Enclosure Options

13.1 Enclosure Options

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13.1 Alternate Enclosures

Enclosure Options

Enclosure Options

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Overview

Eaton's packaged control line offers a full line of enclosure options. Application and environmental requirements can change from location to location, therefore so do the enclosure sizes and types. This section of the catalog discusses some of the capabilities of the packaged control line. For other applications or enclosure options, refer to the product specific sections of this catalog or contact your local distributor.

Non-Metallic Enclosures

Eaton's packaged control product line offers a full line of nonmetallic enclosures for your application needs. This includes the NEMA, lighting, soft starter and custom product lines.

Features

- Designed to meet UL, CSA and CE standards for enclosures
- Type 4X enclosure rating
- Opaque and transparent covers available in most styles
- Available with gasketed tops
- Available with hinged cover options
- Suitable for use in indoor and outdoor applications

Options

- Types of covers: screw-on or hinged
- Transparent or opaque covers in most versions
- DIN rail mounting or panel mounting
- Additional holes/knockouts can be added for easy installation
- Cover control
- Oversized enclosures
- Type 1, 12 and 3R versions

For ordering this option, change the 7th digit in the catalog number to a **5** (that is, ECN222**1**AAF becomes ECN222**5**AAF).

316 Stainless Steel Enclosures

Many people believe that stainless steel is not susceptible to corrosion. While stainless steel greatly improves corrosion resistance, it is still potentially susceptible to corrosion. Certain chemicals, salts, chlorides and acid can corrode stainless steel. Corrosion resistance varies among the different grades of stainless steel due to the chemical composition of the individual grade and is the result of the formation of an oxide film on the surface of the metal. This film can be damaged when used in harsh environments containing chlorides, chemicals and salts, which attack the film and lead to some types of corrosion.

There are many forms of corrosion beyond that of well-known rust. Other common forms of corrosion that may come into play at customer installations include galvanic or two-metal corrosion and pitting corrosion. Galvanic corrosion occurs when two dissimilar metals are placed in contact or are electrically connected. A potential difference produces electron flow between the metals that results in increased corrosion of the less corrosion-resistant metal and a decrease in corrosion of the more resistant material than would occur if the metals were not in contact. Pitting is typically in the form of localized attack that creates holes in the metal. These holes may be very small and difficult to detect due to accompanying rust. 304-Grade stainless steel is susceptible to this form of corrosion in certain atmospheres.

Fortunately, there are options available for applications where 304-Grade stainless steel is susceptible to corrosion. Enclosures manufactured with 316-Grade stainless steel offer even better corrosion resistance to most chemicals, salts and acids and are better suited for installation in marine atmospheres. In marine atmospheres, 304-Grade stainless steel may develop staining with patches of yellowish-brown film. 316-Grade stainless steel yields improved pitting corrosion resistance versus other grades of stainless (for example, 304-Grade) where brines, highway de-icing salts or chlorides are present.

For ordering this option, change the 7th digit in the catalog number to a **9** (that is, ECN222**1**AAF becomes ECN222**9**AAF).

Type 3R Stainless Steel Enclosures

Often, customers are looking for enclosures to install outdoors where they will be exposed to harsh environmental conditions including salt, acid rain, chemical run offs and mist. In these applications, the unit will not be exposed to high-pressure wash downs. Therefore, the customer does not need a fully rated Type 4 enclosure, but rather a product with a higher resistance to corrosion than standard carbon steel. This product design meets the customers' needs.

Pump panel applications will be the primary use for the Type 3R stainless steel option. It offers customers the opportunity to replace their carbon steel Type 3R enclosures with a stainless steel unit that will help resist rusting. For pump panels (ECN54/55, ECT54/55 and ECP54/55), this option is especially attractive.

For ordering this option, change the 7th digit in the catalog number to an **A** (that is, ECN222**1**AAF becomes ECN222**A**AAF).

Type 7/9 Explosion Proof Enclosures

Some applications are exposed to areas in which hazardous materials are handled or stored. These environments require explosion proof enclosures.

Class I locations require the type of explosion-proof electrical equipment where, in case of explosion, the hazardous flames would be contained. In Class II or III locations, dust, fibers and flyings are the combustible materials and it is only necessary to keep these materials out of the electrical equipment (where an arc may take place) and to maintain safe external temperatures.

Further refinement created for the purpose of testing and approving electrical equipment divides Class I into four separate designations: A, B, C, D and Class II into three separate designations; E, F and G. Underwriters Laboratories test and approve electrical equipment for the specific groups.

For more descriptions on code and class definitions, see **Tab 9**.

For ordering this option, change the 7th digit in the catalog number to a **6** for bolted design, and **7** for threaded design. (that is, ECN222**1**AAF becomes ECN222**7**AAF).

Paint Options

With a full line paint shop, we can offer custom solutions for our customers. In many cases this includes custom colors for your panels. This helps in establishing brand identity for our OEM customers and differentiates them from their competition.

OEM Panel Solutions

With one of the largest steel fabrication shops available, we are able to quickly design a custom enclosure for your company's particular needs. Also, with our own custom paint facilities, we can customize the look and feel of your control panels to meet your corporate image.

With our large staff of professional engineers, we are able to quickly and efficiently design your panels for you, using the latest technologies.

Our abilities include:

- AutoCAD
- Mechanical Desktop/ Inventor
- Mechanical Engineering
- Electrical Engineering
- UL Test Certification
- Short-Circuit/Thermal Testing
- Prototyping

Due to our focus on control panels, we have become highly efficient and strive to exceed our customer expectations on performance, quality and delivery.

Eaton can offer the OEM a wide range of solutions for your control and production needs, including:

- Agency testing and certifications
- Flexible ordering schedules and volumes
- Wide range of options for value selling by the OEM
- Fast prototyping
- Just-in-time delivery
- Drop-in technology for their systems
- On-site inspections

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Catalog Number Selection

Enclosures

ECN 16 3 4 A A F - ____

- **ECN** — Design Type
- **16** — Starter Type
- **3** — NEMA Size
- **4** — Enclosure Type
  - **1** = Type 1—General purpose (painted steel)
  - **2** = Type 3R—Rainproof (painted steel)
  - **3** = Type 4—Watertight (painted steel)
  - **4** = Type 4X—Watertight (304 stainless)
  - **5** = Type 4X—Watertight (non-metallic)
  - **6** = Type 7/9—Explosion proof (bolted)
  - **7** = Type 7/9—Explosion proof (threaded)
  - **8** = Type 12—Dust-tight (painted steel)
  - **9** = Type 4X—Watertight (316 stainless)
  - **A** = Type 3R—Rainproof (304 stainless)
- **A** — Coil/Transformer Voltage
- **A** — Cover Control
- **F** — Disconnect/Breaker Ratings
- **-** — Modification Codes