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# Can NEMA 4X or Ex e Enclosures Be Used to Install Wireless Access Points in Hazardous Areas?

The standards surrounding the installation of a wireless access point in hazardous areas are often misinterpreted.

It is not uncommon to think you can purchase a NEMA 4X or Ex e enclosure and simply install any wireless access point into your hazardous area. This is not true and overlooks a key clause of the standard assigned to deploying electrical equipment in hazardous areas.

This article explains key aspects of the standard to consider when deploying wireless devices into hazardous areas. It also addresses why you cannot just use a NEMA 4X or Ex e enclosure to install none certified wireless access points in hazardous areas.



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## Zone 2/Division 2 Hazardous Area Standards for Deploying Wireless Access Points

There are many devices on the market, including WiFi Access Points, UHF RFID Readers, LoRa or BLE Gateways and LTE Routers that have been certified under the IEC 60079-7, previously documented under clause 13 of Ex n standard (Zone 2) IEC 60079-15. They are low powered devices with a supply voltage of less than 60V ac or 85V dc.

# Note: North American & Canada and Europe are documented under the same standard numbers, but the prefix UL and EN replace IEC respectively for specific mention.

The certification comes with an X condition, which is the code for special requirements being necessary. This stipulates that the device must be installed in a NEMA 4X or Ex e enclosure to comply with the requirements of installation in a hazardous area because the devices themselves do not have an enclosure that meets the requirements of IEC 60079-0.

The reason manufacturers choose to certify their equipment in this way is because their standard device meets the requirements of this clause. This is because they do not need to comply with the creepage and clearance required of higher voltage equipment.

This means manufacturers do not need to develop a new hazardous area version of their product, reducing the cost and allowing them to address demand for their equipment used in Zone 2 or Division 2 hazardous areas.

It is this reason that many customers think it is possible to install any standard access point in a NEMA 4X or Ex e increased safety enclosure without further certification in a Zone 2 or Divi-

sion 2 hazardous area. This is not correct; it is not allowed under international rules for installation of electrical equipment in hazardous areas. The device itself must still be certified to ensure that it meets the requirements of the Ex standards and for it to be attributed with a T class.



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## Not all Access Points Carry Hazardous Area Certification

The misconception comes from the reference to using an enclosure that has a degree of protection not less than IP54 and in accordance with IEC 60529. The important point here, that is often overlooked, is that the equipment must also comply with all the relevant electrical installation standards for IEC 60079 series, typically for Zone 2 this would be IEC 60079-0 general requirements, IEC 60079-7 increased safety (Exe) and IEC 60079-15 Ex n (Zone 2) / IEC 60079-11 intrinsic safety.



60079-7 states the following:

The enclosure for the equipment shall provide a degree of protection not less than IP54 in accordance with IEC 60529 unless the equipment is intended to be afford an equivalent degree of protection by location.

It is this clause that has led to those not familiar with the detail of the certification standards, to incorrectly assume that you can take any wireless device and install it in a NEMA 4X or Ex e enclosure without the device itself being certified.

### **Transient Suppression**

This method of protection for a low powered wireless device also requires transient suppression.

Transient suppression can be internal on the power input, or other interfaces such as Ethernet ports of the wireless device, or externally applied. It requires assessment of the wireless device by a notified body to determine if this is internal or needs to be applied externally outside of the hazardous area.

60079-7 states the following:

Where the equipment is intended to be afforded an equivalent degree of protection by location or where transient protection is to be provided externally, the equipment will be marked with the symbol "X" (see the marking requirements of IEC 60079-0) and the information shall be given in the documentation.

#### **Antenna Connections in Hazardous Areas**

The antenna connection is another point that is often overlooked; it is important to determine which antenna connections your chosen enclosure system will use.

All antennas for use in hazardous areas must be protected to the Ex e or Ex n standards if they are not intrinsically safe. This means the antennas need to be tested and approved before they can be used in the field.

If the RF output of the wireless device is proven to be intrinsically safe to Ex ic standard, then it is possible to use standard antennas under the "simple apparatus" clause of the IEC60079-11 intrinsic safety standard.

<u>Click here to see more details on our range of certified hazardous area Wi-Fi</u> <u>access point enclosures.</u>

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