

# Type PEB Power electronic brakes



## Softstarters Power electronic brakes Type PEB



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### Description

Electronic braking stops the load by injecting a controlled amount of DC current into a three phase AC motor. The Power Electronic Brake (PEB) Series features full-wave DC braking which can be adjusted to stop your load quickly, repeatedly and reliably...even if load conditions change.

Unlike other brakes that only provide voltage control, the PEB Series is a current regulated brake. It automatically adjusts for resistance changes in the motor windings due to any input voltage fluctuations. What does this mean? Repeatable, reliable operation every time you stop your motor.

An exceptionally accurate method of micro-processor controlled sensing determines when

the motor shaft has come to a stop. Braking current is removed when the motor stops, eliminating excess braking current which means longer motor life.

Built-in jogging circuitry allows you to select the time you need for machine setup and positioning without applying DC current to the motor windings. DC current is only applied when system setup is complete... no excess current, no excess heating, no premature motor failure.

The PEB Series has a built-in feature to control a mechanical holding brake. Any fault indication automatically enables the mechanical brake for fail-safe operation.

The PEB Series has been designed and tested to meet the most stringent industry standards: UL & cUL.

UL File # E169883



# General information

## Catalog number explanation

**PEB - 010 - 48 - 1**

**Maximum brake amps**

- 010 - 10
- 024 - 24
- 050 - 50
- 100 - 100
- 200 - 200
- 300 - 300
- 400 - 400
- 550 - 550
- 800 - 800
- 1000 - 1000

**Enclosure**

- No digit - Open chassis
- 1 - NEMA 1
- 2 - NEMA 12
- 3 - NEMA 3R
- 4 - NEMA 4
- X - NEMA 4X

**Voltage**

- 24 - 208/240
- 48 - 480
- 60 - 600

# Power electronic brakes Open



PEB-100-48

PEB-10-48

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| Max<br>amps<br>① | 208V       |           |                   | 240V       |           |                   | 480V       |           |                   | 600V       |           |                   | List<br>price |
|------------------|------------|-----------|-------------------|------------|-----------|-------------------|------------|-----------|-------------------|------------|-----------|-------------------|---------------|
|                  | Horsepower |           | Catalog<br>number | Horsepower |           | Catalog<br>number | Horsepower |           | Catalog<br>number | Horsepower |           | Catalog<br>number |               |
|                  | Std. duty  | Hvy. duty |                   | Std. duty  | Hvy. duty |                   | Std. duty  | Hvy. duty |                   | Std. duty  | Hvy. duty |                   |               |
| 10               | 3          | 1         | PEB-010-24        | 3          | 1         | PEB-010-24        | 7.5        | 3         | PEB-010-48        | 10         | 5         | PEB-010-60        | \$ 755        |
| 24               | 7.5        | 3         | PEB-024-24        | 10         | 5         | PEB-024-24        | 20         | 10        | PEB-024-48        | 25         | 15        | PEB-024-60        | 1070          |
| 50               | 15         | 7.5       | PEB-050-24        | 20         | 10        | PEB-050-24        | 40         | 25        | PEB-050-48        | 50         | 30        | PEB-050-60        | 1450          |
| 100              | 30         | 20        | PEB-100-24        | 40         | 15        | PEB-100-24        | 75         | 50        | PEB-100-48        | 100        | 60        | PEB-100-60        | 2250          |
| 200              | 75         | 40        | PEB-200-24        | 75         | 50        | PEB-200-24        | 150        | 100       | PEB-200-48        | 200        | 125       | PEB-200-60        | 3900          |
| 300              | 100        | 60        | PEB-300-24        | 125        | 75        | PEB-300-24        | 250        | 150       | PEB-300-48        | 300        | 200       | PEB-300-60        | 4300          |
| 400              | 150        | 75        | PEB-400-24        | 150        | 100       | PEB-400-24        | 350        | 200       | PEB-400-48        | 400        | 250       | PEB-400-60        | 6500          |
| 550              | 250        | 125       | PEB-550-24        | 200        | 150       | PEB-550-24        | 500        | 300       | PEB-550-48        | 600        | 350       | PEB-550-60        | 8700          |
| 800              | 350        | 200       | PEB-800-24        | 350        | 200       | PEB-800-24        | 700        | 450       | PEB-800-48        | 900        | 500       | PEB-800-60        | 10,250        |
| 1000             | 400        | 250       | PEB-1000-24       | 400        | 300       | PEB-1000-24       | 900        | 500       | PEB-1000-48       | 1000       | 600       | PEB-1000-60       | 13,000        |

NOTE: If duty cycle is not known, it is recommended to use the heavy duty brake since braking current can be adjusted down to meet actual load requirements.

① Never exceed the motor FLA without checking the motor manufacturers data with regards to application duty cycle.



## Power electronic brakes Enclosed, NEMA 1

| Maximum<br>Amps<br>FLA | Maximum motor HP ratings |               |                  |               |                  |               |                  |               | NEMA 1, 480V<br>Catalog number | NEMA 1, 600V<br>Catalog number | List<br>price |
|------------------------|--------------------------|---------------|------------------|---------------|------------------|---------------|------------------|---------------|--------------------------------|--------------------------------|---------------|
|                        | 208V                     |               | 240V             |               | 480V             |               | 600V             |               |                                |                                |               |
|                        | Standard<br>Duty         | Heavy<br>Duty | Standard<br>Duty | Heavy<br>Duty | Standard<br>Duty | Heavy<br>Duty | Standard<br>Duty | Heavy<br>Duty |                                |                                |               |
| 10                     | 3                        | 1             | 3                | 1             | 7.5              | 3             | 10               | 5             | PEB-010-48-1                   | PEB-010-60-1                   | \$ 805        |
| 24                     | 7.5                      | 3             | 10               | 5             | 20               | 10            | 25               | 15            | PEB-024-48-1                   | PEB-024-60-1                   | 1120          |
| 50                     | 15                       | 7.5           | 20               | 10            | 40               | 25            | 50               | 30            | PEB-050-48-1                   | PEB-050-60-1                   | 1650          |
| 100                    | 30                       | 20            | 40               | 15            | 75               | 50            | 100              | 60            | PEB-100-48-1                   | PEB-100-60-1                   | 2450          |
| 200                    | 75                       | 40            | 75               | 50            | 150              | 100           | 200              | 125           | PEB-200-48-1                   | PEB-200-60-1                   | 4320          |
| 300                    | 100                      | 60            | 125              | 75            | 250              | 150           | 300              | 200           | PEB-300-48-1                   | PEB-300-60-1                   | 4800          |
| 400                    | 150                      | 75            | 150              | 100           | 350              | 200           | 400              | 250           | PEB-400-48-1                   | PEB-400-60-1                   | 7000          |
| 550                    | 250                      | 125           | 200              | 150           | 500              | 300           | 600              | 350           | PEB-550-48-1                   | PEB-550-60-1                   | 9200          |
| 800                    | 350                      | 200           | 350              | 200           | 700              | 450           | 900              | 500           | PEB-800-48-1                   | PEB-800-60-1                   | 10,750        |
| 1000                   | 400                      | 250           | 400              | 300           | 900              | 500           | 1000             | 600           | PEB-1000-48-1                  | PEB-1000-60-1                  | 13,500        |

NOTE: See below for additional enclosure styles and price adders.

### Options ⓘ

| Model<br>number | NEMA 12 | NEMA 3R | NEMA 4 | NEMA 4X |
|-----------------|---------|---------|--------|---------|
| PEB-010         | \$ 100  | \$ 100  | \$ 150 | \$ 450  |
| PEB-024         | 100     | 100     | 150    | 450     |
| PEB-050         | 100     | 100     | 150    | 450     |
| PEB-100         | 100     | 100     | 150    | 450     |
| PEB-200         | 150     | 150     | 200    | 600     |
| PEB-300         | 300     | 300     | 350    | 1050    |
| PEB-400         | 300     | 300     | 350    | 1050    |
| PEB-550         | 300     | 300     | 350    | 1050    |
| PEB-800         | 300     | 300     | 350    | 1050    |
| PEB-1000        | 300     | 300     | 350    | 1050    |

ⓘ Add to list price of NEMA 1 enclosed products and change part number appropriately.

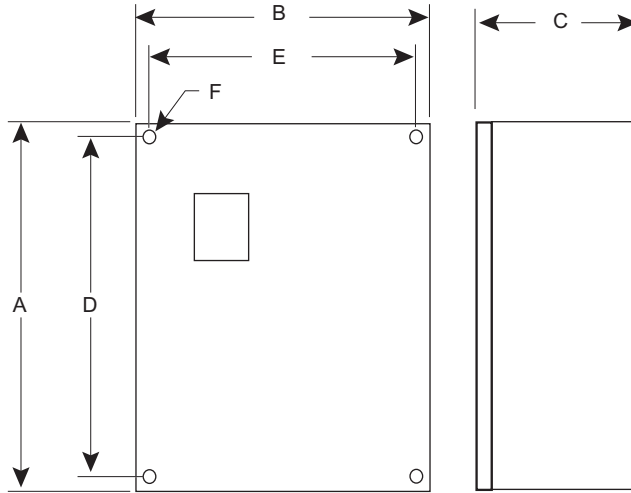
## Technical data



| Item                         | Specification   |
|------------------------------|---|
| Voltage rating               | Models rated from 208 - 600V $\pm 10\%$<br>Selectable for 50/60Hz $\pm 2$ Hz  |
| Current ratings              | 10 - 1000A in 10 sizes: 10, 24, 50, 100, 200, 300, 400, 550, 800, 1000A   |
| Output capacity              | 25% duty cycle at 100% unit rating  |
| Power circuit                | Full wave bridge, 4 SCRs, designed for use without isolation contactors   |
| Transient protection         | RC snubber dv/dt circuit on each SCR device   |
| Fusing                       | Approved for use with existing motor starter fusing when unit is sized for motor FLA. Consult NEC for any other fusing requirements.  |
| Control circuit              | Self-powered directly from line terminals. No separate control voltage required   |
| Control method               | Microprocessor unit controls sequencing, I/O monitoring and status annunciation. Braking current is adjustable via true RMS regulated control using phase angle firing of SCRs.   |
| Operator adjustments         | Brake Time and Jog Time = 7 position binary dipswitch<br>Brake Current = potentiometer  |
| Adjustment ranges            | Brake Jog Times = 0 - 127 seconds in 1 sec. increments<br>Brake Current = Up to 100% unit rating  |
| Inputs                       | Starter Monitor = Dry input for auxiliary contact from motor starter.<br>Jumper selectable for N.O. or N.C. contact.<br><br>Brake Disable = Dry input for N.O. contact to disable braking before or during operation. Can be wired to the starter thermal overload N.O. auxiliary contact to prevent braking of overloaded motor.<br><br>Motor Power Sensor (T3) = voltage input used for sensing motor power presence in sequencing/status circuit and for zero speed sensing during braking |
| Outputs                      | Starter Coil Interlock = Two sets of FORM "C" relay contacts for use in interlocking the starter coil and/or other devices to prevent energizing as the braking power is applied.<br><br>Mechanical Brake Release = N.O. relay contact for use in controlling electro-mechanical brake as a holding brake. When the PEB Series is "disabled," this circuit controls the mechanical brake normally as if it is the only brake in the system.   |
| Auxilliary contact ratings   | 5 amps, 250VAC max  |
| LED Status indicators        | Large LEDs: Braking = green; Fault = red<br>Small LEDs: Power On, Jog/Armed, Brake Off, Disabled, Over Temp, and Wiring Error   |
| Operating design temperature | 0 - 50 °C (32-122 °F) open<br>0 - 40 °C (32 - 104 °F ) enclosed   |
| Ambient conditions           | 0 - 95% relative humidity<br>0 - 3300ft (1000M) elevation   |
| Approvals                    | UL, cUL Listed  |

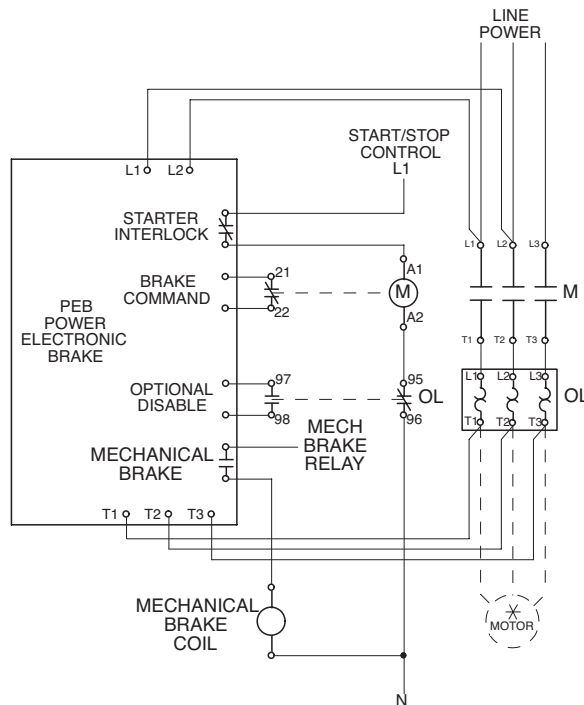
## Approximate dimensions & Circuit diagram Open

### Approximate dimensions (inches)



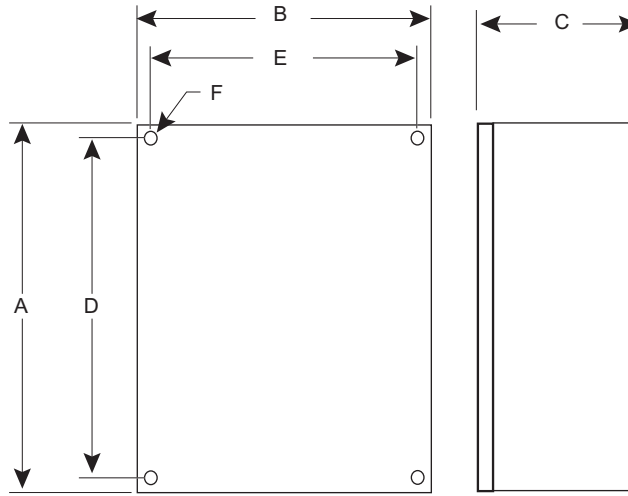
| Model No. | A    | B   | C   | D    | E   | F    |
|-----------|------|-----|-----|------|-----|------|
| PEB-10    | 8.5  | 7.3 | 6.2 | 8    | 6.9 | 0.21 |
| PEB-24    | 8.5  | 7.3 | 6.2 | 8    | 6.9 | 0.21 |
| PEB-50    | 10.5 | 7.9 | 7.2 | 10   | 6.8 | 0.22 |
| PEB-100   | 10.5 | 7.9 | 7.2 | 10   | 6.8 | 0.22 |
| PEB-200   | 16.5 | 10  | 10  | 15.9 | 9   | 0.28 |
| PEB-300   | 16   | 16  | 10  | 15   | 15  | 0.5  |
| PEB-400   | 16   | 16  | 10  | 15   | 15  | 0.5  |
| PEB-550   | 16   | 16  | 10  | 15   | 15  | 0.5  |
| PEB-800   | 16   | 16  | 10  | 15   | 15  | 0.5  |
| PEB-1000  | 16   | 16  | 10  | 15   | 15  | 0.5  |

### Circuit diagram



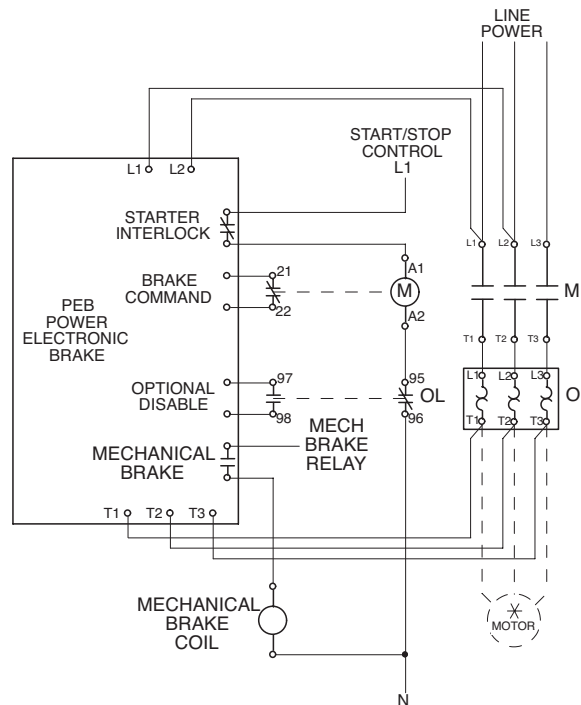
# Approximate dimensions & Circuit diagram Enclosed

## Approximate dimensions (inches) ①



| Model No. | A  | B  | C  | D    | E    | F   |
|-----------|----|----|----|------|------|-----|
| PEB-10    | 16 | 12 | 9  | 14.5 | 10.5 | 0.5 |
| PEB-24    | 16 | 12 | 9  | 14.5 | 10.5 | 0.5 |
| PEB-50    | 20 | 16 | 9  | 18.5 | 14.5 | 0.5 |
| PEB-100   | 20 | 16 | 9  | 18.5 | 14.5 | 0.5 |
| PEB-200   | 24 | 20 | 13 | 22.5 | 18.5 | 0.5 |
| PEB-300   | 36 | 24 | 13 | 34.5 | 22.5 | 0.5 |
| PEB-400   | 36 | 24 | 13 | 34.5 | 22.5 | 0.5 |
| PEB-550   | 36 | 24 | 13 | 34.5 | 22.5 | 0.5 |
| PEB-800   | 36 | 24 | 13 | 34.5 | 22.5 | 0.5 |
| PEB-1000  | 36 | 24 | 13 | 34.5 | 22.5 | 0.5 |

## Circuit diagram



① Dimensions apply to NEMA 1, NEMA 12, NEMA 3R and NEMA 4 enclosures. Consult factory for NEMA 4X dimensions.

