



# NEMA Contactor, Starter, and Pump Panel Specifications

Bulletin Numbers 500 and 1200 Product Lines

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## Additional Resources

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

| Resource                                                                                    | Description                                                                         |
|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 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.ab.com">http://www.ab.com</a>           | Provides declarations of conformity, certificates, and other certification details. |

You can view or download publications at <http://www.rockwellautomation.com/global/literature-library/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

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# 500 & 1200 Line NEMA Contactors, Starters, Pump Panels

## Specifications

### Electrical Ratings

| NEMA Size | Load Voltage                           | Continuous Current Rating | Service Limit Current Rating <sup>(1)</sup> | Maximum Hp Rating (Non-plugging and non-jogging duty) |                                        | Maximum Hp Rating (Plugging and jogging duty) <sup>(2)</sup> |                                        | Transformer Primary Switching kVa Rating (Inrush Current ≤ 20 times Continuous Current) |                                    | Transformer Primary Switching kVa Rating (Inrush Current = 20 to 40 times Continuous Current) |                                    | Capacitor Switching kVAR <sup>(3)</sup> | Maximum Circuit Closing Inrush Current [A] Peak Including Offset |
|-----------|----------------------------------------|---------------------------|---------------------------------------------|-------------------------------------------------------|----------------------------------------|--------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------------|------------------------------------------------------------------|
|           | [V]                                    | [A]                       | [A]                                         | 1Ø                                                    | 3Ø                                     | 1Ø                                                           | 3Ø                                     | 1Ø                                                                                      | 3Ø                                 | 1Ø                                                                                            | 3Ø                                 | 3Ø                                      | 3Ø                                                               |
| 00        | 115<br>200<br>230<br>380<br>460<br>575 | 9                         | 11                                          | 1/3<br>—<br>1<br>—<br>—<br>—                          | —<br>1-1/2<br>1-1/2<br>1-1/2<br>2<br>2 | 1/4<br>—<br>1/2<br>—<br>—<br>—                               | —<br>1<br>1<br>1<br>1-1/2<br>1-1/2     | —<br>—<br>—<br>—<br>—<br>—                                                              | —<br>—<br>—<br>—<br>—<br>—         | —<br>—<br>—<br>—<br>—<br>—                                                                    | —<br>—<br>—<br>—<br>—<br>—         | —<br>—<br>—<br>—<br>—<br>—              | 87                                                               |
| 0         | 115<br>200<br>230<br>380<br>460<br>575 | 18                        | 21                                          | 1<br>—<br>2<br>—<br>—<br>—                            | —<br>3<br>3<br>5<br>5<br>5             | 1/2<br>—<br>1<br>—<br>—<br>—                                 | —<br>1-1/2<br>1-1/2<br>1-1/2<br>2<br>2 | 0.6<br>—<br>1.2<br>—<br>2.4<br>3                                                        | —<br>1.8<br>2.1<br>—<br>4.2<br>5.2 | 0.3<br>—<br>0.6<br>—<br>1.2<br>1.5                                                            | —<br>0.9<br>1<br>—<br>2.1<br>2.6   | —<br>—<br>—<br>—<br>—<br>—              | 140                                                              |
| 1         | 115<br>200<br>230<br>380<br>460<br>575 | 27                        | 32                                          | 2<br>—<br>3<br>—<br>—<br>—                            | —<br>7-1/2<br>7-1/2<br>10<br>10<br>10  | 1<br>—<br>2<br>—<br>—<br>—                                   | —<br>3<br>3<br>5<br>5<br>5             | 1.2<br>—<br>2.4<br>—<br>4.9<br>6.2                                                      | —<br>3.6<br>4.3<br>—<br>8.5<br>11  | 0.6<br>—<br>1.2<br>—<br>2.5<br>3.1                                                            | —<br>1.8<br>2.1<br>—<br>4.3<br>5.3 | —<br>—<br>6<br>13.5<br>17               | 288                                                              |
| 1P        | 115<br>230                             | 36                        | 42                                          | 3<br>5                                                | —<br>—                                 | 1-1/2<br>3                                                   | —<br>—                                 | —<br>—                                                                                  | —<br>—                             | —<br>—                                                                                        | —<br>—                             | —<br>—                                  | —<br>—                                                           |
| 2         | 115<br>200<br>230<br>380<br>460<br>575 | 45                        | 52                                          | 3<br>—<br>7-1/2<br>—<br>—<br>—                        | —<br>10<br>15<br>25<br>25<br>25        | 2<br>—<br>5<br>—<br>—<br>—                                   | —<br>7-1/2<br>10<br>15<br>15<br>15     | 2.1<br>—<br>4.1<br>—<br>8.3<br>10                                                       | —<br>6.3<br>7.2<br>—<br>14<br>18   | 1<br>—<br>2.1<br>—<br>4.2<br>5.2                                                              | —<br>3.1<br>3.6<br>—<br>7.2<br>8.9 | —<br>—<br>12<br>25<br>31                | 483                                                              |
| 3         | 115<br>200<br>230<br>380<br>460<br>575 | 90                        | 104                                         | 7-1/2<br>—<br>15<br>—<br>—<br>—                       | —<br>25<br>30<br>50<br>50<br>50        | 7-1/2<br>—<br>15<br>—<br>—<br>—                              | —<br>15<br>20<br>30<br>30<br>30        | 4.1<br>—<br>8.1<br>—<br>16<br>20                                                        | —<br>12<br>14<br>—<br>28<br>35     | 2<br>—<br>4.1<br>—<br>8.1<br>10                                                               | —<br>6.1<br>7.0<br>—<br>14<br>18   | —<br>—<br>27<br>53<br>67                | 947                                                              |
| 4         | 115<br>200<br>230<br>380<br>460<br>575 | 135                       | 156                                         | —<br>—<br>—<br>—<br>—<br>—                            | —<br>40<br>50<br>75<br>100<br>100      | —<br>—<br>—<br>—<br>—<br>—                                   | —<br>25<br>30<br>50<br>60<br>60        | 6.8<br>—<br>14<br>—<br>27<br>34                                                         | —<br>20<br>23<br>—<br>47<br>59     | 3.4<br>—<br>6.8<br>—<br>14<br>17                                                              | —<br>10<br>12<br>—<br>23<br>29     | —<br>—<br>40<br>80<br>100               | 1581                                                             |
| 5         | 115<br>200<br>230<br>380<br>460<br>575 | 270                       | 311                                         | —<br>—<br>—<br>—<br>—<br>—                            | —<br>75<br>100<br>150<br>200<br>200    | —<br>—<br>—<br>—<br>—<br>—                                   | —<br>60<br>75<br>125<br>150<br>150     | 14<br>—<br>27<br>—<br>54<br>68                                                          | —<br>41<br>47<br>—<br>94<br>117    | 6.8<br>—<br>14<br>—<br>27<br>34                                                               | —<br>20<br>24<br>—<br>47<br>59     | —<br>—<br>80<br>160<br>200              | 3163                                                             |
| 6         | 115<br>200<br>230<br>380<br>460<br>575 | 540                       | 621                                         | —<br>—<br>—<br>—<br>—<br>—                            | —<br>150<br>200<br>300<br>400<br>400   | —<br>—<br>—<br>—<br>—<br>—                                   | —<br>125<br>150<br>250<br>300<br>300   | 27<br>—<br>54<br>—<br>108<br>135                                                        | —<br>81<br>94<br>—<br>188<br>234   | 14<br>—<br>27<br>—<br>54<br>68                                                                | —<br>41<br>47<br>—<br>94<br>117    | —<br>—<br>160<br>320<br>400             | 6326                                                             |
| 7         | 230<br>460<br>575                      | 810                       | 932                                         | —<br>—<br>—                                           | 300<br>600<br>600                      | —<br>—<br>—                                                  | —<br>—<br>—                            | —<br>—<br>—                                                                             | —<br>—<br>—                        | —<br>—<br>—                                                                                   | —<br>—<br>—                        | 240<br>480<br>600                       | 9470                                                             |
| 8         | 230<br>460<br>575                      | 1215                      | 1400                                        | —<br>—<br>—                                           | 450<br>900<br>900                      | —<br>—<br>—                                                  | —<br>—<br>—                            | —<br>—<br>—                                                                             | —<br>—<br>—                        | —<br>—<br>—                                                                                   | —<br>—<br>—                        | 360<br>720<br>900                       | 14205                                                            |
| 9         | 230<br>460<br>575                      | 2250                      | 2590                                        | —<br>—<br>—                                           | 800<br>1600<br>1600                    | —<br>—<br>—                                                  | —<br>—<br>—                            | —<br>—<br>—                                                                             | —<br>—<br>—                        | —<br>—<br>—                                                                                   | —<br>—<br>—                        | 665<br>1325<br>1670                     | 25380                                                            |

- (1) **Service-Limit Current Ratings** — The service-limit current ratings shown represent the maximum rms current, in amperes, which the controller shall be permitted to carry for protracted periods in normal service. At service-limit current ratings, temperature rises shall be permitted to exceed those obtained by testing the controller at its continuous current rating. The current rating of overload relays or the trip current of other motor protective devices used shall not exceed the service-limit current rating of the controller.
- (2) **Plugging or Jogging Service** — The listed horsepower ratings are recommended for those applications requiring repeated interruption of stalled motor current encountered in rapid motor reversal in excess of five openings or closings per minute and shall not be more than ten in a ten minute period.
- (3) If maximum available current (at capacitor terminals) is greater than 3000 A, please contact your local Rockwell Automation sales office, Allen-Bradley distributor, or NEMA ICS-2 Standard.

## Mechanical Ratings

| NEMA Size | Mechanical Life<br>(Millions of Operations) | Maximum Number of<br>Auxiliary Contacts | Operating Time [ms] |                    |
|-----------|---------------------------------------------|-----------------------------------------|---------------------|--------------------|
|           |                                             |                                         | Pick-up (Average)   | Drop-out (Average) |
| 00        | 10                                          | 5                                       | 20                  | 16                 |
| 0         | 10                                          | 8                                       | 21                  | 16                 |
| 1         | 10                                          | 8                                       | 22                  | 14                 |
| 2         | 10                                          | 8                                       | 27                  | 13                 |
| 3         | 5                                           | 8                                       | 37                  | 20                 |
| 4         | 5                                           | 8                                       | 27                  | 20                 |
| 5         | 5                                           | 8                                       | 25                  | 18                 |
| 6         | 5                                           | 4                                       | 25...79             | 10...22            |
| 7         | —                                           | 8                                       | 88                  | 40                 |
| 8         | —                                           | 8                                       | 88                  | 45                 |
| 9         | —                                           | 8                                       | 118                 | 84                 |

## Construction

| NEMA Size | Wire Size for Power Terminals                                                                                                                                                                 | Required Torque on Power Terminal Wire Clamps and Pressure Connectors or Lugs | Type of Power Terminal | Contact Material |                    | Requirements for Sizing of Wire                                                                           |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------|------------------|--------------------|-----------------------------------------------------------------------------------------------------------|
|           |                                                                                                                                                                                               |                                                                               |                        | Power Contacts   | Auxiliary Contacts |                                                                                                           |
| 00        | #16...10 AWG                                                                                                                                                                                  | 9 lb•in                                                                       | Pressure terminals     | Silver alloy     | Silver             | All wire rated 167 °F (75°C) or higher must be sized per the local Electrical Code for 167°F (75°C) wire. |
| 0         | #14...10 AWG                                                                                                                                                                                  | 20 lb•in                                                                      | Saddle or wire clamps  |                  |                    |                                                                                                           |
| 1         | #14...8 AWG                                                                                                                                                                                   | 20 lb•in                                                                      | Pressure terminals     |                  |                    |                                                                                                           |
| 2         | #14...4 AWG                                                                                                                                                                                   | 45 lb•in                                                                      |                        |                  |                    |                                                                                                           |
| 3         | #8...1/0 AWG                                                                                                                                                                                  | 150 lb•in                                                                     |                        |                  |                    |                                                                                                           |
| 4         | #6...4/0 AWG                                                                                                                                                                                  | 275 lb•in                                                                     |                        |                  |                    |                                                                                                           |
| 5         | #4 AWG...500 MCM                                                                                                                                                                              | 375 lb•in                                                                     |                        |                  |                    |                                                                                                           |
| 6         | Lugs sold separately<br><a href="http://ab.rockwellautomation.com/Motor-Control/NEMA-Contactors/Bulletin-500">http://ab.rockwellautomation.com/Motor-Control/NEMA-Contactors/Bulletin-500</a> |                                                                               |                        |                  |                    |                                                                                                           |
| 7         |                                                                                                                                                                                               |                                                                               |                        |                  |                    |                                                                                                           |
| 8         |                                                                                                                                                                                               |                                                                               |                        |                  |                    |                                                                                                           |
| 9         | Direct bus connections only                                                                                                                                                                   |                                                                               |                        |                  |                    |                                                                                                           |

## Environmental

| NEMA Size | Operating Position | Operating Temperature Range                                                                                                                                                                        | Altitude                    | Corrosion-Resistance                                 |
|-----------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------|
| 00        | Horizontal         | Starters with eutectic alloy<br>Overload relay<br>−13...+149 °F (−25...+65 °C)<br><br>Starters with SMP Overload relay<br>−13...+131 °F (−25...+55 °C)<br><br>(provided condensation is prevented) | 10 000 feet before derating | All metal parts are treated for corrosion-resistance |
| 0         | Vertical           |                                                                                                                                                                                                    |                             |                                                      |
| 1         |                    |                                                                                                                                                                                                    |                             |                                                      |
| 2         |                    |                                                                                                                                                                                                    |                             |                                                      |
| 3         |                    |                                                                                                                                                                                                    |                             |                                                      |
| 4         |                    |                                                                                                                                                                                                    |                             |                                                      |
| 5         |                    |                                                                                                                                                                                                    |                             |                                                      |
| 6         | Horizontal         |                                                                                                                                                                                                    |                             |                                                      |
| 7         | Vertical           |                                                                                                                                                                                                    |                             |                                                      |
| 8         |                    |                                                                                                                                                                                                    |                             |                                                      |
| 9         |                    |                                                                                                                                                                                                    |                             |                                                      |