



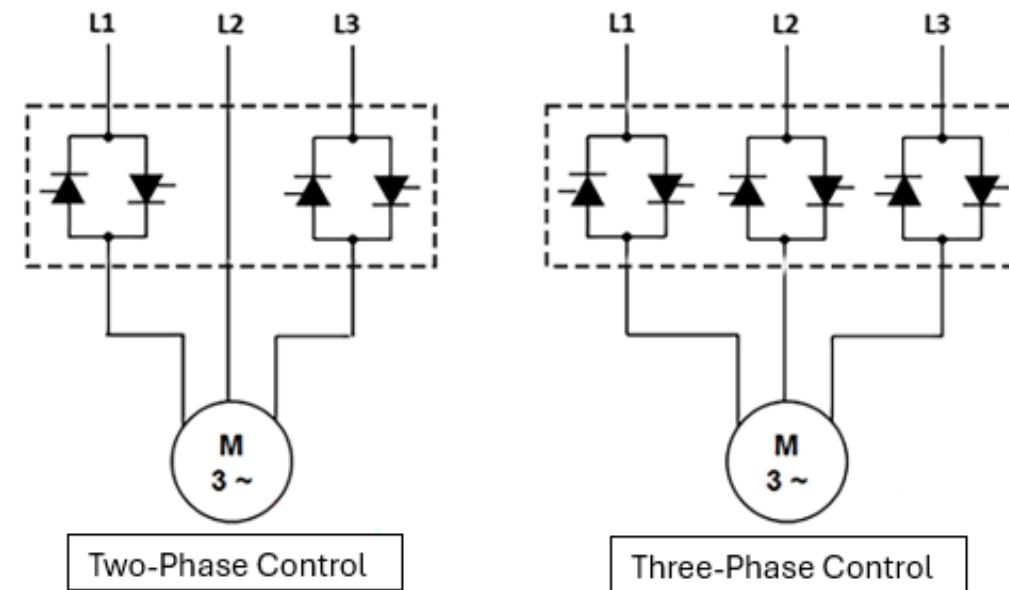
Three-phase Control, Motor Soft-Starters



The Benefits Compared to 2-Phase Control Devices

Three-phase control and two-phase control motor soft-starters both run 3-phase motors, and both appear to do the same job. But do they really?

Three-phase thyristor-controlled soft starters provide clear advantages over two-phase controlled designs in motor performance, system protection, application flexibility, and critically, maintenance safety. Key benefits include:



The Benefits Compared to 2-Phase Control Devices

1. Smooth Torque, Minimal Mechanical Shock

- Three-phase control: Delivers symmetrical three-phase voltage, producing a stable rotating magnetic field and uniform, ripple-free starting torque. This ensures smooth motor start-up and operation.
- Two-phase control: Asymmetrical voltage creates an elliptical magnetic field and pulsating torque, often causing vibration, noise, and reduced smoothness.

2. Balanced Currents, Grid-Friendly Operation

- Three-phase control: Maintains balanced starting currents, minimizing grid impact. Resulting harmonics are more predictable and easier to filter.
- Two-phase control: Causes severe current imbalance and may introduce neutral currents, increasing harmonic distortion and stressing the power system.

The Benefits Compared to 2-Phase Control Devices

3. Better Motor Protection, Longer Service Life

- Three-phase control: Balanced phase currents lead to even heating of motor windings, preventing hot spots, protecting insulation, and extending motor lifespan.
- Two-phase control: Current imbalance results in uneven heating, raising the risk of localized overheating and long-term insulation damage.

4. Higher Control Precision, Wider Applicability

- Three-phase control: Supports smooth, stepless voltage control from initial energization to full voltage, ideal for demanding processes such as low-speed crawling. It is the standard for medium- and high-power, heavy-duty applications.
- Two-phase control: Offers limited control precision and range, generally suitable only for low-torque, low-power systems with simple starting needs, e.g. Fans

The Benefits Compared to 2-Phase Control Devices

5. Superior Maintenance Safety (Major Advantage)

- Three-phase control (with mechanical bypass): During maintenance, the bypass contactor provides a clear physical isolation point between the energized input and motor side, significantly reducing electric shock risk.
- Two-phase control (typically without effective bypass): Even after shutdown, internal terminals remain energized, leaving most of the device live and posing a substantial ongoing safety hazard.



RS PRO Three-phase Control Motor Soft Starters:

RS ARTICLE	Power Rating	Voltage Rating	Current Rating	IP Rating
2275219	1.5kW @ 400Vac	187 → 575 V ac	3A	IP42
2275221	5.5kW @ 400Vac	187 → 575 V ac	11 A	IP42
2275222	75kW @ 400Vac	187 → 575 V ac	150 A	IP42
2275223	7.5kW @ 400Vac	187 → 575 V ac	15 A	IP42
2275224	0.75kW @ 400Vac	187 → 575 V ac	1.5 A	IP42
2275225	11.0kW @ 400Vac	187 → 575 V ac	22 A	IP42
2275226	1.1kW @ 400Vac	187 → 575 V ac	2.2 A	IP42
2275227	15.0kW @ 400Vac	187 → 575 V ac	30 A	IP42
2275229	18.5kW @ 400Vac	187 → 575 V ac	37 A	IP42
2275230	22kW @ 400Vac	187 → 575 V ac	45 A	IP42
2275231	2.2kW @ 400Vac	187 → 575 V ac	4.5 A	IP42
2275232	30.0kW @ 400Vac	187 → 575 V ac	60 A	IP42
2275233	37.0kW @ 400Vac	187 → 575 V ac	75 A	IP42
2275235	3.7kW @ 400Vac	187 → 575 V ac	7.5 A	IP42
2275236	45kW @ 400Vac	187 → 575 V ac	90 A	IP42



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A combination of quality, choice and value
for industrial supplies.

