPT 100-FL	138 157 160
100-FA, 100-FC	163.5
100-FA, 100-FC	181

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP