IS devices must always be connected to power limiting devices, such as intrinsically safe barriers or galvanic isolators. These barriers are located in a safe, non-explosive environment. They are placed between the electrical power supply and the IS device. Their purpose is to limit the voltage and current available to the IS device that is in the hazardous environment.

Wire runs can change the electrical characteristics of a circuit and must therefore be considered as part of the overall system. Wiring of IS systems must be done according to standards created by regulating authorities.

Configuring Intrinsically Safe Elements Together

The elements of IS systems can be organized in several different ways. For example, IS barriers may be incorporated within an instrument, such as a humidity transmitter with a

Remote sensor. The electronic portion of this instrument would be installed in a safe environment and the remote probe installed in the hazardous environment.

Such a system would include all of the necessary elements for an IS installation and would free the user from having to specify and acquire IS barriers. However, the electronic portion of the instrument could never be mounted in a hazardous location, seriously limiting the flexibility of installation. Another approach is to separate the IS barriers from the instrument. Power and signal wires terminate at the IS barriers in the safe environment. This allows for flexibility in installation, but it also requires that the user specifies and acquires barriers that are appropriate for the installation.

Installation Guidelines

- Installation guidelines are specific to each regulating body by which the IS device is approved.
- Guidelines can be used to specify and select an appropriate IS barrier or galvanic isolator.
- Factors to consider are the power supply and the electrical characteristics of the device where the signal wires will terminate.
- Maximum load calculation should be made to ensure the total circuit impedance does not drop the voltage below minimum threshold voltage for correct operation of the IS device.
- Users should contact the manufacturers of IS barriers or galvanic isolators for help in selecting these devices

Certification standards

Across the world, there are differing regulations and requirements which dictate how products are designed, developed, certified and manufactured in order to be sold to a customer as I.S. certified.

Some examples of I.S. standards are: