

PB Controllers

Economical and easy to use... ideal for Three Phase or Single Phase low horsepower squirrel cage motors



The PB Softstarter is a compact and economical solid state controller designed for single and three phase, low horsepower squirrel cage motors (up to 15HP @ 460V). The unit is designed to work in conjunction with an electromechanical motor starter.

No additional control is required. Series PB Softstarters are ideal for constant torque starting applications such as conveyors, bridge cranes and overhead doors.

Decreases downtime

In operation, the PB Softstarter reduces the starting torque surge typical of across-the-line starting (see figure at right). This provides smoother starts and decreases equipment downtime caused by shock and vibration problems.

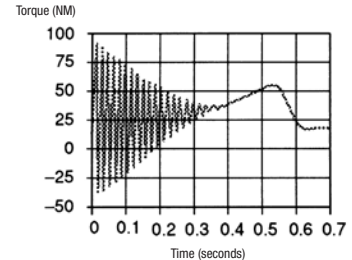
For use anywhere

Four voltage ranges between 120V and 600V assure that these units can be used anywhere in the world.

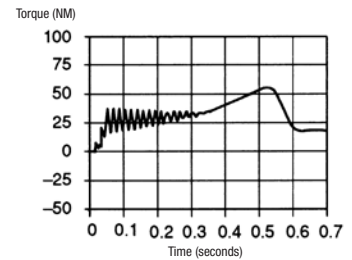
Many convenient features

PB Softstarters are completely self contained and require minimal mounting and installation. Digital rotary switch-

es are quickly and easily set to the exact value. In addition, the units are maintenance-free with no mechanical parts to wear out.



Starting torque typical with across-the-line starting



Starting torque typical when using the PB Softstarter



PB Softstarters are available in four voltage ranges for applications up to 15 HP (@ 460V).

Open Type Controllers ①

| Maximum Horsepower | | | | | | Current Rating | Catalog Number | Price |
|--------------------|------|-------------|------|------|------|----------------|----------------|-------|
| Single Phase | | Three Phase | | | | | | |
| 115V | 230V | 200V | 230V | 460V | 575V | | | |
| .5 | ~ | ~ | ~ | ~ | ~ | 11 | PBS-011-120V | 759 |
| 1 | ~ | ~ | ~ | ~ | ~ | 16 | PBS-016-120V | 828 |
| 1.5 | ~ | ~ | ~ | ~ | ~ | 22 | PBS-022-120V | 896 |
| ~ | 1.5 | 3 | 3 | ~ | ~ | 11 | PBS-011-240V | 759 |
| ~ | 2 | 3 | 5 | ~ | ~ | 16 | PBS-016-240V | 828 |
| ~ | 3 | 5 | 7.5 | ~ | ~ | 22 | PBS-022-240V | 896 |
| ~ | ~ | ~ | ~ | 7.5 | ~ | 11 | PBS-011-480V | 759 |
| ~ | ~ | ~ | ~ | 10 | ~ | 16 | PBS-016-480V | 828 |
| ~ | ~ | ~ | ~ | 15 | ~ | 22 | PBS-022-480V | 896 |
| ~ | ~ | ~ | ~ | ~ | 10 | 11 | PBS-011-600V | 1107 |
| ~ | ~ | ~ | ~ | ~ | 10 | 16 | PBS-016-600V | 1170 |
| ~ | ~ | ~ | ~ | ~ | 20 | 22 | PBS-022-600V | 1243 |

① PB Softstarters must be wired in series with a separately supplied contactor and overload relay. The contactor provides start/stop control and the overload relay provides motor protection.

Standard Features

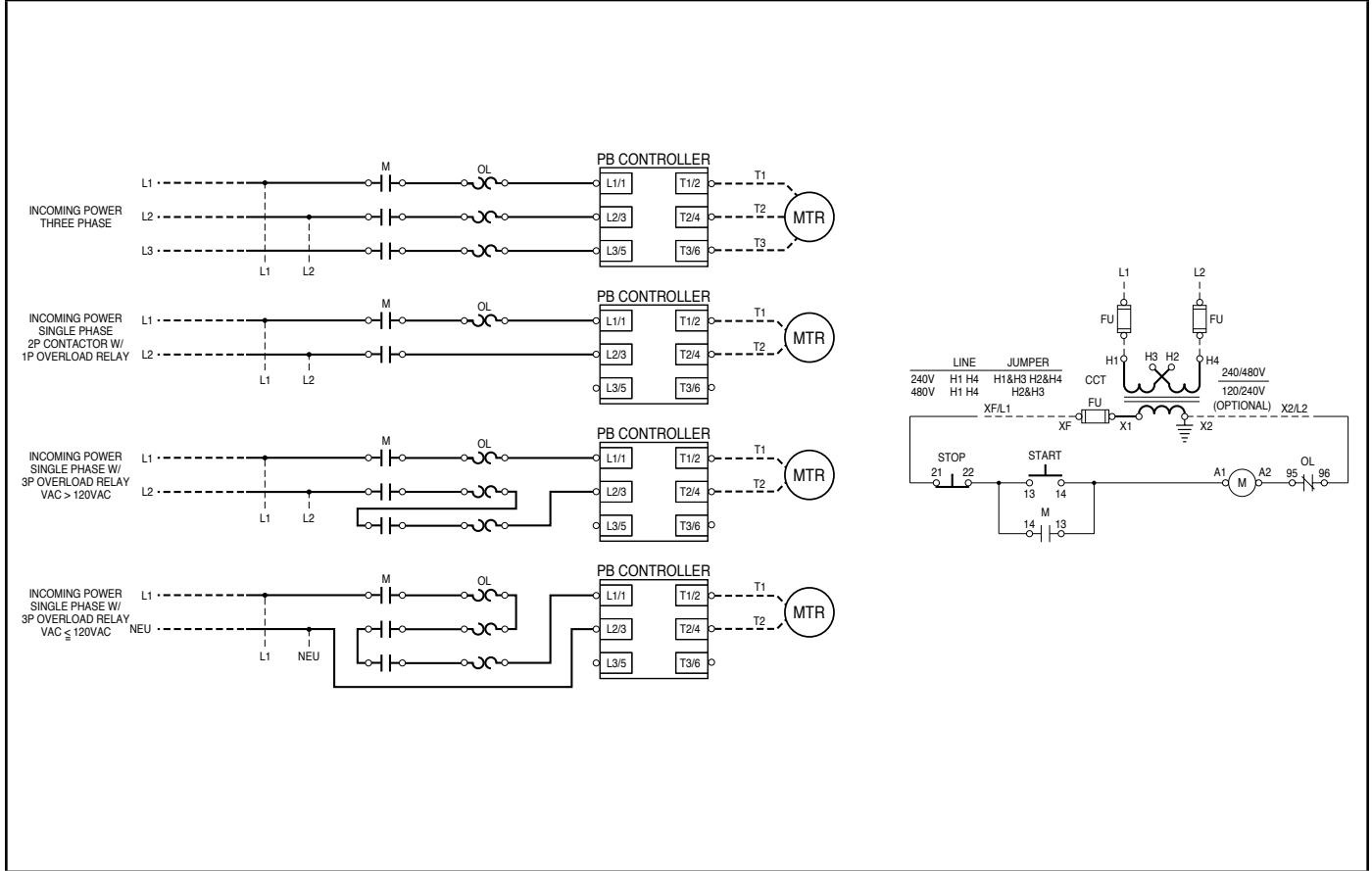
| | | |
|-----------------|-------------|---|
| Set-up | Wiring | PB Softstarters are wired in series with a motor starter. |
| | Adjustments | Desired starting torque and time are configured with rotary digital switches. |
| Starting | | From an initial torque setting, the PB Softstarter increases the voltage gradually during the acceleration period until full voltage is achieved. |
| Running | Protection | Motor overload protection is provided by the overload relay as part of the motor starter. |

**Technical Information
Functional Design Specifications**

| | | PBS-011 | PBS-016 | PBS-022 |
|---|-----------------------------|---|---------------------|---------------------|
| Rated Operating Voltage (+10%, -15%) | | | | |
| UL/CSA | [V] | 100 to 120, 200 to 240VAC, 50/60Hz, 1 phase – 200 to 240, 380 to 480 or 500 to 600VAC, 50-60Hz, 3 phase | | |
| Rated Operating Current | | | | |
| UL/CSA | [A] | 11 | 16 | 22 |
| Rated Operating Power | | | | |
| 1Ø | 120V | [kW] | .75 | 1.1 |
| | 240V | [kW] | 1.5 | 2.2 |
| 3Ø | 220V | [kW] | 2.2 | 4 |
| | 380V | [kW] | 4 | 7.5 |
| | 415V | [kW] | 5.5 | 7.5 |
| UL/CSA 1Ø | 500V | [kW] | 5.5 | 10 |
| | 120V | [HP] | .5 | 1 |
| 3Ø | 240V | [HP] | 1.5 | 2 |
| | 200V | [HP] | 3 | 3 |
| | 230V | [HP] | 3 | 5 |
| | 460V | [HP] | 7.5 | 10 |
| | 575V | [HP] | 10 | 15 |
| | | | 10 | 20 |
| Maximum Heat Dissipation | | [W] | 15 | 18 |
| Power Section | | Back to back SCR(s) | | |
| Thermal Capacity | | NEMA MG1 — IEC 34 (S1) | | |
| Cable Size | | | | |
| Power Terminals | [mm ²] [AWG] | 1.5-6 #14 to #12 | 1.5-6 #14 to #12 | 1.5-6 #14 to #12 |
| Temperature | Operating | [°C] 0° to +50° (32°F to 122°F) | | |
| | Storage | [°C] -40° to +85° (-40°F to 185°F) | | |
| Altitude | [m] | 2000 (6560 feet) | | |
| Humidity | [%] | 5-95% Relative Humidity (non-condensing) | | |
| Repetitive Peak Inverse Voltage Rating | [V] | 1400V up to 480V Line, 1600V up to 600V Line | | |
| Selectable Start Times | | 0.1 to 4.5 seconds | | |
| Selectable Initial Torque Settings | | 10 to 80% locked rotor torque | | |
| Noise and RF Immunity | | Surge Transient Peak 3400V. Showering Arc 1500V. | | |
| DV/DT Protection | | RC Snubber Network | | |
| Resistance to Vibration | | 2.5G for 60 minutes | | |
| Resistance to Shock | | 30G for 11mSec. | | |
| Construction | | | | |
| Power Poles | | High temperature thermoplastic moldings | | |
| Control Modules | | Thermoplastic moldings | | |
| Metal Parts | | Anodized aluminum, plated brass or copper | | |
| Terminals | | | | |
| Power | | 6.0mm hole with clamping plate | | |
| Power Terminal Marking | | NEMA, CENELEC EN50 012 | | |

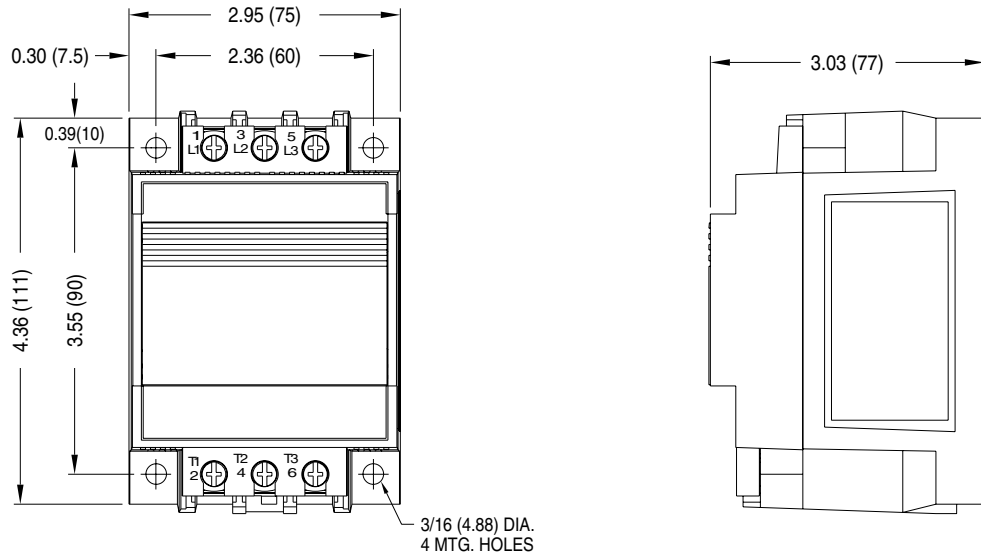
Wiring Diagram

Series PB Softstarter - Wiring Diagram



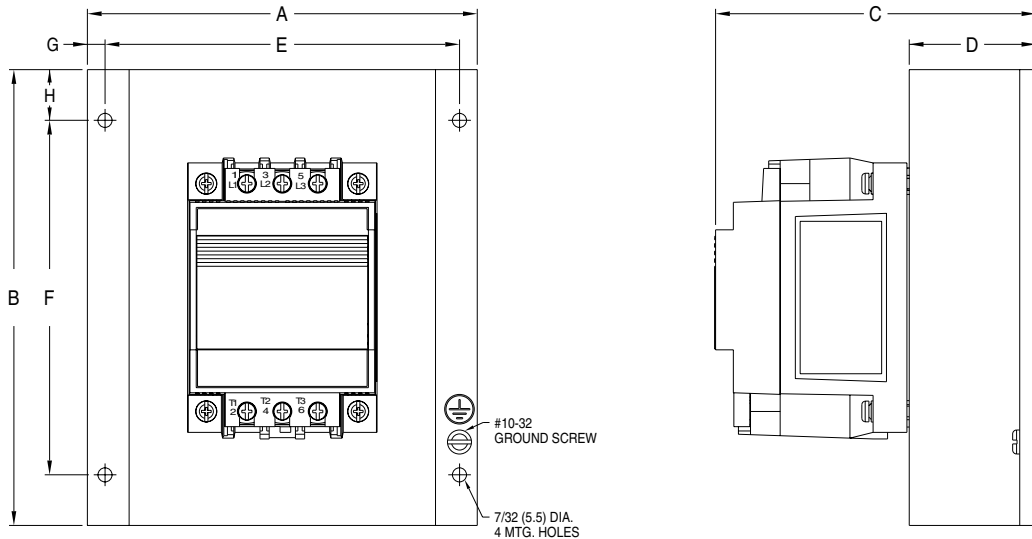
Dimensions

Series PB Softstarter - 11A



| | |
|---------------------|------|
| Approx. ship weight | |
| kg | lbs |
| 0.39 | 0.85 |

Series PB Softstarter - 16 & 22A



| Controller | A | B | C | D | E | F | G | H | Appx. Ship Wt. |
|------------|------------|------------|------------|-----------|------------|------------|----------|-------------|----------------|
| 16 A | 122 (4.8) | 127 (5.0) | 107 (3.97) | 24 (0.93) | 110 (4.33) | 90 (3.55) | 6 (0.25) | 18.5 (0.75) | 2.25 kg (5 lb) |
| 22 A | 154 (6.06) | 180 (7.09) | 127 (5.00) | 50 (1.97) | 140 (5.52) | 140 (5.52) | 7 (0.28) | 20 (0.78) | 3.15 kg (7 lb) |