

NEMA Motor Starters

Motor starters and protection

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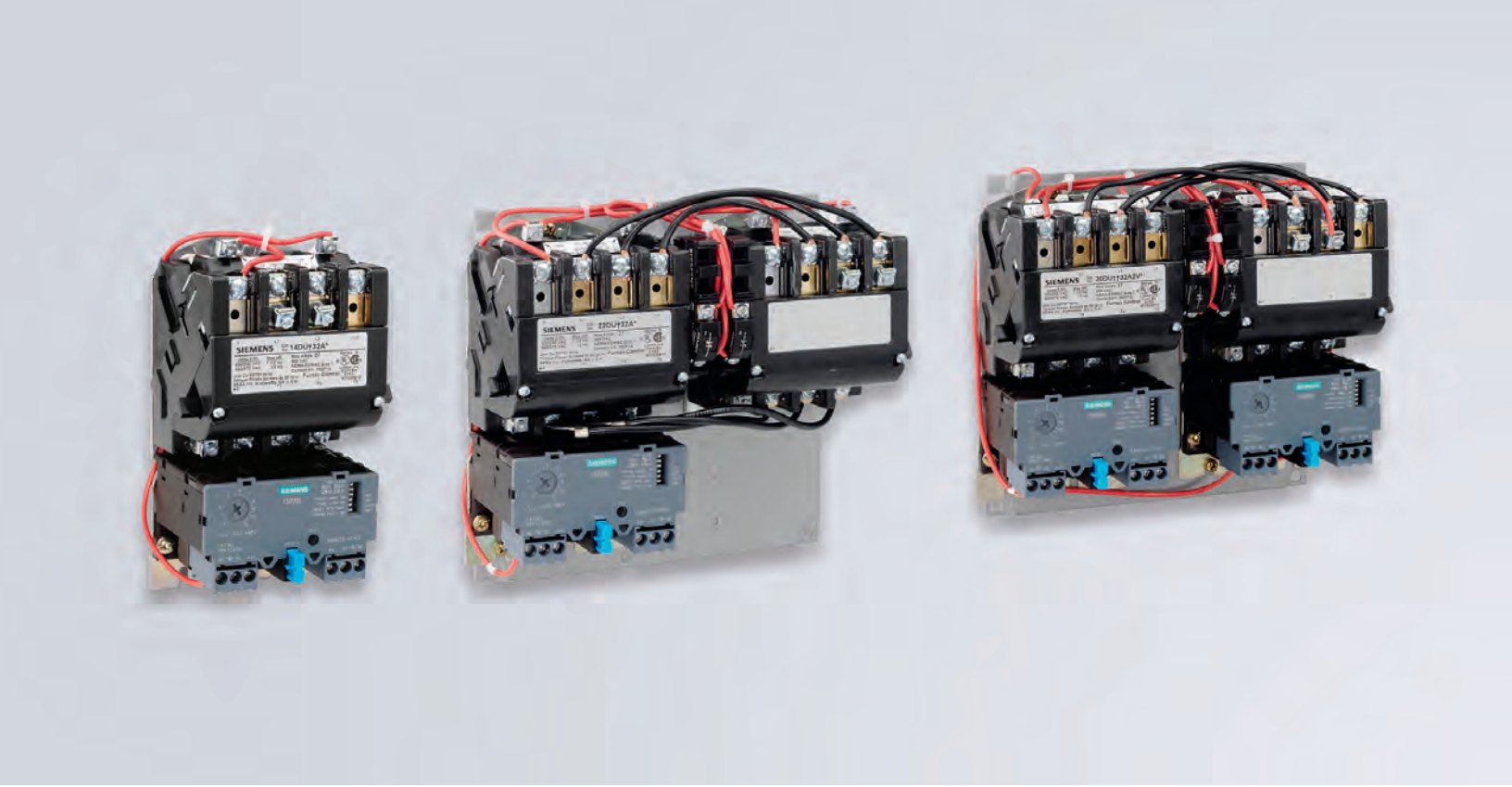

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The newest chapter in our history of motor protection.

Thanks to breakthroughs like our ESP200™ Overload Relay, Siemens starters continue to provide both proven protection and outstanding service. Since the early '90s, Siemens NEMA starters with electronic overload protection have been installed on millions of motors. They are on the front line in protecting against damaging motor overload conditions that degrade motor insulation and shorten motor life.

Customer testimonials claim thousands of dollars in savings on motor repairs and motor replacements. These customers have reduced their downtime and increased profitability by using the Siemens electronic overload relays.

Reliable starters with innovative solid-state overload relays

These starters are built rugged, to withstand the most severe and demanding industrial and continuous-duty commercial applications in the industrial and construction markets. This includes standard full NEMA sizes and motor-matched half sizes exclusive to Siemens.

There is a cost savings up to 31% in using the half sizes for applications where it applies.

Starters are available as open and enclosed, with the ESP200 solid-state overload relay. Available with automatic and remote reset features, the ESP200 self-powered overload relays protect against motor damage while preventing nuisance tripping.

Plus, Siemens offers a wide selection of accessories and spare parts. All these products are readily available through your local Siemens distributor.

NEMA starters

A versatile line of starters and industrial applications



Non-reversing starter with ESP200 solid-state overload relay – Class 14



Reversing starter with ESP200 solid-state overload relay – Class 22



Two-speed reversing starter with ESP200 solid-state overload relay – Class 30

This versatile line offers a motor starter for every application you may have. Siemens offers full or reduced voltage NEMA starters with solid-state electronic overload protection, single-speed or two-speed, reversing or non-reversing, single-phase or three-phase, in full and half sizes 00-8. From fractional horsepower to large 900 HP motors, Siemens NEMA starters are the right choice for demanding applications. All starters are UL listed and CSA certified.

Now available

New Single Phase ESP200 Overload range 25-100 amps, expanded range to meet more single phase applications. Part# 3UB88334GW2

Advantages for diverse industries

Ideal for oil pumping, agriculture, OEM operations and any other industrial applications where motor life is monitored and single-phase protection is important, NEMA starters equipped with ESP200 are both versatile and rugged.

ESP200 overload relays versatility

Designed to be easily installed and readily modified to meet the unique requirements of diverse industries, the ESP200 provides users with the specific level and type of protection they desire. For example, the field selectable Trip Class 5,10, 20 or 30 can easily be set by two DIP-switches and the FLA dial allows for a wide range of adjustment (4:1). These features eliminate the guess factor for application requirements. Together these can result in a reduction in inventory needs by as much as 40% and still address multiple applications.

By offering these and other tailored options, the ESP200 can be easily adapted to the user requirements.

Having both remote and automatic resets available further increases its versatility.

In short, the ESP200 offers a single, convenient, reliable answer to the needs of multiple industries.



Industries that will benefit

- Agriculture
- Automotive
- Cement
- Chemical
- Food & Beverage
- Glass
- Machine Tools
- Marine
- Metals
- Mining
- Oil & Gas
- Pharmaceutical
- Production Machines

Durability

Self-powered, the ESP200 is ruggedly constructed to ensure reliability under the harshest industrial conditions. The protective coated circuit board gives the ESP200 added resistance to environmental challenges and helps to prevent nuisance tripping.

These attributes, along with other aspects, allow the ESP200 to withstand severe conditions.

Easy to use

Removable terminals allowing the ESP200 to be changed without removing control wiring, DIN rail mounting for easy installation and visible trip indicator for faster identification of overload trips are just a few of the ways that these features make installation and regular operation easier for all involved. One NO and one NC contacts are standard and make it simple for the user to wire local contacts.

For critical applications such as refrigeration, select auto reset mode. In auto mode, the ESP200 overload relay will automatically reset in three minutes after tripping, allowing the motor to cool down before restart.

There is also a test button that triggers a complete electronic functions test, including the trip mechanisms.

These easy-to-use features all contribute to increased motor uptime and a better return on your investment.

Protection

The ESP200 has touch-safe terminals to prevent accidental touching of live circuits. The ESP200 is UL listed and CSA certified according to the strictest standards. With ground fault detection that trips at 60% of motor current, the ESP200 protects against high-resistance short circuits or ground faults due to moisture, condensation, insulation damage or other reasons.

To protect motors against over heating and related temperature damage, the ESP200 also has phase loss protection that trips in less than 3 seconds, phase unbalance protection and thermal memory to prevent the motor from restarting while too hot. While protecting the motors, the ESP200 has been designed to operate at a wide range of temperatures and be insensitive to ambient temperatures that do not affect motor operation. These features prevent nuisance tripping and increase motor uptime.

The ESP200 even protects itself in the event of a short circuit, unlike bimetal or melting alloy overload relays. This eliminates the need to replace the overload after a short circuit.





Construction applications

Building beyond expectations

Perfect for use in the construction of schools, hospitals, water treatment plants, retail areas and commercial facilities, the ESP200 is more than just another overload relay. The ESP200 is ruggedly designed, uniquely versatile and cost- competitive, all of which make it singularly well suited to answer diverse construction needs.

Saving time and money

Field selectable for Trip Class 5,10, 20 or 30, the ESP200 can easily be set by two DIP- switches. This versatility effectively eliminates the guess factor of application requirements and allows for reduced inventory for multiple applications.

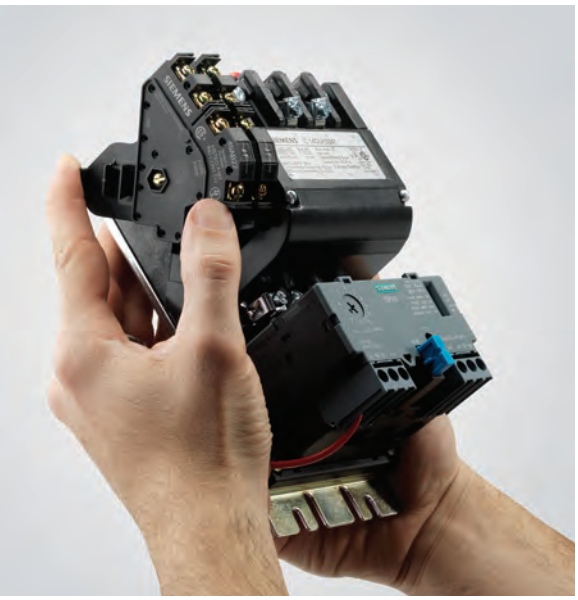
Also, its visible trip indicator saves time by making it faster to identify trips. Plus, the easy installation features, including DIN rail mounting and self-power, means reduced installation time and none of the costs required for an external power supply.

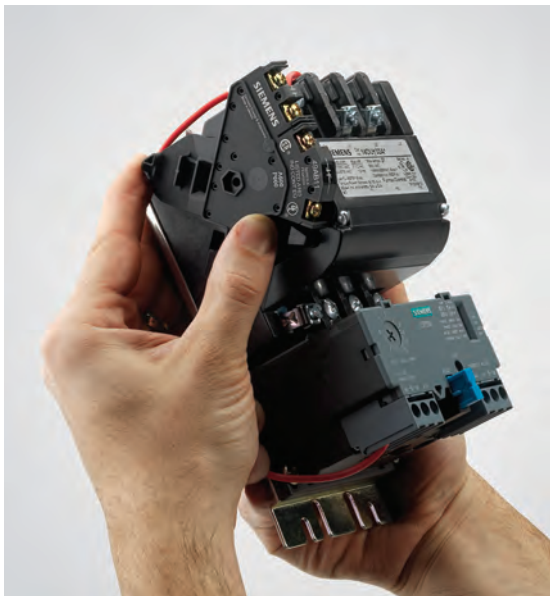
Reliability

Thanks to its rugged design, coated circuit board and ability to work in a wide temperature range, the ESP200 offers a higher level of reliability. It's this combination that makes the ESP200 a worry-free solution for construction needs in even the most demanding environmental conditions.

The Siemens answer

With so many advantages for both industrial and construction applications, NEMA starters with ESP200 overload relays add another example of Siemens reliability and technical expertise at work. These advantages coupled with the easy availability of Siemens through distributors and other avenues make Siemens NEMA starters an easy choice whether dealing with a singular challenge, formulating specifications or just deciding what to keep in stock. NEMA starters with ESP200 overload relays can retrofit an installed competitor's starter.





Snap-on auxiliary contacts



Contactors

The family of contactors, reversing and nonreversing, offers all sizes from 00-8 in standard NEMA sizes. Unique motor-matched half sizes are available in the standard product line. Siemens offers vacuum contactors for specific applications up to 400 horsepower at 600 volts.

Auxiliary contacts

Snap-on: Installing or removing the auxiliary contacts requires no tools. Simply snap the contact block into either side of the contactor and push down to install. Just pull out to remove.

Front mounting: For easy access and time savings.

Pressure plate terminals: For ease of wiring and reliable connections.

Superior contact reliability: Designed to provide reliable contact conductivity at low power for programmable controller applications.

Multiple auxiliary contacts: Up to 8 contacts per contactor or starter, normally open or closed (NO or NC).

Visual symbols: For ease of identification, the contacts are labeled with symbols for NO or NC.

Electronic overload relays

To protect and serve, defending your investments



Solid-state ESP200
overload relay – Class 48





Solid-state ESP200
overload relay – Class 958

Building and improving on past successes, self-powered ESP200 overload relays are a revolution for both industrial and construction applications. These overload relays provide accuracy unmatched in the market. With repeat accuracy of greater than 99%, trips can be set to the most specific conditions, resulting in both longer motor life and cost savings.

The ESP200 overload relay is so simple to configure. Just set the FLA dial to match the FLA of the motor nameplate and set the DIP switches per the faceplate engraving. No software or manuals are required.

If replacing your existing installed ESP100 with the new ESP200, no modifications to the contactor, enclosure or MCC compartment are required.

The 958 ESP200 solid state overload relay is specifically designed to provide protection for sealed compressors and artificially cooled motors.

The 958L ESP200 is specifically designed for the oil market and pumping applications with a precise trip curve to provide accurate trip when needed.

Features:

- **Trip classes – 5, 10, 20 or 30 selectable by DIP-switches**
- **Phase loss protection – Trips in less than 3 seconds**
- **Phase unbalance protection**
- **Ground fault protection**
- **Visible trip indicator**
- **Ambient insensitive**
- **No heaters required**
- **Self-powered – No separate source required**
- **FLA dial with wide adjustment – 4:1 ratio**
- **Self protected in short circuit condition**
- **Test button – Tests electronics**
- **Thermal memory**
- **Conformally coated circuit board**
- **1 NO and 1 NC contacts standard**
- **Operating temperature: -25° C to + 60° C**
- **Repeat accuracy <1%**
- **Removable control terminals**
- **Selectable manual/Automatic reset**
- **Remote reset**
- **DIN rail-mounted**
- **Touch-safe terminals**
- **UL listed and CSA certified**





Solid-state ESP200
overload relay – Class 958L



Snap-in coils



Contact tips

Coils
Consider these features:

Snap-in coils: No tools are required for installing or removing the coil.

Wide variety: Offered in a wide variety of A/C and D/C voltages, in both single and dual voltages.

Single coil: Same size coil is used for contactor sizes 00–2 1/2, reducing inventory for spare parts.

Visible jumper connections on labels identify proper voltage connections. Jumpers are supplied if required.

Encapsulation: Protects against dust, increases vibration resistance and provides improved heat dissipation.

Saddle clamp terminals: Provides wire guide, reliable connection and ease of wiring.

Power contacts:
Power contacts from Siemens offer a range of advantages to ensure smooth functioning.

Easy to inspect: Power contacts are easy to inspect. No need to remove any wiring, just loosen 2 captive screws on front cover for visual inspection of the contacts.

Removal: Easily removed by twisting contact to the side and pulling it out.

Contact tips: Large silver cadmium oxide for durability, increased reliability and longer life.

Design: Contacts are designed on a 45° wedge to provide reduced bounce time and faster arc quenching for longer life.

Dropout: Gravity dropout with spring-loaded mechanism provides quick opening of contacts.

Standards: Contacts are tested per NEMA standards for electrical and mechanical life. All contactors and starters are UL listed and CSA certified.

Accessories and parts



Terminal kit for use with direct coupled overload relays to separately mount



Tamper resistant cover



Mounting plate for the ESP200 to be coupled with the contactor plate



In order to help address any specific challenges that arise, Siemens offers a variety of readily available accessories for field or factory additions and modifications. These include replacement parts for maintaining starters and contactors for longer life and proper operation. All of these are available at your local Siemens distributor.

For more information about how Siemens starters can help you enhance your motor protection while simplifying installation and reducing costs, contact your local Siemens sales office or ask your Siemens distributor how to order today. Refer to the additional brochures listed below for information on other NEMA and general-purpose control products. Order online via the Siemens Literature Fulfillment System at www.usa.siemens.com/literature or contact your local Siemens sales office.

Enclosed NEMA Starters Publication
No. NEBR-ENCST-0320
Manual Motor Controls Publication
No. NEBR-MANMC-0219
Pump Controls Publication
No. NEBR-PUMPS-0119
Lighting & Heating Contactors Publication
No. NEBR-LTGCO-1019
Control Power Transformers Publication
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