

Environmental Ratings

IP Environmental Protection Codes

First Numeral - Protection from Particles

- 0 No protection
- 1 Particles >50mm
- 2 Particles >12mm
- 3 Particles >2.5mm
- 4 Particles >1mm
- 5 Dust protected - limited ingress, no deposits
- 6 Dust tight - totally protected

IP (first numeral, second numeral), for example IP67

Second Numeral - Protection from Water

- 0 No protection
- 1 Vertical falling water
- 2 Direct sprays up to 15° from vertical
- 3 Direct sprays up to 60° from vertical
- 4 Direct sprays from all directions - limited ingress permitted
- 5 Low pressure jets of water from all directions - limited ingress permitted
- 6 Strong jets of water from all directions
- 7 Immersion in water from 15cm to 1m
- 8 Immersion in water under pressure for long periods of time
- 9 High pressure steam jet up to 100 bar

Environmental ratings on NOSHOK transducers are indicated with the individual specifications throughout this catalog. The following ratings are used and this is how they are defined.

IP65 Totally protected from dust as well as protection from low pressure jets of water from all directions – limited ingress permitted (no effect on performance)

IP67 Dust tight and capable of immersion in water from 15 cm to 1 m.

IP68 Capable of immersion in water for long periods of time.

IP69K Capable of steam jet washdown.

Since IP65, NEMA 4 and NEMA 4X are related, the differences are in the standards used in qualification. Here they are:

	IP65	NEMA 4
Method	Stream of water	Stream of water
Nozzle Size	1/2 "	1 "
Distance	10 ft	10 ft
Duration	15 minutes	5 minutes
Direction	All angles	All angles
Pressure/Flow	10 m of water	65 gallons/min.

In order to meet the standard, the IP65 test results allow some ingress of water as long as it does not affect the performance of the instrument.

In order to meet the standard, the NEMA 4 test results do not allow any ingress of water.

NEMA 4X includes the NEMA 4 standard requirements plus corrosion resistance.

Hazardous Location Pressure Measurement with NOSHOK Pressure Transmitters

NOSHOK has solutions to your applications in areas with flammable gases and liquids. Let's start with the definitions related to equipment used in hazardous environments:

Intrinsic Safety Protection

Protection in which the measurement system contains only transmitters and associated equipment that are incapable of causing ignition of the surrounding flammable atmosphere. Normally an intrinsic safety barrier is employed between the transmitter which is located in the hazardous area and the downstream receiving equipment. This barrier contains a electrical network designed to limit the energy (voltage and current) available to the protected circuit in the hazardous location under specified fault conditions. NOSHOK models 625, 626 and 627 are Factory Mutual and Canadian Standards Association approved as intrinsically safe.

Non-incendive Protection

Protection in which the measurement may contain arcing or sparking equipment but is still incapable, under specified test conditions, of igniting the flammable gas, vapor or dust-air mixture. This applies only in Division 2 environments. An intrinsic safety barrier is not required in this measurement system. No special wiring is required. NOSHOK models 623 and 624 are Factory Mutual and Canadian Standards Association approved as non-incendive.

Explosion proof Protection

Protection in which the enclosure of the transmitter is capable of withstanding an explosion of the specified gas or vapor that may occur within it and of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes or explosion of the gas or vapor within, and that operates at such an external temperature that a surrounding flammable atmosphere will not be ignited.

Explosion proof installation techniques are required including special electrical conduit and junction boxes. NOSHOK models 621 and 622 are Factory Mutual approved as explosion proof.