

Protect Your Sensitive Equipment at the Edge. Start by Understanding NEMA Type Ratings.



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Emerging technologies driving the Internet of Things (IoT) and Industry 4.0 are accelerating the need for network connectivity and compute everywhere. Protecting the sensitive—and expensive—equipment that powers and connects these networks is paramount, so it is important to understand where they will be located. Harsh indoor and outdoor environments require special electrical enclosures that ensure reliable, uninterrupted operation of the equipment inside.

Thankfully, the National Electrical Manufacturer Association (NEMA) has established a protection rating system to help identify which type of enclosure will best protect the sensitive, expensive equipment housed inside.

However, selecting an enclosure with an improper rating is one of the most common errors when specifying a NEMA Type enclosure. This can result in inadequate protection for equipment, leading to wasted time and money, or worse, network outages and crippling downtime.

To satisfy most nonhazardous location requirements, focus on three enclosure ratings: NEMA Type 12, NEMA Type 4 and NEMA Type 4X.

NEMA Type 12



Common applications: Use NEMA Type 12 enclosures to house standard IT networking connections and equipment or automation control and electronic drive systems for packaging, material handling and process control systems in noncorrosive environments within warehouses and manufacturing facilities.

Deployment Location: Indoor only

Construction: Mild steel, foam gasket

Protection Against:

- Nonhazardous foreign solid objects such as falling dirt, dust, lint, fibers and flyings
- Nonpressurized, light water drips and splashes
- External condensation of noncorrosive liquids

NEMA Type 4



Common applications: Use NEMA Type 4 enclosures to house standard IT networking connections and equipment, automation electronics or telemetry for noncorrosive and non-explosive processes like telecommunications phone and cable network distribution, communications signal equipment and security equipment.

Deployment Location: Indoor or outdoor

Construction: Mild steel, foam gasket

Protection Against:

- Foreign solid objects such as falling dirt, dust, lint, fibers and flyings
- Hosedown or pressurized streams of water; at least 65 GPM of water from a distance not less than 10 feet for 5 minutes
- Rain, snow, sleet (external formation of ice on the enclosure will not damage the enclosure)

NEMA Type 4X



Common applications: Use NEMA Type 4X enclosures in food and chemical processing industries, salt water environments and coastal municipalities.

Deployment Location: Indoor or outdoor

Construction: Stainless steel, foam gasket

Protection Against:

- Foreign solid objects such as falling dirt, dust, lint, fibers and flyings
- Hosedown or pressurized streams of water
- Rain, snow, sleet (external formation of ice on the enclosure will not damage the enclosure)
- Corrosive agents such as salt and mild chemicals

Additional Considerations



Intelligent Power Distribution Units (PDUs)

Monitor and manage the sensitive equipment located in edge sites with intelligent eConnect® PDUs. With eConnect PDUs, it is possible to remotely manage and cycle power for each piece of equipment attached to the PDU.



Cooling Units

The sealed design of industrial enclosures doesn't allow for needed ventilation, so a filter fan or cooling unit is an important requirement to exhaust or reject heat from the enclosure in order to maintain the equipment manufacturer's recommended temperature operating range. Like the enclosures, the filter fan or cooling unit needs to be NEMA-rated to match (or exceed) the enclosure rating.



Drain Plugs and Vents

If the enclosure is not watertight and will be exposed to rain or spray, it's recommended to add a drain plug on the bottom of the enclosure. Likewise, if the enclosure is placed in a location with rapid temperature or humidity change and is not equipped with a cooling unit or fan, consider adding a vent to the enclosure to allow pressure to equalize quickly to prevent or reduce condensation.



Third-Party Certification

No matter what your applications needs may be, it's wise to look for industrial and electrical enclosure manufacturers that have been tested by UL®, an industry-leading independent test laboratory, to carry the UL Type 12, 4 or 4X listing for both the United States and Canada. These types of enclosures also typically carry UL classification to comply with IP55 per ANSI/IEC 60529, the international standard for degrees of protection for enclosures. And because both NEMA and IP standards are voluntary, meaning that any manufacturer can claim to have NEMA- or IP-rated products, it is important to check for a third-party tested UL Listing certification as well as the protection rating a product has.



To get started, customize your NEMA Type enclosure fully accessorized with a cooling unit and drain plugs using CPI's Product Designer at chatsworth.com/product-designer.



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