PRODUCT PORTFOLIO

PHARMACEUTICAL MANUFACTURING EQUIPMENT SOLUTIONS

For mixers & blenders, fillers, and tablet compression presses

ENGINEERED TO OUTRUN

The pharmaceutical manufacturing industry is rapidly evolving, driven by advancements in R&D, the rise of biopharmaceuticals and personalized medicine, and increasing regulatory demands. This evolution is fueling the need for advanced, automated equipment that ensures efficiency, precision, and compliance.

Discover how ABB products can provide reliable, efficient, and robust electrical solutions to support the needs of this critical industry.

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APPLICATION OVERVIEW

Pharmaceutical manufacturing equipment solutions

Ingredient Preparation

1. Weighing and Dispensing

Ingredient Processing

2. Granulation
3. Drying
4. Milling & Sieving
5. Mixing & Blending

Product Formation and Finishing

6. Product Formation
7. Coating and Printing

Packaging

8. Primary Packaging
9. Secondary Packaging
10. Gas Cabinets
11. Vacuum Pump System
12. HVAC Room
13. LV/MV Distribution

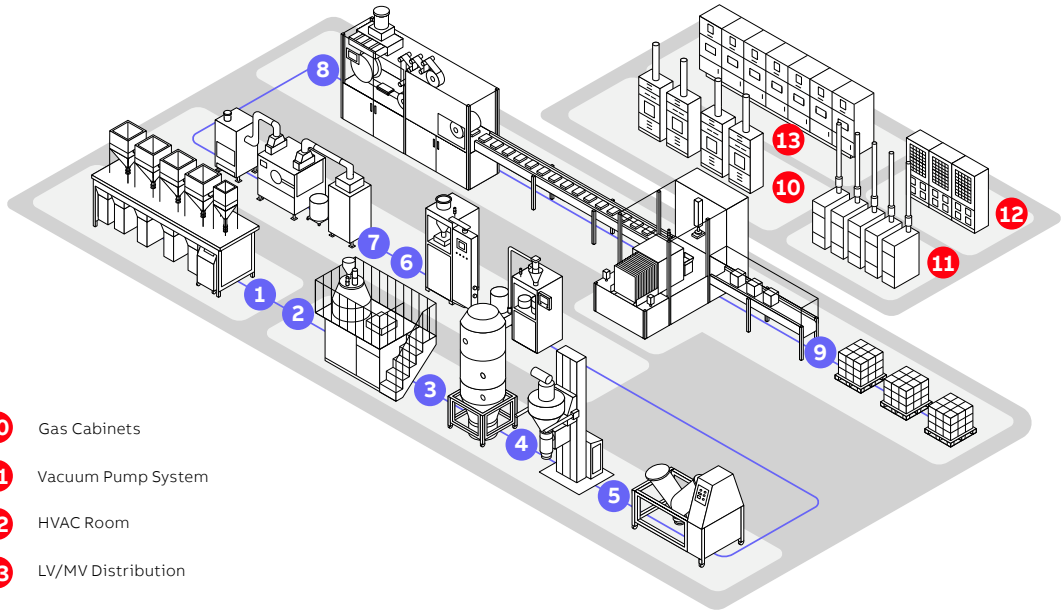


Figure 1: Layout of a generic pharmaceutical manufacturing process

Note: This diagram provides a simplified overview of pharmaceutical manufacturing and does not represent all processes or product types.

Pharmaceutical manufacturing is a precision-driven process that transforms raw materials, active pharmaceutical ingredients (APIs) and excipients, into safe, effective, and consistent dosage forms. These forms include tablets, capsules, liquids, creams, inhaled formulations, and injectables, each requiring tailored handling and formulation techniques to meet strict quality and regulatory standards.

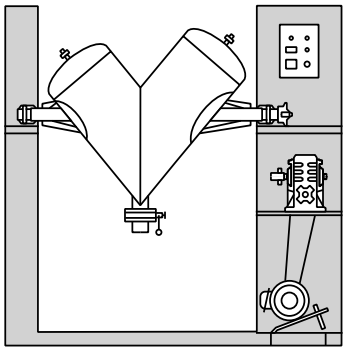
The following illustration outlines the core stages commonly involved in a typical solid dose manufacturing process, beginning with raw material preparation and concluding with final product packaging. The following pages detail ABB solutions for mixing and blending, filling, and tablet compression applications. However, ABB's power and control components can apply to many areas of the pharmaceutical manufacturing process.

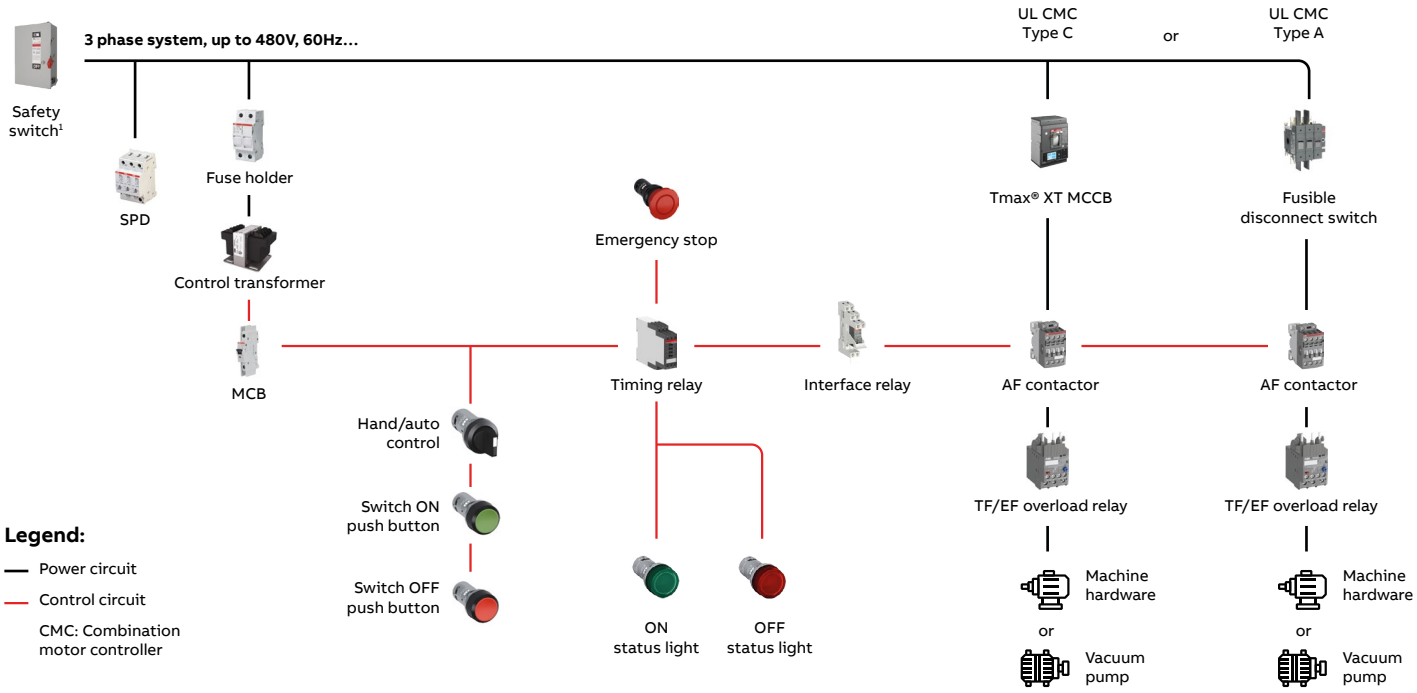
APPLICATION OVERVIEW

Mixers and blenders

Pharmaceutical mixers and blenders create homogeneous mixtures from two or more substances. Precision is critical as different batch sizes and formulations require control of speed, temperature, and mixing time to ensure consistent product quality.

Reliable power and control systems enable this precision. Power drives the mechanical motion required for effective blending, while control systems manage critical operational parameters. Together, they ensure consistent, high-quality outputs across various pharmaceutical formulations.





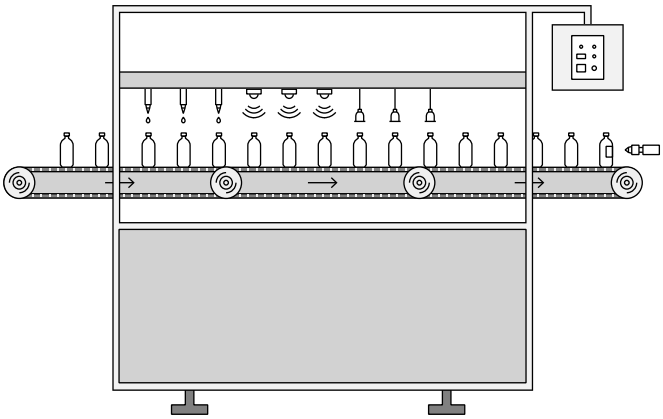
Note: This configuration is for a generic system and is not representative of existing manufacturers.
¹ Use the fusible version to meet NEC code requirements.

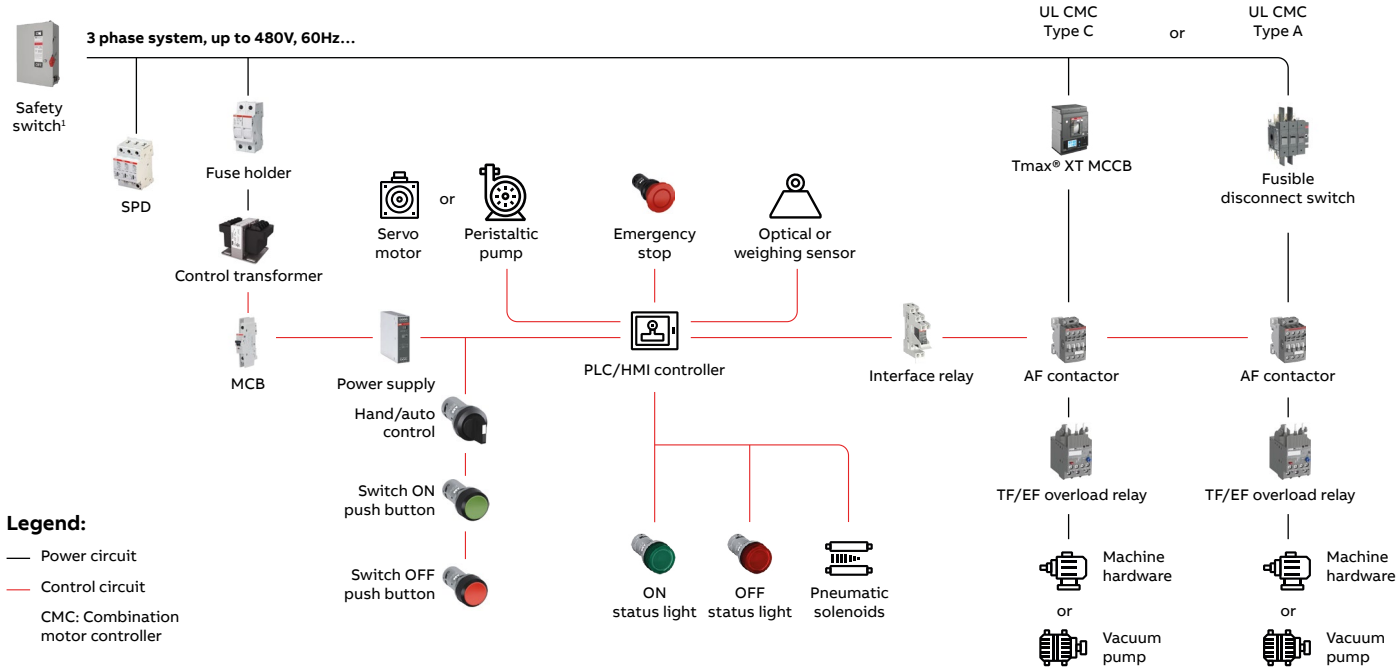
APPLICATION OVERVIEW

Fillers

Pharmaceutical fillers are designed to dispense precise dosages into capsules, vials, or syringes while maintaining a sterile environment.

Power and control systems are essential to achieving accuracy and repeatability. Even small fluctuations in power quality can lead to dosing variations and operational inefficiencies. Effective power management provides safety and protection by incorporating overload and short-circuit protection, which helps prevent equipment damage and ensure consistent performance. Additionally, control systems improve operator safety by immediately shutting down equipment in the event of an emergency or unsafe condition.





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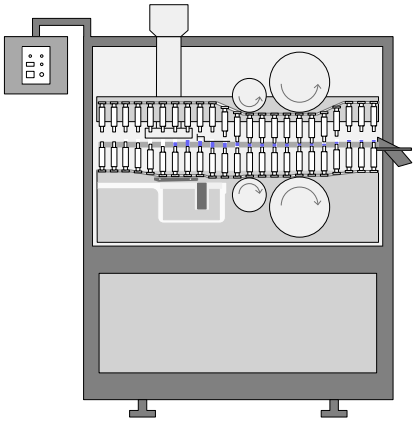
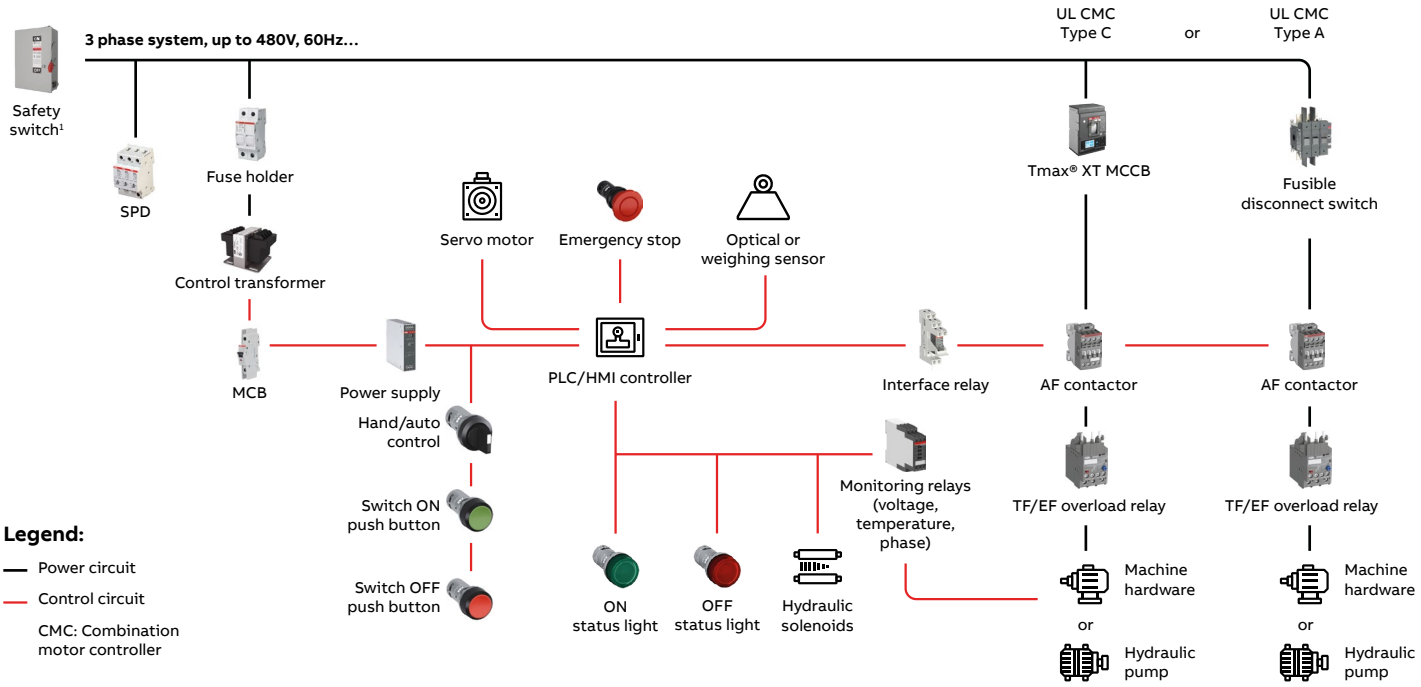
APPLICATION OVERVIEW

Tablet compression presses

Tablet compression presses convert powders or granules into solid tablets that meet strict dosage, shape, and weight pharmaceutical standards. The process enables the efficient, large-scale production of uniform tablets, which are one of the most common forms of medication.

Precision and reliability are essential to ensure product quality, operational efficiency, and safety. Motors and drives provide the mechanical force for compression, while stable power quality and protection devices prevent operational losses from voltage fluctuations or faults. Control systems monitor critical variables such as compression force, speed, and fill depth. Precise control of these variables ensures that each tablet is uniform and in compliance with quality standards.





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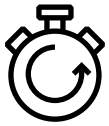
KEY VALUES

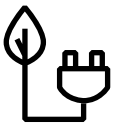
01



Continuous operation

Avoid operational disruptions and downtime with ABB circuit breakers. Equipped with advanced trip units, our breakers identify voltage irregularities and protect your production system.

02



Energy-efficient system

Our AF coil technology boosts control panel energy efficiency, which means less dissipated heat, reduced operating costs, and better equipment performance for your pharmaceutical processes.

03

Compact and easy to install

Save space, reduce assembly time, and experience greater design flexibility with our narrow designs in circuit breakers, contactors, and overload relays.

04

Safety and protection

Our product specifications help to enhance safety and reduce hazards by using surge protective devices and monitoring relays to help provide added equipment protection.

FEATURED PRODUCTS

SACE® TMAX® XT MOLDED CASE CIRCUIT BREAKERS (MCCBs)

Product range
This circuit breaker portfolio helps ensure extreme performance and protection features up to 1200 A.
Performance & protection
It sets the standards when extreme breaking capacity is needed, sharing the same logic, interfaces, and features regardless of operating voltage or environmental conditions.
Data & connectivity
Provide advanced metering features and access, monitor, and control information remotely, improving efficiency and saving energy.

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AF CONTACTORS

Product range
UL 508 and UL 60947-4-1 contactors certified for up to 900 hp - 480 V and 2850 A - general use.
Installation
Comes in screw, push-in spring and ring tongue connection types. The push-in spring terminals offer only one push for extremely fast wiring.
Energy efficient
A reduction of the coil's energy consumption lets customers save energy.

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SAFETY SWITCHES

Flexible across applications
Full range of safety switches (general duty, heavy duty, double-throw switches, and emergency power transfer switches) from 30 to 1200 A, along with field installable accessory kits.
Save time and labor costs
Switches are fully factory assembled and tested, ready to install.
Superior safety
All switches meet or exceed cULus requirements and are fully tested at the factory before shipment.

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DIN-RAIL SURGE PROTECTIVE DEVICES (SPDs)

Product range
UL 1449 approved, with options for voltages up to 600 V AC.
Durability
Safety reserve system with two varistors per line to extend protection lifetime.
Installation
Pluggable and replaceable cartridges for easy replacement during maintenance.

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POWER SUPPLIES

Product range
Wide range of AC or DC supply voltages with output voltage of up to 48 V DC, output current of up to 20 A and output power of up to 480 W.
Durability
Coated (PCBA) and ATEX certification available for hazardous locations. It has overload protection, active power factor correction and a broad certified AC and DC input range.
Efficiency
These power supplies have a 150% integrated power reserve and operate at an efficiency of up to 94%.

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MINIATURE CIRCUIT BREAKERS (MCBs)

Product range
Largest selection of current-limiting, compact, DIN-rail mounted MCBs for AC and DC applications with ratings of 0.2 to 100 A, up to 600 V AC/DC and 50 kA short circuit protection.
Safety
Thermal and magnetic trips are provided to cover both overcurrent and short-circuit faults.
Compliance
UL 489 approved.

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COMPLEMENTARY PRODUCTS

FUSE HOLDERS

Durability and reliability
Fuse holders have venting grooves and cooling chambers to improve heat dissipation.
Product range
UL approved IP20 fuse holders with ratings up to 60 A at 600 V AC/DC.
Installation
Ergonomic flip hinge makes fuse replacement easier in small spaces, even while wearing gloves.

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ENCLOSED ROTARY SWITCHES (ERS)

Product range
UL 508 and UL 98 approved portfolio of enclosed switches 16 to 100 A and UL/NEMA 1, 3R/12, 4/4X enclosure options.
Harsh conditions
Suitable for wet and corrosive environments housed in thermoplastic/polycarbonate, steel sheet, or stainless-steel enclosures.
Continuous operation
Maximize uptime with a switch rated for a minimum of 6,000 operations under load and 20,000 operations mechanical endurance.

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OVERLOAD RELAYS

Product range
Thermal overload relays cover a current range from 0.1 A to 200 A, while electronic overload relays cover an even larger current range from 0.1 A to 1250 A.
Energy-efficient
Electronic overload relays combine high accuracy with an energy-efficient design that does not need an extra external supply.
Continuous operation
The selectable automatic reset mode allows for reduced downtimes and traveling costs for installation in dispersed locations.

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OS FUSIBLE DISCONNECT SWITCHES

Safety and protection
Designed for personal safety as well as for reliable process protection.
Reliability and performance
The knife contact design, in combination with the fuse link, enables rapid fault clearance and maintains a protection level even after a fault occurs.
Installation
Its accessories create considerable savings in terms of installation time and costs. For example, the shaft can be adjusted to various installation depths, which eliminates the need for special cutting tools.

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DEFINITE PURPOSE CONTACTORS

Product range
Define purpose contactors certified for wide current range from 20 A up to 75 A up to 600 V AC.
Size flexibility
Comes in various flexible sizes, compact 1 and 2 pole contactors and full size 2, 3, and 4-pole.
Easy installation
Industry standard mounting plate provides easily accessible mounting holes.

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M MINI CONTACTORS

Product range
Contactors certified to UL/CSA for up to 3 hp - 240 V, 7.5 hp – 480 V, 10 hp – 600 V, or 20 A (600 V AC) – general use.
Installation
Comes in two terminal types available: screw and screw for ring tong ferrules. Complete range of accessories including front or side mounting auxiliary contact blocks, surge suppressors and electronic timers.
Operation
Standard DC versions with extended operating limits coils.

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COMPLEMENTARY PRODUCTS

B SERIES MINI CONTACTORS

Product range
Contactors certified to UL/CSA for up to 3 hp – 240 V,5 hp – 480V, or 16 A – general use.
Installation
Connection types available: screw, soldering pins and flat pin. Available in mini-reversing contactor with built-in mechanical interlock.
Energy efficient
Energy and cost savings with special version of 1.4 W coil consumption for direct connection to PLC.

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LIMIT SWITCHES

Reliable in extreme conditions
Plastic or metal casing limit switches are designed to operate in the most difficult environments.
Continuous operation
High mechanical durability can handle up to 30 million operations with contacts that are mechanically linked to actuators.
Easy to install
Satisfy design specifications with the flexibility of three different types of electrical connections and cable lengths.

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MEASURING AND MONITORING RELAYS

Design
Wide range of products from single- and three-phase monitors to temperature monitoring relays.
Technology
Easy Connect Technology with push-in terminals allows the product to be wired much more quickly and easily – without the need for tools.
Product range
Comes in value devices (CM-E range) and advanced solutions (CM-S and CM-N range) to meet customer's needs.

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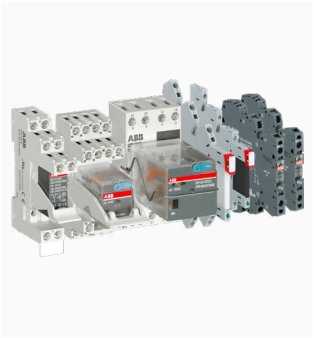

INTERFACE RELAYS AND OPTOCOUPLERS

Continuous operation
Optocouplers allow for continuous operation without any mechanical wear-and-tear.
Installation
The interface relay includes both pluggable and non-pluggable relays. The pluggable relays allow for the easy and seamless exchange of relay modules.
Product rating
The wide variety of pluggable interface relays have coil voltages from 5 V DC to 230 V AC and are accompanied by standard or logic sockets that may be used for switching AC or DC loads.

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22 MM PILOT DEVICES

Product range
Modular plastic and metal ranges include flexible and adjustable products to meet your exact needs.
Reliability
Designed with a protection degree of up to 4X, helping provide reliability in extreme environments.
Installation
The compact range reduces installation space and saves time, and the modular range enables tool-free installation that is quick and simple.

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NEMA 30 MM HEAVY-DUTY OIL-TIGHT PILOT DEVICES

Product range
NEMA types 1, 3, 3R, 4, 4X, 12 and 13 to meet a wide range of applications.
Durability
Due to the octagonal locking nut design, greater torque can be applied during assembly and installation to provide a water- and oil-tight fit.
Installation
Ease of assembly with one-screw contact block mounting and easy wiring with 45° angled wire terminals.

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COMPLEMENTARY PRODUCTS

CONTROL POWER AND MACHINE TOOL TRANSFORMERS

Installation
Type IP transformers are lightweight, small, and designed for minimum mounting dimensions.
Safety
Finger-safe terminals offer added protection and safety.
Reliability
Pressure-plate terminals ensure secure connections.

CATALOG

WEBSITE

LEARN MORE

To learn more about ABB engineered products for pharmaceutical manufacturing, visit our website

CONTACT US

Do you have a similar project and are you searching for the right application configuration?
Contact us and talk to our experts!

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