

# NEMA and IP Enclosure Ratings of Perma-Cal® Products

NEMA (National Electrical Manufacturer's Association) and the IEC (International Electro-technical Commission) have created ratings schemes to designate the degree of protection of enclosures which house electronic equipment. Although, save Perma-Cal's Digital Gauges, all of Perma-Cal's products are mechanical in nature, questions still arise from time to time regarding the "NEMA Rating" or "IP Code" of various products. It is best to contact the factory if questions arise concerning the ambient environment of Perma-Cal products, however below is some general information which may be of help.

## Industrial Gauges

All of Perma-Cal's analog industrial gauge products (regardless of accuracy) are designed for outdoor use and will continue to operate when exposed to moderate rain, snow, blowing dust and temperature extremes. In most cases, the materials exposed to the elements are ABS (Acrylonitrile butadiene styrene) and stainless steel. High temperature cases are made of glass reinforced nylon and metal cases may be either aluminum or stainless steel. Additionally, most aluminum cases are powder coated. The IP code is IP54 which generally equates to a NEMA 4X.

## Miniature Gauges

Since all Miniature Gauge products are designed for a specific application NEMA and IP don't apply. However, ingress protection equivalent to IP68 is typical.

## Digital Gauges and Transducers

Digital Gauges and Transducers are designed for indoor environments such as design / test / research laboratories, classrooms, etc. Ingress protection is NEMA 5 or IP42.

## Pneumatic Regulators

Due to their nature, internal parts of pneumatic pressure Regulators are at times exposed to the environment. Dust and small particles fouling seats and seals are the most common mode of failure. In general, exposure to the splashing of clean water and clean non-corrosive lubricants is not a cause for concern. IP code IP4X (no equivalent NEMA rating).