NEMA ENCLOSURE TYPES

The following are brief descriptions of the various types of enclosures offered by the Allen-Bradley Company. For definitions, descriptions and test criteria see National Electrical Manufacturers Association (NEMA) Standards Publication No. 250. Also see individual product listings within the Allen-Bradley catalog for available enclosure types and for any additional information relating to these descriptions.

NOTE: Enclosures do not normally protect devices against conditions such as condensation, icing, corrosion or contamination which may occur within the enclosure or enter via the conduit or unsealed openings. Users must make adequate provisions to safeguard against such conditions, and satisfy themselves that the equipment is properly protected.

NEMA Type 1

Type 1 enclosures are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment in locations where unusual service conditions do not exist. The enclosures are designed to meet the rod entry and rust-resistance design tests. Enclosure is sheet steel, treated to resist corrosion.

NEMA Type 3

Type 3 enclosures are intended for outdoor use primarily to provide a degree of protection against windblown dust, rain and sleet; and to be undamaged by the formation of ice on the enclosure. They are designed to meet rain [1], external icing [2], dust, and rust-resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

NEMA Type 3R

Type 3R enclosures are intended for outdoor use primarily to provide a degree of protection against falling rain, and to be undamaged by the formation of ice on the enclosure. They are designed to meet rod entry, rain [3], external icing [2], and rust-resistance design tests. They are not intended to provide protection against conditions such as dust, internal condensation, or internal icing.

NEMA Type 3R, 7 & 9 Unilock Enclosure For Hazardous Locations

This enclosure is cast from "copper-free" (less than 0.1%) aluminum and the entire enclosure (including interior and flange areas) is bronze chromated. The exterior surfaces are also primed with a special epoxy primer and finished with an aliphatic urethane paint for extra corrosion resistance. The V-Band permits easy removal of the cover for inspection and for making field modifications. This enclosure meets the same tests as separate NEMA Type 3R, and NEMA Type 7 and 9 enclosures. For NEMA Type 3R application, it is necessary that a drain be added.

([1], [2], and [3] - see page 33)

NEMA Type 4

Type 4 enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose-directed water; and to be undamaged by the formation of ice on the enclosure: They are designed to meet hosedown, dust, external icing [2], and rust-resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing. Enclosures are made of heavy gauge stainless steel, cast aluminum or heavy gauge sheet steel, depending on the type of unit and size. Cover has a synthetic rubber gasket.

NEMA Type 4X Non-Metallic, Corrosion-Resistant Fiberglass Reinforced Polyester

Type 4X enclosures are intended for indoor or outdoor use primarity to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water; and to be undamaged by the formation of ice on the enclosure. They are designed to meet the hosedown, dust, external icing [2], and corrosion-resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing. Enclosure is fiberglass reinforced polyester with a synthetic rubber gasket between cover and base. Ideal for such industries as chemical plants and paper mills.

NEMA Type 6P

Type 6P enclosures are intended for indoor or outdoor use primarily to provide a degree or protection against the entry of water during prolonged submersion at a limited depth; and to be undamaged by the formation of ice on the enclosure. They are designed to meet air pressure, external icing [2], hosedown and corrosion-resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

NEMA Type 7 For Hazardous Gas Locations Bolted Enclosure

Type 7 enclosures are for indoor use in locations classified as Class I, Groups C or D, as defined in the National Electrical Code. Type 7

enclosures are designed to be capable of withstanding the pressures resulting from an internal explosion of specified gases, and contain such an explosion sufficiently that an explosive gas-air mixture existing in the atmosphere surrounding the enclosure will not be ignited. Enclosed heat generating devices are designed not to cause external surfaces to reach temperatures capable of igniting explosive gas-air mixtures in the surrounding atmosphere. Enclosures are designed to meet explosion, hydrostatic, and temperature design test. Finish is a special corrosion-resistant, grey enamel.

NEMA Type 9 For Hazardous Dust Locations

Type 9 enclosures are intended for indoor use in locations classified as Class II, Groups E, F or G, as defined in the National Electrical Code. Type 9 enclosures are designed to be capable of preventing the entrance of dust. Enclosed heat generating devices are designed not to cause external surfaces to reach temperatures capable of igniting or discoloring dust on the enclosure or igniting dust-air mixtures in the surrounding atmosphere. Enclosures are designed to meet dust penetration and temperature design tests, and aging of gaskets. The outside finish is a special corrosion-resistant grey enamel.

NEMA Type 12

Type 12 enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping noncorrosive liquids. They are designed to meet drip [1], dust, and rust-resistance design tests. They are not intended to provide protection against conditions such as internal condensation.

NEMA Type 13

Type 13 enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and noncorrosive coolant, They are designed to meet oil exclusion and rust-resistance design tests. They are not intended to provide protection against conditions such as internal condensation.

[1] Evaluation criteria: No water has entered enclosure during specified test.

[2] Evaluation criteria: Undamaged after ice which built up during specified test has melted (Note: Not required to be operable while ice-laden.)

[3] Evaluation criteria: No water shall have reached live parts. insulation or mechanisms.