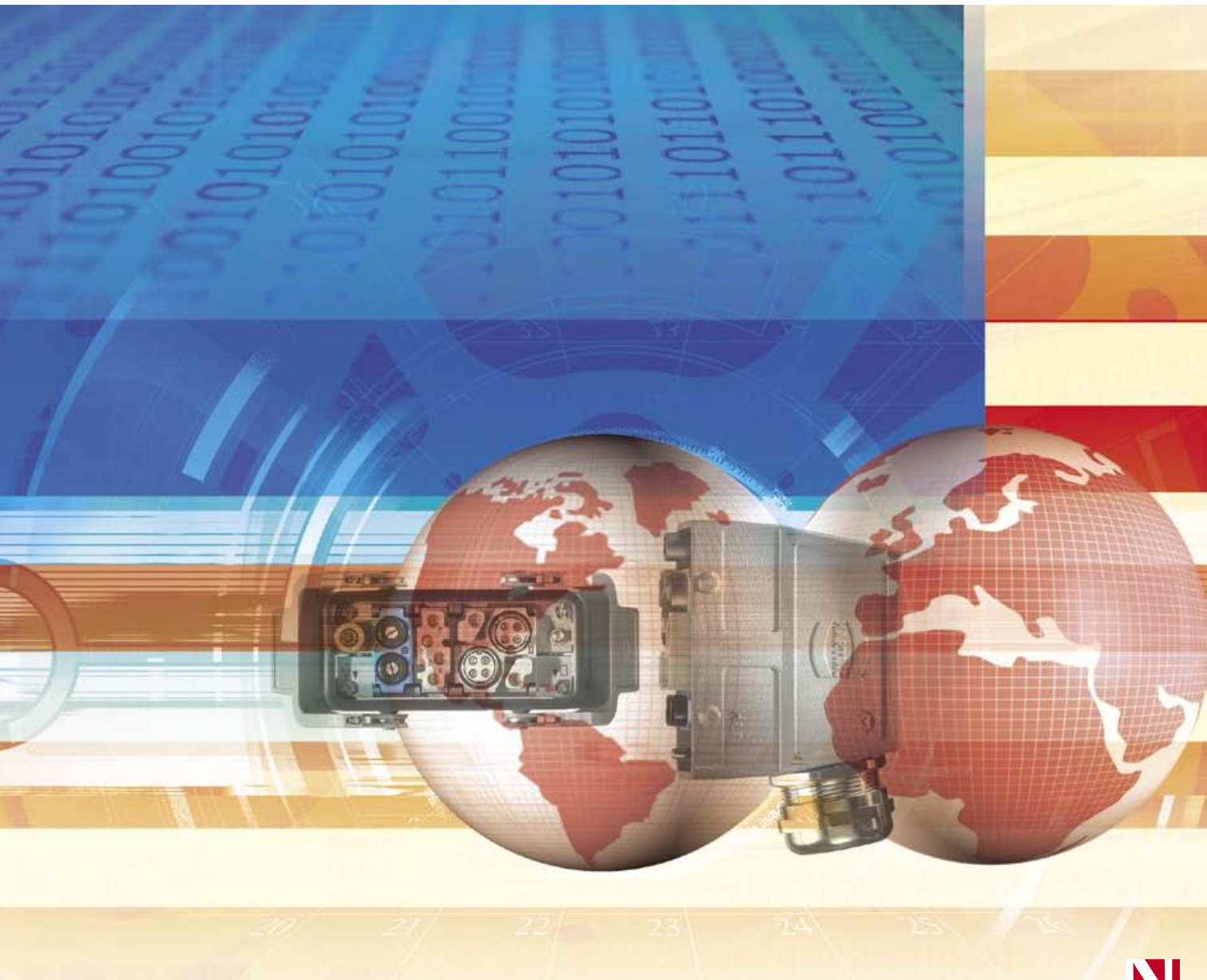


Rich Carlson

International Standardization on its Way Local Requirements still important

The world has become a much smaller place in which to do business, and international harmonization of technical standards is well underway as large end-user companies demand commonality. In a global market, products are manufactured and shipped all over the world. For manufacturers and end-users, this means that products must be inter-matable and have common operating characteristics. However, in many places in the world, and the United States is one, local requirements still are looked to for local applications and must be followed. Manufacturers are required to comply with these standards if they expect to do business with local customers.



Many organizations exist for writing and communicating electrotechnical standards but the world looks mainly to the International Electrotechnical Commission (IEC) with its central office in Geneva. Its membership consists of National Standardization committees such as ANSI (USA), UTE (France), BSI (UK) and DKE (Germany) for example. These National Standardization Committees delegate experts from manufacturers, end-users and academics from their countries to take part in the preparation and changes to international standards. This diverse group brings many perspectives to the job of writing requirements for electrical products. When a product is designed and built to meet the requirements of the IEC standards, an end-user can have a high degree of confidence that the product will perform as expected.

In the US, the National Electrical Manufacturer's Association (NEMA) is one of the major organizations responsible for writing national electrical standards and requirements. Its membership consists mainly of electrical manufacturers and end users. Of particular interest to HARTING are the requirements for environmental protection. NEMA has a system of type ratings for enclosures that are similar to IEC International Protection (IP) codes with some significant differences based on historical US market practices and focused mainly on US market circumstances.

The two approaches, international standards (IEC) and historically imposed american standards or requirements have been concurrently used in the United States. A general trend is taking place, with an increasing number of american standards or requirements being rewritten to reflect international standards in various areas. This process is not simple and will take quite a bit of time. Manufacturers, end-users and standards bodies will naturally change the way certain industrial practices will be addressed and finally reach a consensus on how to make agreeable adjustments to their standards.

INTERNATIONAL PROTECTION

Typical HARTING Han® connectors are designed to provide a degree of protection of IP 65 and IP 67 according to IEC 60529. This rating is well suited for most industrial environments as proven by the ongoing, continued use and success of Han connectors in global markets.

Generally the well-known IP XX degree of protection can be explained shortly with the following example. The first numeral has meaning for protection of equipment and for protection of persons. Using the example of "IP 65", the numeral '6' means the connector provides dust tight protection against ingress of solid foreign objects. A critical but often overlooked aspect is that this first numeral '6' also has meaning for protection of persons. Access to hazardous parts by the back of the hand, fingers, tools and wires are prevented.

The second numeral has meaning for protection of equipment against ingress of water with harmful effects. The second numeral '5' indicates that water jetting, for example hose directed water, onto the connector will not affect the operation of the connector.

The IP Code addresses requirements for protection of people, ingress of solid objects and ingress of water only. There are numerous other requirements covered by NEMA Type designations, which go beyond the IEC 60529/IP Codes. For example:

- Construction requirements
- Door and cover securement
- Corrosion resistance
- Effects of icing
- Gasket aging and oil resistance
- Coolant effects

NEMA DESIGNATIONS

NEMA Type designation specifies requirements for these performance protections. For this reason, IP Code designations cannot be converted to enclosure Type num-

bers. Most American customers require enclosures with a NEMA, UL or CSA rating.

NEMA 250 is the document that defines Type classifications for enclosures and control cabinets for the United States. These control cabinets are typically inspected by Underwriters Laboratories (UL) for electrical safety and sold as UL Listed devices to end customers. While not specifically mentioning connectors, NEMA 250 clearly indicates that Openings, Equipment Openings, Conduit Connections, and Knockouts shall meet the appropriate design tests for the enclosure Type.

Compliance with NEMA requirements is voluntary. NEMA does not require enclosures to be tested by qualified evaluators nor does it send on-site inspectors to ensure that manufacturers adhere to prescribed manufacturing methods and material specifications. NEMA allows manufacturers to self-certify that their end products meet NEMA compliance.

Maintaining enclosure integrity is critical. After the appropriate enclosure type rating has been selected, it is important to maintain the enclosure's integrity by installing only those devices that are UL listed or recognized as having the same environmental rating. The NEMA enclosure Type rating most used in the North American market is Type 4 as explained in NEMA 250: "Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); and that will be undamaged by the external formation of ice on the enclosure."

HARTING PASSES THE TEST

Recently, HARTING successfully passed NEMA Type 4 and Type 12 testing at Underwriters Laboratories (UL). We can now say to the US market, that not only do we meet

the international requirements, but also we now meet the American requirements for environmental protection. A major benefit for enclosure and panel manufacturers is that their ratings remain intact with the use of HARTING Han connector installations. UL recognition assures that their product performs according to US requirements.

This is significant for our North American customers for several reasons. First, they can assure end customer/users that control cabinets also comply with NEMA requirements. Secondly, the required listing of cabinets by Underwriter Laboratories is more easily completed due to the use of recognized components.

Lastly, importers of control cabinets and enclosures to the US market can be confident they are meeting the requirements requested by their American customers.

TYPE NOT "HYPE"

The key word here is "Type". Since NEMA compliance is voluntary, nobody is routinely checking to verify that American standards are met. Most competitors in the United States will state in literature that their connectivity product meets the requirements of NEMA 4 based upon a faulty comparison to IP ratings. Underwriters Laboratories does not allow the term "Type" to be used together with a NEMA rating unless the relevant testing has been passed. Only HARTING has gone to the extra effort and can make the statement that Han connectors have a distinct advantage of not only meeting the International IP requirements, but also now fully meeting the requirements of NEMA Type 4 and NEMA Type 12.



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