



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Active Barrier and Power Supply

RN221N is used as an intrinsically safe barrier and power supply



Hazardous chemical storage



RN221N active barrier and power supply



Protection in dust hazardous storage

The RN221N is a FM certified active intrinsically safe barrier with integral power supply for safe isolation of 4 to 20 mA current circuits.

What is intrinsic safety?

An intrinsically safe installation in process instrumentation is a wiring method that limits the availability of electrical energy supplied to the equipment installed in hazardous areas to such an extent that ignition of explosive mixtures cannot occur. With the electrical energy limited, there is no possibility of a spark occurring or of component surfaces being heated by the current to levels that can create an explosion when hazardous fluids are introduced. Intrinsically safe circuits are designed in such a manner that they are protected both during normal operation and in possible fault conditions.

In general, equipment with power consumption less than 1 Watt, which is normally sufficient to operate process instrumentation, can be applied in intrinsically safe circuits. A typical intrinsically safe circuit consists of the power supply, an intrinsic safety barrier and the instrument being powered.

The RN221N is both the power supply and the intrinsically safe barrier in one compact, easy to mount DIN rail component.

Advantages of an intrinsically safe installation

There are significant advantages in using intrinsically safe instrumentation compared to other protection methods such as flame-proof or explosion proof enclosures.

1. Maintenance of the active system: It is not necessary to establish a gas free zone or to insulate circuit before calibration or other work can be undertaken on the respective devices. Sealed or magnetically coupled control units that are used on flameproof or explosion proof enclosures are no longer required.
2. Lower costs Enclosures are lighter and cheaper. Approved cables, piping or conduits can be replaced by simple wiring. Thermocouples, resistors, switches and other, not energy storing passive devices merely have to meet common requirements (e.g.: weather-proof).

3. High reliability

The system even remains safe when seals age, cables are cut (open circuit), leaks occur in the conduit, or the enclosure covers are opened or no longer close correctly. One of the basic features of the RN221N is that the protection continues to be active even when up to two malfunctions occur in the unit. (Units are marked: **Ex ia**).

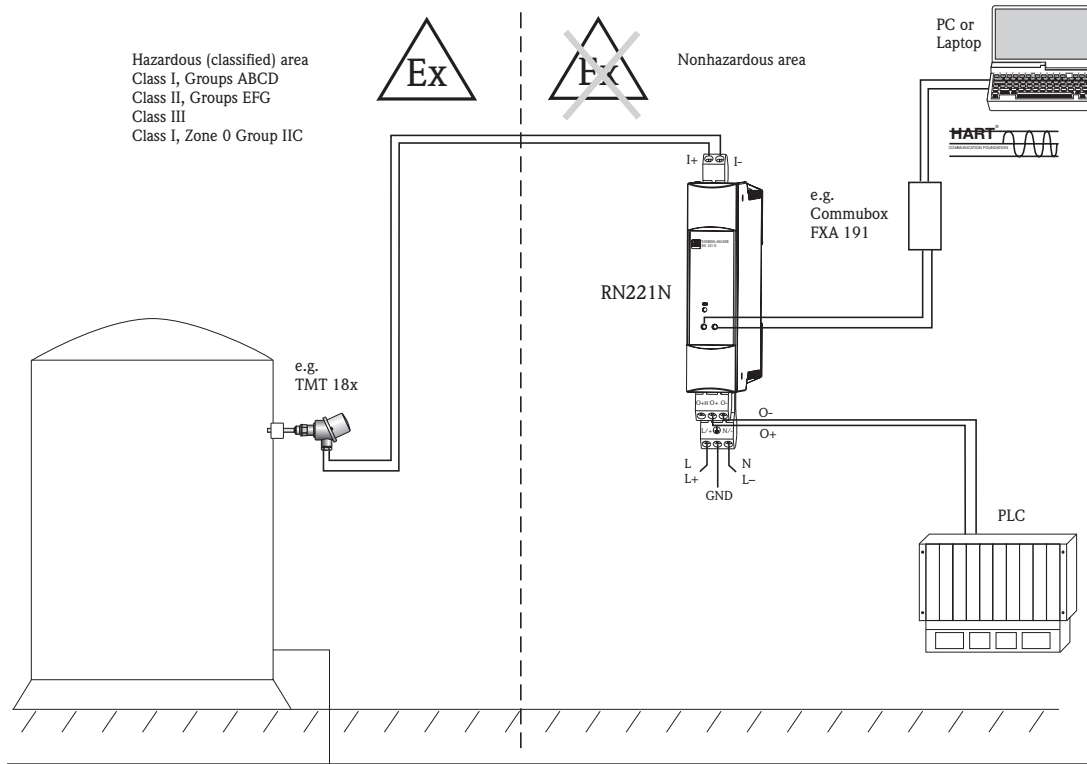
4. Safety

Personnel cannot be harmed by the low voltage and current used in intrinsically safe circuits.

5. Variety of applications: Intrinsic safety is the most cost-effective method protection which can be applied in Division 1 (high danger) hazardous areas

Applications with RN221N

The RN221N can be used in all applications where two wire sensors are operating in flammable gases or dust mixtures. Refer to the illustration on page 2.



Typically the RN221N is mounted in the non-hazardous area and the split between the supply voltage and the intrinsically safe voltage occurs in the device itself. The cables powered by the RN are then fed into the hazardous area where they power the two wire transmitter. The RN221N transmits the measured signal received from the hazardous area to the non-hazardous area equipment. HART signals are bi-directionally transmitted.

The power supply required for the RN221N is within the range of 20 to 150 V AC/DC.

NOTE: It is not customary to mix IS (intrinsically safe) devices in areas wired with explosion proof enclosures, conduit and devices due to the possibility of opening an explosion proof device while thinking it is an intrinsically safe device and exposing the area to possible ignition.

Any time a transmitter is sold into an intrinsically safe designated hazardous location, use a RN221N active barrier and power supply. Each instrument needs a barrier and power supply. The RN221N, with FM IS certification, is the barrier AND the power supply for the loop.

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