

Clamped EBMXC explosionproof combination motor starters

Cl. I, Div. 1 & 2, Groups B[Ⓟ], C, D
Cl. I, Zones 1 & 2
Cl. II, Groups E, F, G
Cl. III
NEMA 3R, 4X[Ⓟ], 7BCD, 9EFG

Explosionproof
Dust-ignitionproof

1C

Applications:

- Operating where flammable liquids or gases are handled, processed or used
- Damp, wet, dirty, dusty, hazardous areas where ultimate corrosion and ingress protection is required
- Harsh and hazardous motor control environments, including refineries, chemical and petrochemical plants, corrosive process facilities, food and beverage, marine and mining
- Across-the-line starting, stopping, speed changing and reversing of polyphased AC induction motors

Features:

- Clamped enclosure significantly reduces time to enter enclosure and reduces opportunity for missing, stripped or broken bolts
- 65 kAIC at 480V enclosure rating for high interrupting capacity applications
- -50°C to +60°C temperature range for extreme environments
- Magnetic, thermal magnetic and electronic break trip options for short circuit and overcurrent protection
- Bi-metallic and electronic/solid state overload protection options
- Normally open (NO) holding circuit contact supplied standard
- Up to six cover operators for a variety of applications
- Side operated breaker handle provides visual confirmation of proper operator alignment while cover is open and can be padlocked in either “ON” or “OFF” positions for OSHA compliance
- Neoprene cover gasket provides NEMA 4X protection for hose down applications
- Maximum wiring room compliance with National Electrical Code requirements allows for easy and safe installation^A
- Rugged, corrosion-resistant, cast copper-free aluminum construction provides NEMA 4X protection
- Semi-clamshell enclosure design, with an external flanged ground joint between body and cover, provides increased access to interior components
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and adjacent enclosure
- Pre-drilled mounting plate for simple starter and breaker installation
- Detachable tap-on mounting feet
- Steel brackets supplied standard for lifting during installation
- Bodies have top and bottom drilled and tapped entries for power and control conduits; removable reducers are supplied standard to accommodate smaller size conduits; all conduit entries are plugged

Electrical ratings:

- Motor starters:
 - Single-, three-phase
 - 3-pole, non-reversing, full voltage
 - 600 VAC maximum
 - NEMA sizes 0-4
- Breakers and HMCPs:
 - 3-pole, 600 VAC, 125 VDC
 - Eaton frames: EG/PDG, JG (up to 250A)[Ⓟ]



Certifications and compliances:

NEC/CEC:

- Class I, Divisions 1 & 2, Groups B[Ⓟ], C, D
- Class I, Zones 1 & 2
- Class II, Groups E, F, G
- Class III

UL standards:

- UL1203 – Explosionproof and Dust-ignitionproof Electrical Equipment for use in Hazardous (Classified) Locations
- UL2062 – High AIC Ratings for Groups C, D

| Voltage (VAC) | RMS symmetrical amps |
|---------------|----------------------|
| 240, 480 | 65,000 |
| 600 | 35,000 |

CSA standard:

- cUL to CSA C22.2 No. 30

Additional certifications:

- UL/cUL certified for -50°C to +60°C
- SASO Certificate of Conformity

Environmental ratings:

- NEMA 3R, 4X[Ⓟ], 7BCD, 9EFG

Standard materials:

- Body and cover – copper-free aluminum
- Clamp – anodized copper-free aluminum
- External hardware – stainless steel
- Internal parts – galvanized steel

^A Standard factory wiring included between the starter and breaker – consult factory for any additional wiring requirements.

^B High AIC and -50°C temperature certifications do not apply for Group B.

^C Enclosures with PB23, RR2 and RR3 options are rated NEMA 3R. All other options maintain NEMA 4X rating.

^D 15-125A rated 600Y/347 VAC maximum; 150-250A rated 600 VAC maximum.

Clamped EBMXC explosionproof combination motor starters

Cl. I, Div. 1 & 2, Groups B, C, D
Cl. I, Zones 1 & 2
Cl. II, Groups E, F, G
Cl. III
NEMA 3R, 4X, 7BCD, 9EFG

Explosionproof
Dust-ignitionproof

1C

Ordering information:

Part number example

EBMX2C-F2W4B-100 RLN AIC

EBMX **2** **C-F** **2** **W** **4** **B-100** **RLN**

Series
EBMX Hazardous rated enclosure with clamping technology

Enclosure size
2 NEMA sizes 0-2
3 NEMA sizes 3 & 4

Function
C Combo starter in clamped EBMX enclosure

Combo starter function

| | |
|---|---|
| F | Full voltage, non-reversing starter, 120V coil, breaker, with CPT |
| G | Full voltage, non-reversing starter [Ⓞ] , breaker, without CPT |
| H | Full voltage, non-reversing starter, 120V coil, HMCP, with CPT |
| K | Full voltage, non-reversing starter [Ⓞ] , HMCP, without CPT |

Line voltage

| | |
|---|---------|
| 1 | 120 VAC |
| 2 | 240 VAC |
| 4 | 480 VAC |
| 6 | 600 VAC |

Starter manufacturer
W Eaton

NEMA starter size
0
1
3
4

**Breaker trip[Ⓜ]
(only with "F" or "G" as
combo starter function)**

| | | |
|-----|-----|-----|
| 015 | 050 | 125 |
| 020 | 070 | 150 |
| 030 | 090 | 175 |
| 040 | 100 | 200 |

**HMCP trip[Ⓜ]
(only with "H" or "K" as
combo starter function)**

| | | |
|-----|-----|-----|
| 003 | 030 | 100 |
| 007 | 050 | 250 |
| 015 | 070 | |

Cover operators[Ⓛ]

| | |
|-------|---|
| GLB | Green LED pilot light with blank legend plate |
| GLF | Green LED light with "OFF" legend plate |
| PB23 | Start/Stop pushbutton with "START" & "STOP" legend plates (two positions) |
| RLB | Red LED pilot light with blank legend plate |
| RLN | Red LED light with "ON" legend plate |
| RR2 | 2-position selector switch with "ON-OFF" legend plate |
| RR3 | 3-position selector switch with "HAND-OFF-AUTO" legend plate |
| BLANK | No cover operators |

Options[Ⓜ]

| | |
|-----------------|---|
| AIC | 65kAIC at 480V, 35kAIC at 600V |
| BST | Shunt trip, 120V |
| ER [Ⓚ] | Electronic overload relay (starter) |
| ET | Electronic trip breaker (thermal magnetic standard) |
| HT | Ambient compensated breaker; +60°C enclosure rating |
| MT | Freeze-tested breaker; -50°C enclosure rating |
| R11 | Space heater, 25 watts, 120V |
| R22 | Space heater, 25 watts, 240V |
| R44 | Space heater, 25 watts, 480V |
| S214 | External ground lug |
| S752 | External epoxy coating |
| S753 | Internal and external epoxy coating |
| S756V | Breather and drain (Class I, Groups B, C, D) |
| S781 | Auxiliary contact on starter: (1) NO & (1) NC |
| S782 | Auxiliary contacts on starter: (2) NO & (2) NC |
| S783 | Auxiliary contacts on starter: (3) NO & (3) NC |
| S784 | Auxiliary switch on circuit breaker: 1A & 1B |
| S785 | Auxiliary switches on circuit breaker: 2A & 2B |
| S786 | 12-point terminal block, 30 amp, 300V |

FLA

| | FLA range | NEMA size | | | |
|---------------------------|---------------|-----------|---|------|--|
| | | 0, 1 | 2 | 3, 4 | |
| <i>Blank or ER option</i> | 0.0 - 0.0 | • | • | • | |
| A | 0.8 - 1.3 | • | • | | |
| B | 1.2 - 2.0 | • | • | | |
| C | 1.8 - 2.9 | • | • | | |
| D | 2.2 - 3.5 | • | • | | |
| E | 3.2 - 5.2 | • | • | | |
| F | 4.6 - 7.4 | • | • | | |
| G | 6.8 - 11.0 | • | • | | |
| H | 9.1 - 14.0 | • | • | | |
| J | 14.0 - 22.8 | • | • | | |
| L | 23.5 - 38.5 | • | • | | |
| M | 39.6 - 57.4 | | • | | |
| N | 53.9 - 74.9 | | • | | |
| P | 8.0 - 11.5 | | | • | |
| Q | 11.4 - 15.7 | | | • | |
| R | 14.3 - 19.0 | | | • | |
| S | 18.0 - 24.5 | | | • | |
| T | 24.6 - 33.4 | | | • | |
| V | 33.5 - 45.6 | | | • | |
| W | 45.7 - 62.1 | | | • | |
| X | 62.2 - 84.6 | | | • | |
| Y | 84.7 - 115.0 | | | • | |
| Z | 106.0 - 144.0 | | | • | |

[Ⓜ] High AIC and -50°C temperature certifications do not apply for Group B.

[Ⓛ] Enclosures with PB23, RR2 and RR3 options are rated NEMA 3R. All other options maintain NEMA 4X rating.

[Ⓞ] Starter coil equals line voltage.

[Ⓜ] 15-125A rated 600Y/347 VAC maximum; 150-250A rated 600 VAC maximum.

[Ⓛ] List selected operators in order starting with the top position.

[Ⓜ] List selected options in alphanumeric order.

[Ⓚ] Available with NEMA starter sizes 0-3. Pushbutton provided in cover for manual reset.

Clamped EBMXC explosionproof combination motor starters

Cl. I, Div. 1 & 2, Groups B, C, D
Cl. I, Zones 1 & 2
Cl. II, Groups E, F, G
Cl. III
NEMA 3R, 4X, 7BCD, 9EFG

Explosionproof
Dust-ignitionproof

1C

Freedom starter and G-Series breaker:

| Motor starter | | Circuit breaker | | |
|---------------|--------------|-----------------|----------|--------|
| Horsepower | Line voltage | NEMA size | Amperage | Frame |
| 1 | 120 | 0 | 20 | EG/PDG |
| 3 | 240 | | 20 | |
| 5 | 480 | | 15 | |
| 5 | 600 | | 15 | |
| 2 | 120 | 1 | 30 | EG/PDG |
| 5 | 240 | | 30 | |
| 7.5 | 240 | | 50 | |
| 10 | 480 | | 30 | |
| 10 | 600 | 2 | 30 | EG/PDG |
| 3 | 120 | | 50 | |
| 10 | 240 | | 50 | |
| 15 | 240 | | 70 | |
| 15 | 480 | 2 | 40 | EG/PDG |
| 15 | 600 | | 40 | |
| 20 | 480 | | 50 | |
| 20 | 600 | | 50 | |
| 25 | 480 | 3 | 70 | EG/PDG |
| 25 | 600 | | 70 | |
| 20 | 240 | | 90 | |
| 25 | 240 | | 100 | |
| 30 | 240 | 3 | 125 | EG/PDG |
| 30 | 480 | | 70 | |
| 30 | 600 | | 70 | |
| 40 | 480 | | 90 | |
| 40 | 600 | 4 | 90 | JG |
| 50 | 480 | | 100 | |
| 50 | 600 | | 100 | |
| 40 | 240 | | 175 | |
| 50 | 240 | 4 | 200 | JG |
| 60 | 480 | | 125 | |
| 60 | 600 | | 100 | |
| 75 | 480 | | 150 | |
| 75 | 600 | 4 | 125 | JG |
| 100 | 480 | | 200 | |
| 100 | 600 | | 150 | |

Note: 120V is single-phase; other voltages are polyphase.

Freedom starter and G-Series HMCP:

| Motor starter | | HMCP | | |
|---------------|--------------|-----------|----------|--------|
| Horsepower | Line voltage | NEMA size | Amperage | Frame |
| 3 | 240 | 0 | 15 | EG/PDG |
| 3 | 480 | | 7 | |
| 3 | 600 | | 7 | |
| 5 | 480 | | 15 | |
| 5 | 600 | 1 | 15 | EG/PDG |
| 7.5 | 240 | | 30 | |
| 7.5 | 480 | | 15 | |
| 10 | 480 | | 30 | |
| 10 | 600 | 2 | 15 | EG/PDG |
| 10 | 240 | | 50 | |
| 15 | 240 | | 100 | |
| 15 | 480 | | 30 | |
| 20 | 600 | 2 | 30 | EG/PDG |
| 25 | 480 | | 50 | |
| 25 | 600 | | 50 | |
| 30 | 240 | | 100 | |
| 30 | 600 | 3 | 50 | EG/PDG |
| 50 | 480 | | 100 | |
| 50 | 600 | | 100 | |
| 50 | 240 | | 250 | |
| 100 | 480 | 4 | 250 | JG |
| 100 | 600 | | 250 | |

Reference tables:

Starter electronic overload relay settings

| NEMA size | FLA range (A) |
|-----------|---------------|
| 0 | 1-5 |
| 1 | 4-20 |
| 2 | 9-45 |
| 3 | 20-100 |
| 4 | 28-140 |

Breaker electronic trip dial settings

| Amperage (A) | Range (A) |
|--------------|--|
| 50 | 20, 25, 30, 32, 40, 45, 50 |
| 100 | 40, 45, 50, 63, 70, 80, 90, 100 |
| 160 | 63, 80, 90, 100, 110, 125, 150, 160 |
| 200 | 100, 125, 150, 160, 170, 200, 225, 250 |

Control circuit transformer, 50/60 Hz, fusing for primary and secondary

| NEMA size | VA |
|-----------|-----|
| 0-2 | 100 |
| 3 | 200 |
| 4 | 300 |

HMCP trip settings

| Amperage (A) | Trip range (A) |
|--------------|----------------|
| 3 | 9-33 |
| 7 | 21-77 |
| 15 | 45-165 |
| 30 | 90-330 |
| 50 | 150-550 |
| 70 | 210-770 |
| 100 | 300-1100 |
| 250 | 1250-2500 |

Ⓛ High AIC and -50°C temperature certifications do not apply for Group B.

Ⓜ Enclosures with PB23, RR2 and RR3 options are rated NEMA 3R. All other options maintain NEMA 4X rating.

Ⓝ Fuses not included.

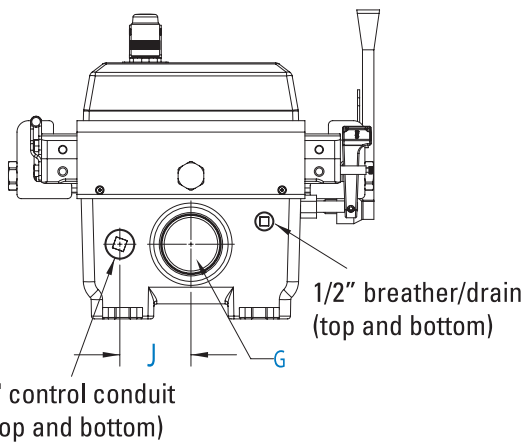
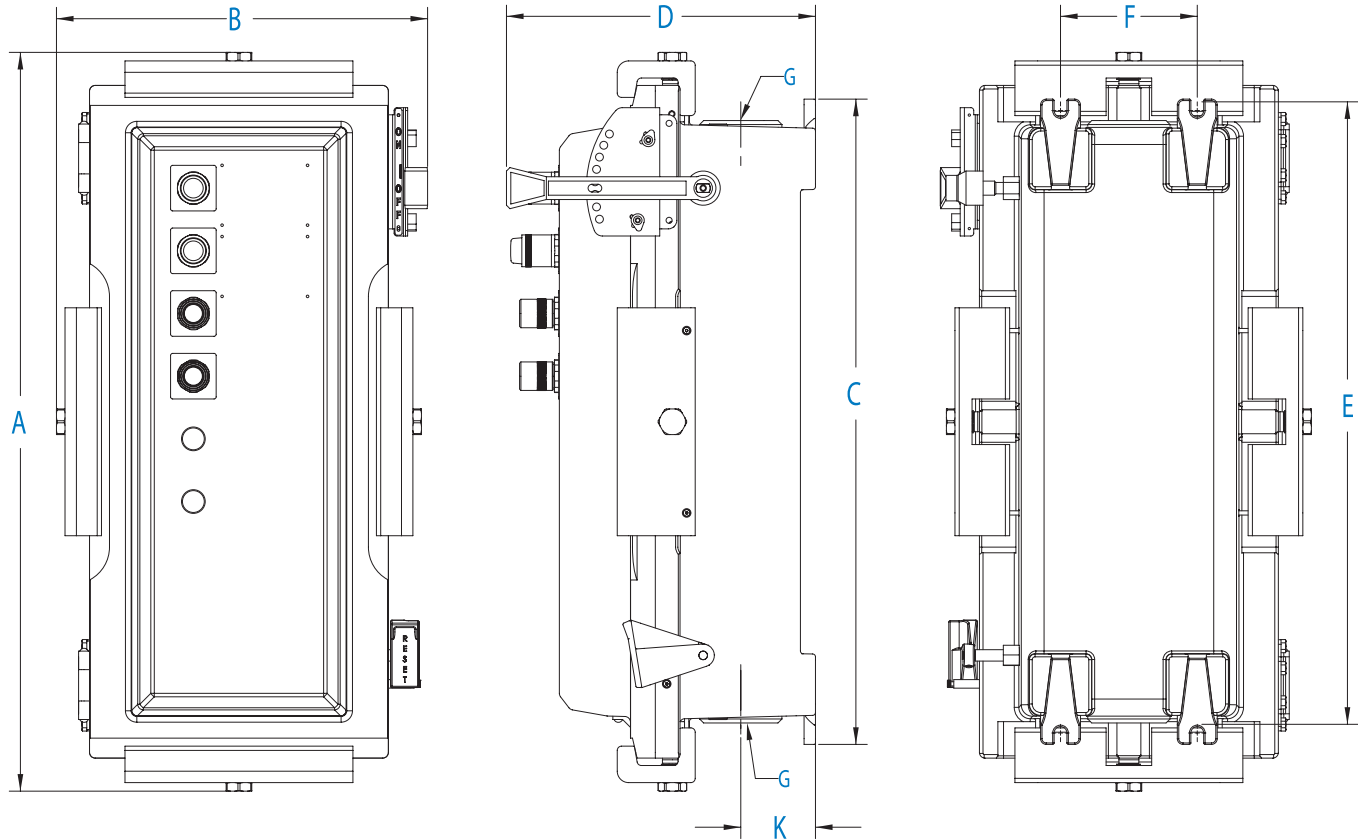
Clamped EBMXC explosionproof combination motor starters

Cl. I, Div. 1 & 2, Groups B, C, D
Cl. I, Zones 1 & 2
Cl. II, Groups E, F, G
Cl. III
NEMA 3R, 4X, 7BCD, 9EFG

Explosionproof
Dust-ignitionproof

1C

Dimensions (in inches):



| Enclosure size | A | B | C | D | E | F | G | | | |
|----------------|-------|-------|-------|-------|-------|------|--------------------|--------------|------|------|
| | | | | | | | Drilled and tapped | With reducer | J | K |
| 2 | 32.40 | 16.28 | 28.31 | 13.56 | 27.25 | 6.00 | 3 NPT | 2.5 NPT | 3.12 | 3.28 |
| 3 | 42.28 | 17.93 | 38.15 | 13.85 | 37.25 | 6.00 | 3 NPT | 2.5 NPT | 3.93 | 3.56 |

⊕ High AIC and -50°C temperature certifications do not apply for Group B.

Ⓟ Enclosures with PB23, RR2 and RR3 options are rated NEMA 3R. All other options maintain NEMA 4X rating.