19.08.2020 | LÜTZE - NEMA control cabinet accessories

# Control cabinet accessories acc. to NEMA protection classes, tested to UL 50E for North America

**The automation specialist LÜTZE, Weinstadt, supplies certified control cabinet products that comply with the UL 50E standard for use in the North American market. These also include the LÜTZE USB and RJ45 panel connectors, as well as the CABLEFIX® opening systems for cables.**

International companies that supply electrical operating equipment require international approvals. The UL and cUL norms for the US American and Canadian markets are known. Less well-known are the 'IP-Norms', i.e. the North American protection classes for casings that are summarized in the UL rating types for indoor and outdoor use. LÜTZE also supplies certified control cabinet accessories acc. to UL 50E UL rating types 2, 3R, 4, 4X, 12 and 13. The LÜTZE CABLEFIX® cable opening systems X and ONE, tested according to the UL rating types 4X, 12 and 13 for pre-fabricated or non-prefabricated cables, offer various clamping ranges of 3.5 mm to max. 29.5 mm, and are oil-resistant. The LÜTZE control cabinet panel connectors for front mounting are available either as an RJ45 connection with Cat.6a or, alternatively, with an USB-3.0 interface. Both panel connectors fulfil a wide range of different protection classes, for example the IP65 or the UL Type 4X.

*Fig. 1: LÜTZE also supplies certified control cabinet accessories acc. to NEMA UL rating types 2, 3R, 4, 4X, 12 and 13.*

## IP protection – the standard norm for European industries

The casing must protect active parts against harmful ambient conditions, e.g. penetration of foreign bodies like dust and water, and also offer impact resistance. This casing protection in Europe is usually defined in the protection classes IP 00 to IP 69K. The IP protection class indicates various ambient conditions and protection of humans against potential risks during use. The rule of thumb is that the higher the IP code, the higher the protection class of the casing.

## UL 50E – the casing protection standard for North America

If we look beyond Europe's borders, products are classified according to NEMA 250 and/or UL 50E instead of the IP protection. The UL ratings are recognized on a par with the IP protection classes in Europe and are always stipulated in the USA, Canada and Mexico. NEMA 'National Electrical Manufacturers Association' is an organization that defines technical standards for the US-American electronics industry. The NEMA performance criteria and test procedures are

used by the Underwriters Laboratories UL, as guidelines for examining and listing electrical encapsulations, and are defined in the Norm UL 50E.

**Differences between the brands:**

Please note that it is not possible to match IP and UL protection classes directly. However, the level of protection they offer with regard to water and dust is comparable as the following overview shows.
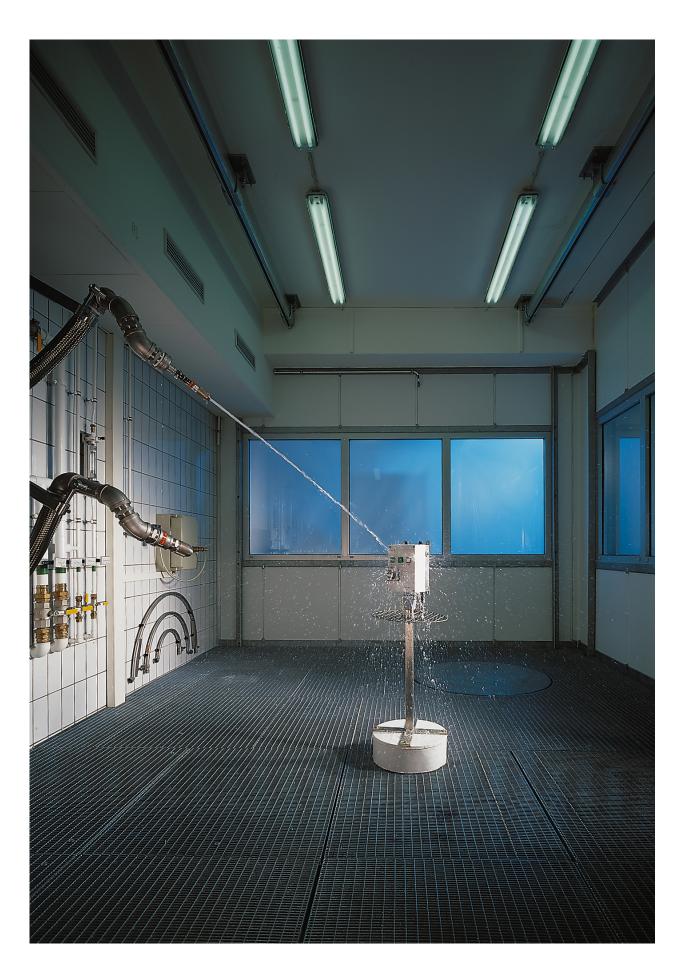
| NEMA Schutzklasse | IP Schutzklasse |
|---|---|
| 1 | IP 20 |
| 2 | IP 21 |
| 3 | IP 54 |
| 3R | IP 24 |
| 3S | IP 54 |
| 4, 4X | IP 56 |
| 5 | IP 52 |
| 6, 6P | IP 67 |
| 12, 12K | IP 52 |
| 13 | IP 54 |

*Fig. 2: Comparison of IP and NEMA ratings*

Additionally, NEMA includes certain ambient conditions according to the test specifications 'NEMA 250' and, in contrast to the IP test procedure acc. to EN 60529, also takes into account the corrosion-resistance of the casing, as well as resistance to aging, oil and cooling media, and mechanical impact for example.

These differences clearly show that the UL 50E test procedure requires different equipment than for the IP test procedure. For example, a water pump that has been calibrated by an accredited testing laboratory is stipulated for the waterproof test; depending on the test procedure, this pump guarantees the specified pressure output l/min and has jet nozzles with the appropriate inner diameter.

*Fig. 3: A water pump that has been calibrated by an accredited testing laboratory is stipulated for the waterproof test acc. to UL 50E, © Copyright 2020, I2PS*

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