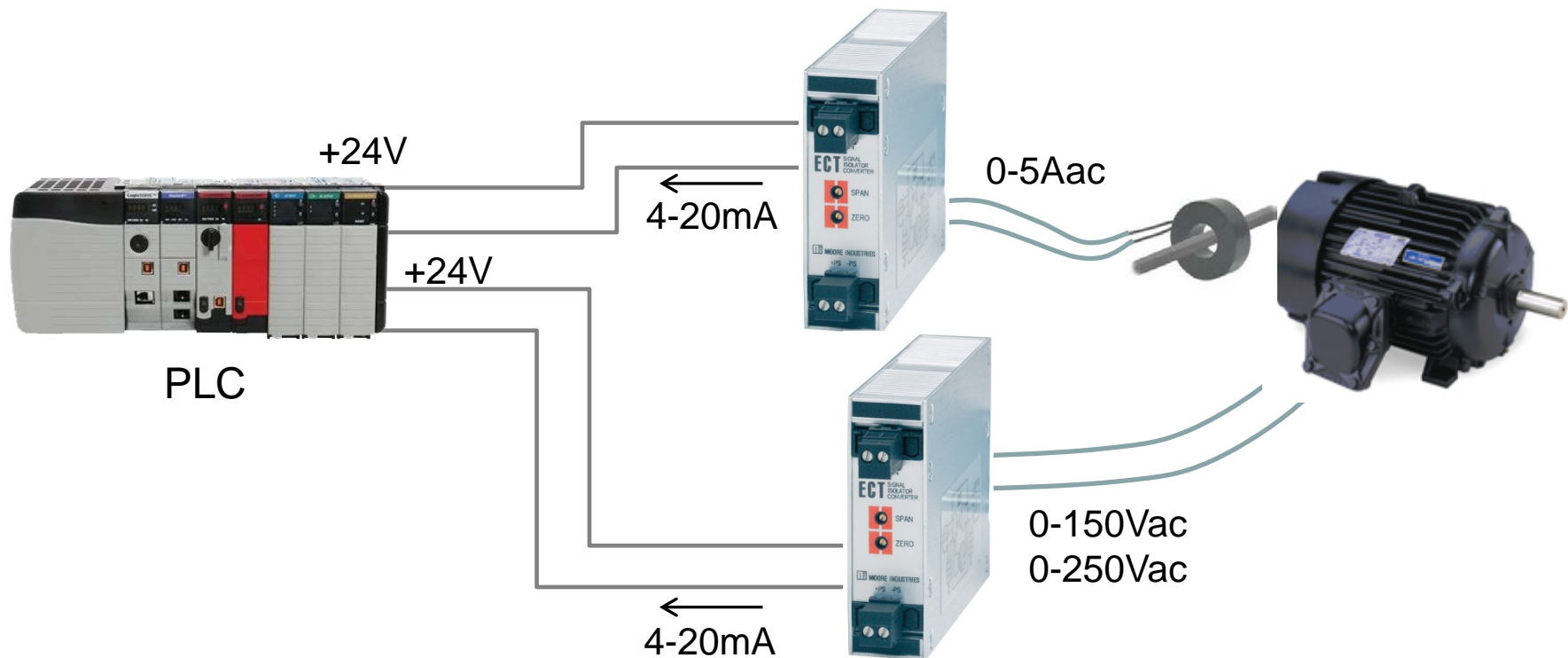
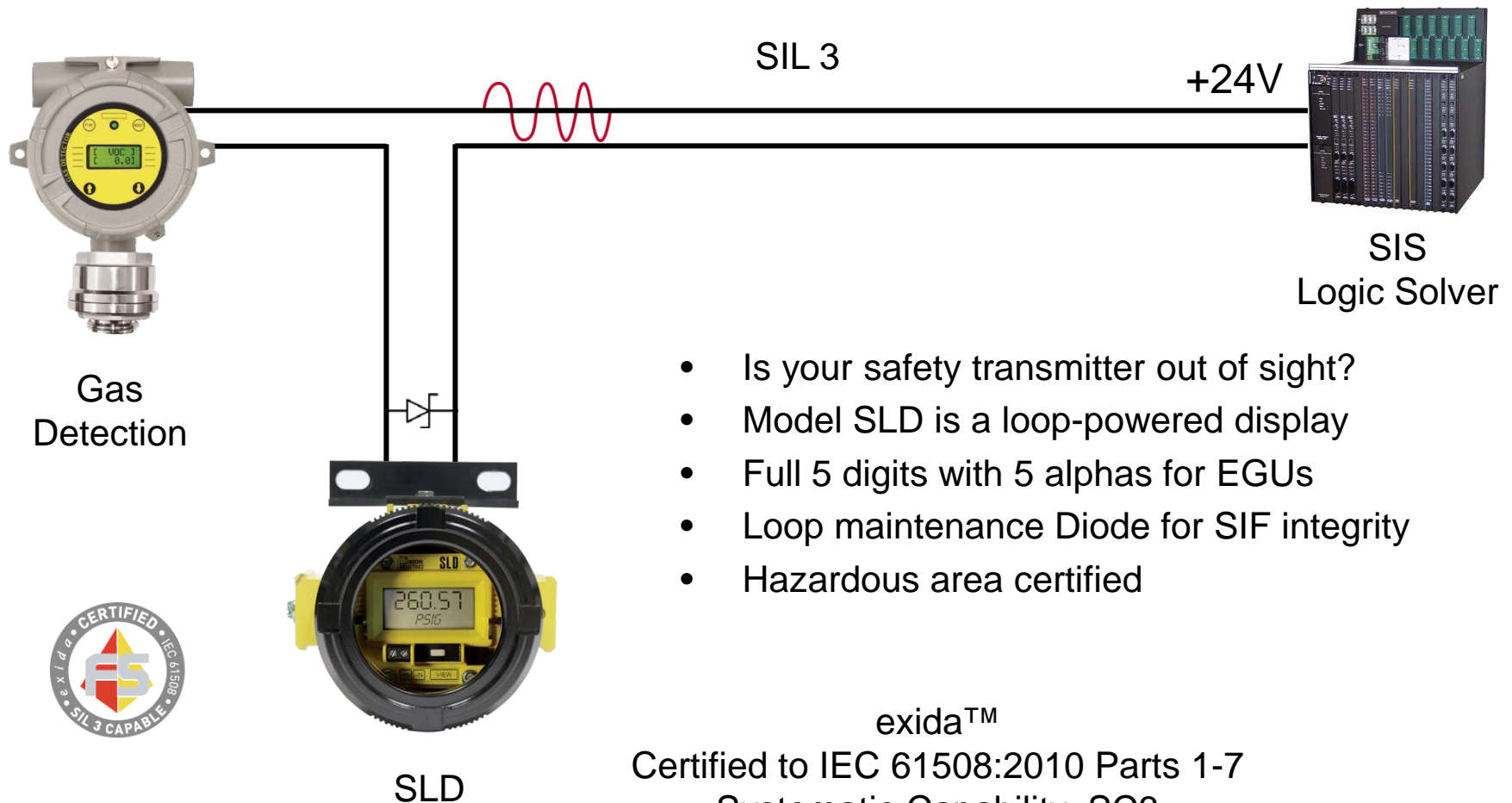


# Mining AC Motor Load Measurements

- Simple motor load signals are everywhere and easily converted to loop-powered 4-20mA readable by the DCS
- Model ECT is Class I, Div 2/Zone 2 certified with ambient temperature specs of **-40°F to 185°F**



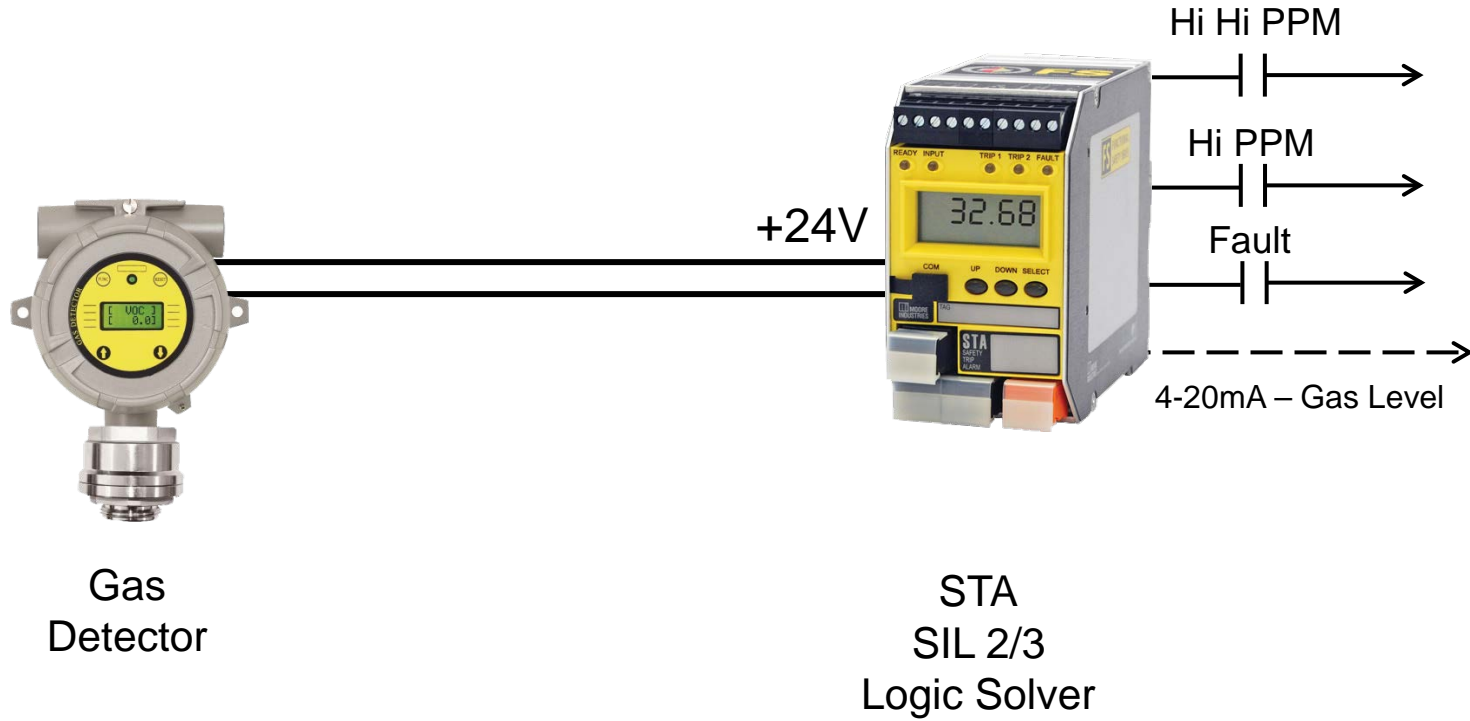
# IEC 61508 Certified Loop Display



exida™

Certified to IEC 61508:2010 Parts 1-7  
Systematic Capability: SC3  
Random Integrity: Type A Non-interfering

# Gas Measurement Safety Logic Solver



exida™  
Certified to IEC 61508:2010 Parts 1-7  
Systematic Capability: SC3

# Advanced Temperature with AIS Input



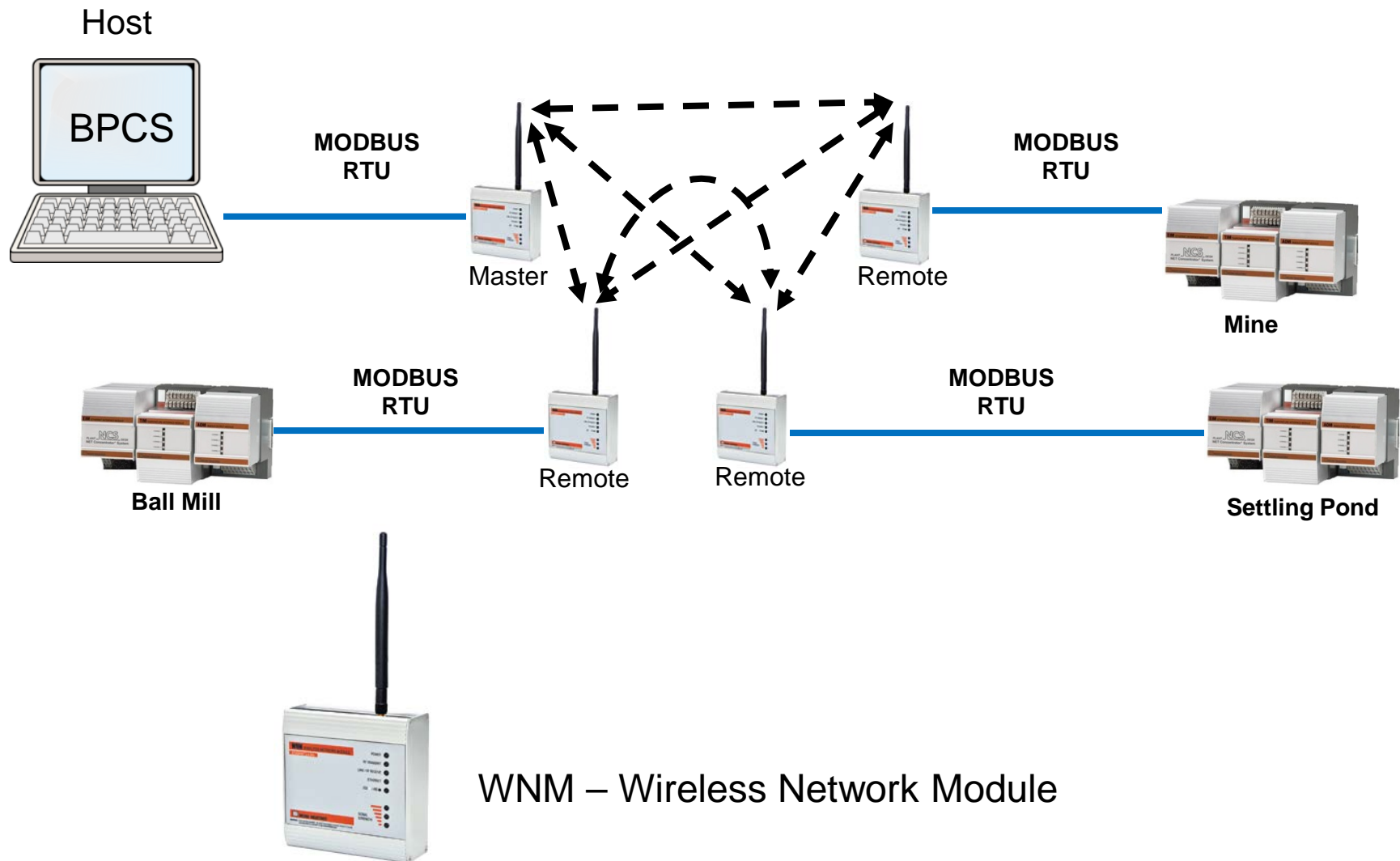
- **Eliminate long TC extension wire runs** by mounting your TTs in J-Boxes near process unit
- **Eliminate IS barriers** and the space they consume
- Model THZ3 with the optional Associated IS input **combines all these features**
- Plus it handles **dual inputs** and **input corrosion detection**

IS barrier  
inside



Class 1, Div 2  
Zone 2

# Wireless Link to Remote Mining Locations



# Conveyor Belt Speed Protection and Monitoring

Conveyor Belt, Pump  
or Mixing Motor

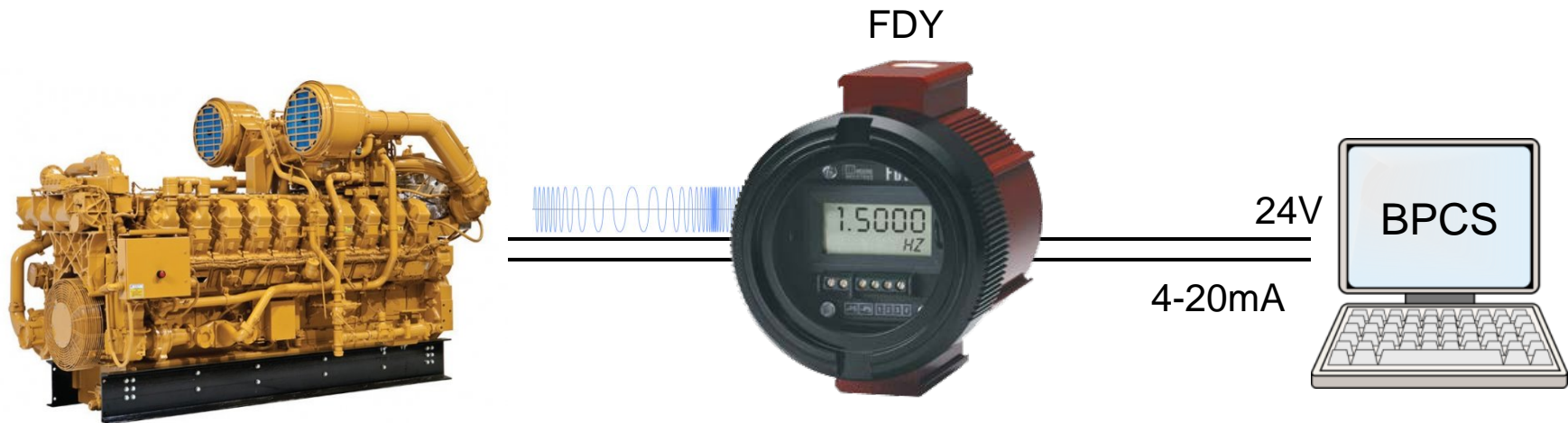


## Frequency / Speed transmitter

- High Accuracy Frequency to 4-20mA
- Input Spans: 0.1 Hz to 25,000Hz
- Accuracy: 0.01 to 0.05% of reading
- Hazardous area certified
- Ambient: -40°F to 185°F

# Frequency to DC Converter

## Compressor Over-speed Protection

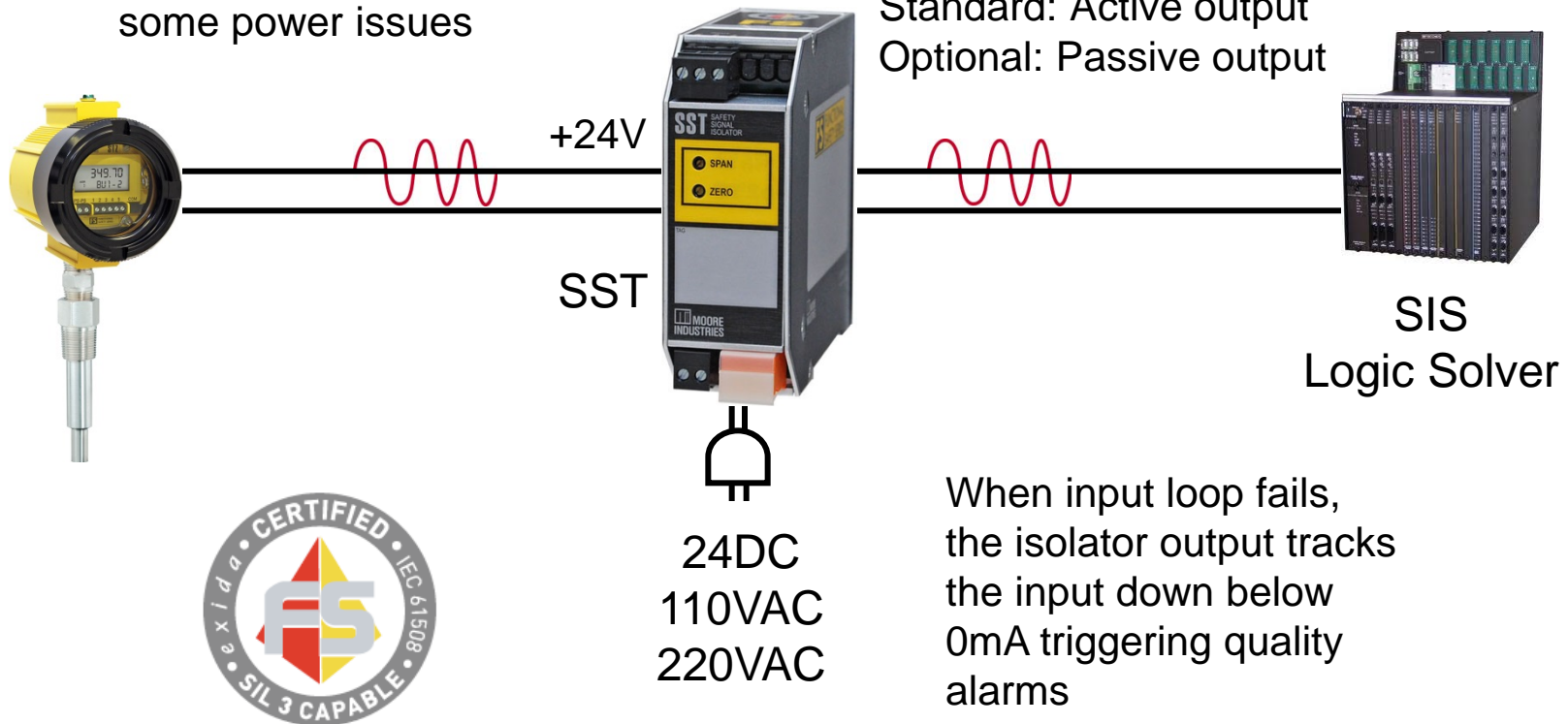


### Frequency / Speed transmitter

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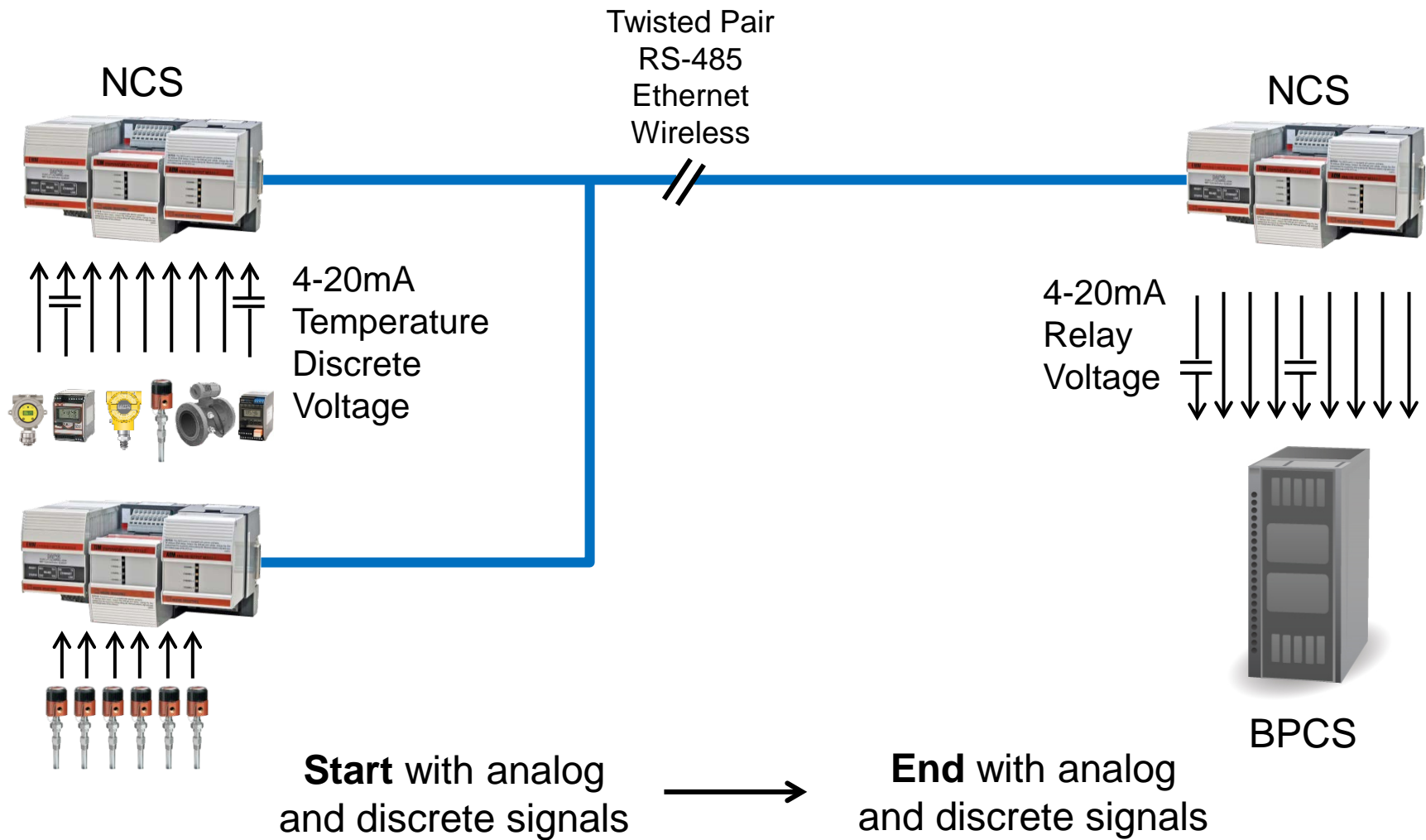
# IEC 61508 Certified SIL 2 Capable Signal Isolator

Line powered isolators provide same capabilities, but also solve some power issues

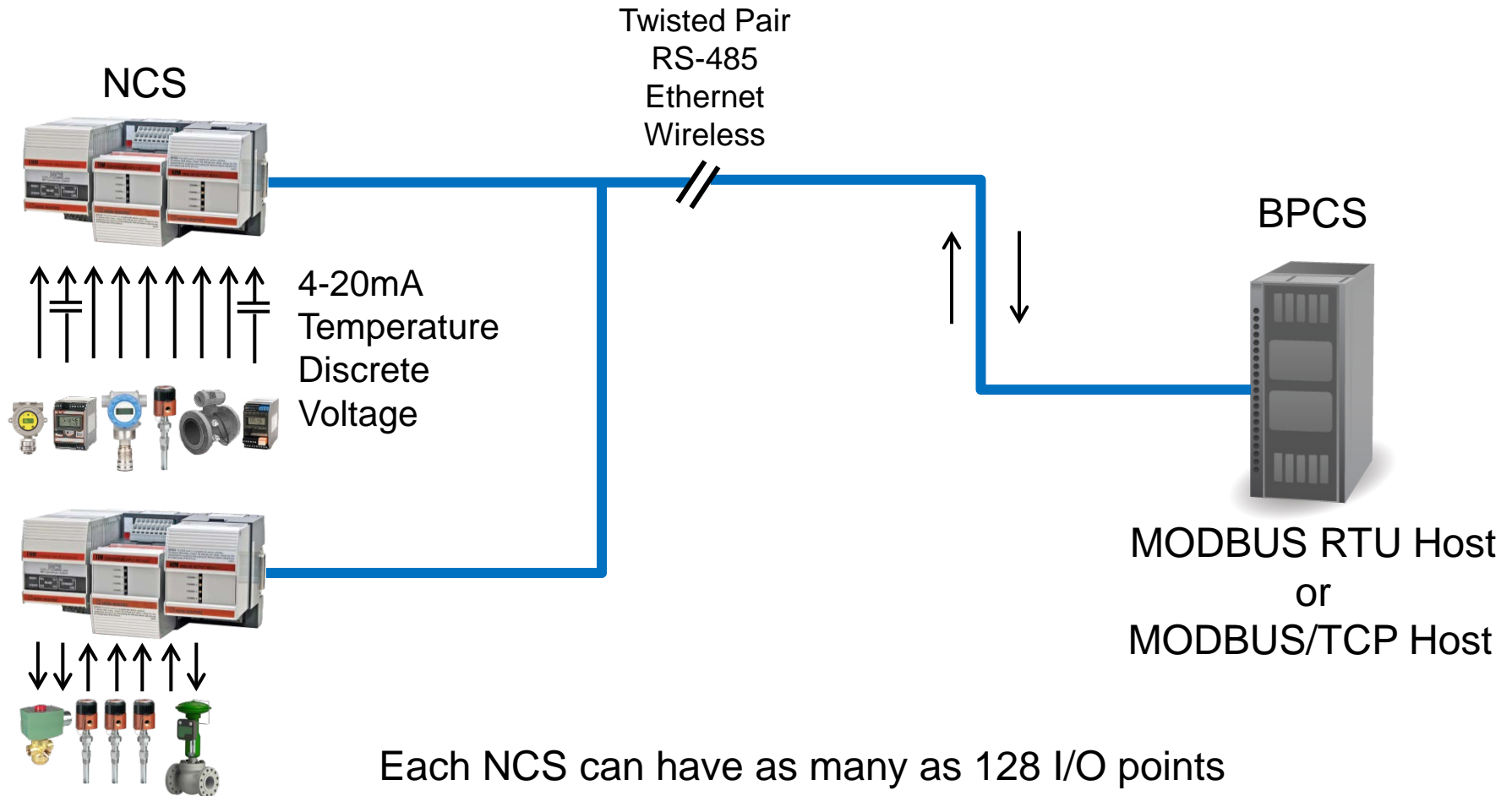




# Peer-to-Peer Multiplexer

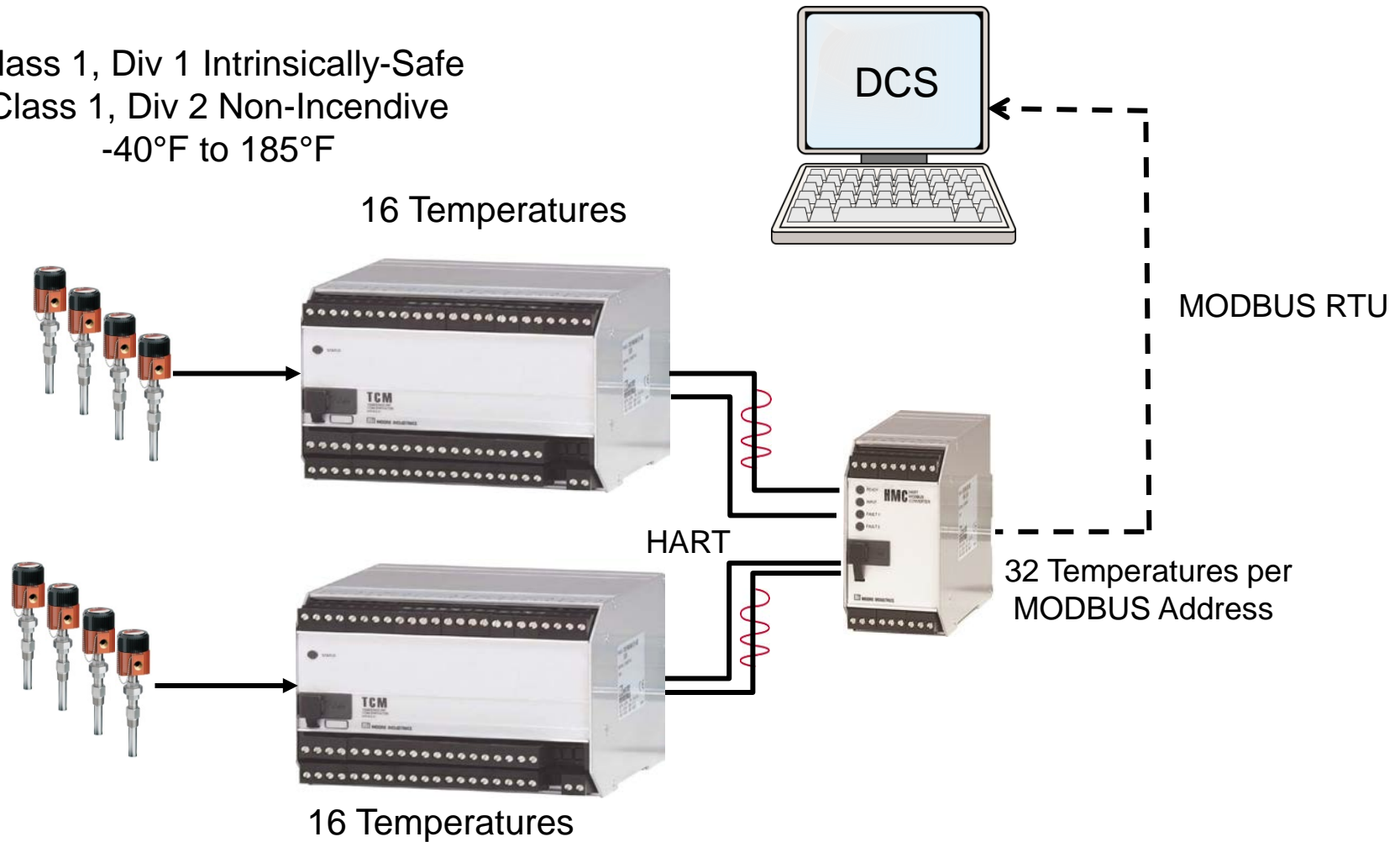


# Remote I/O Multiplexer – Peer-to-Host



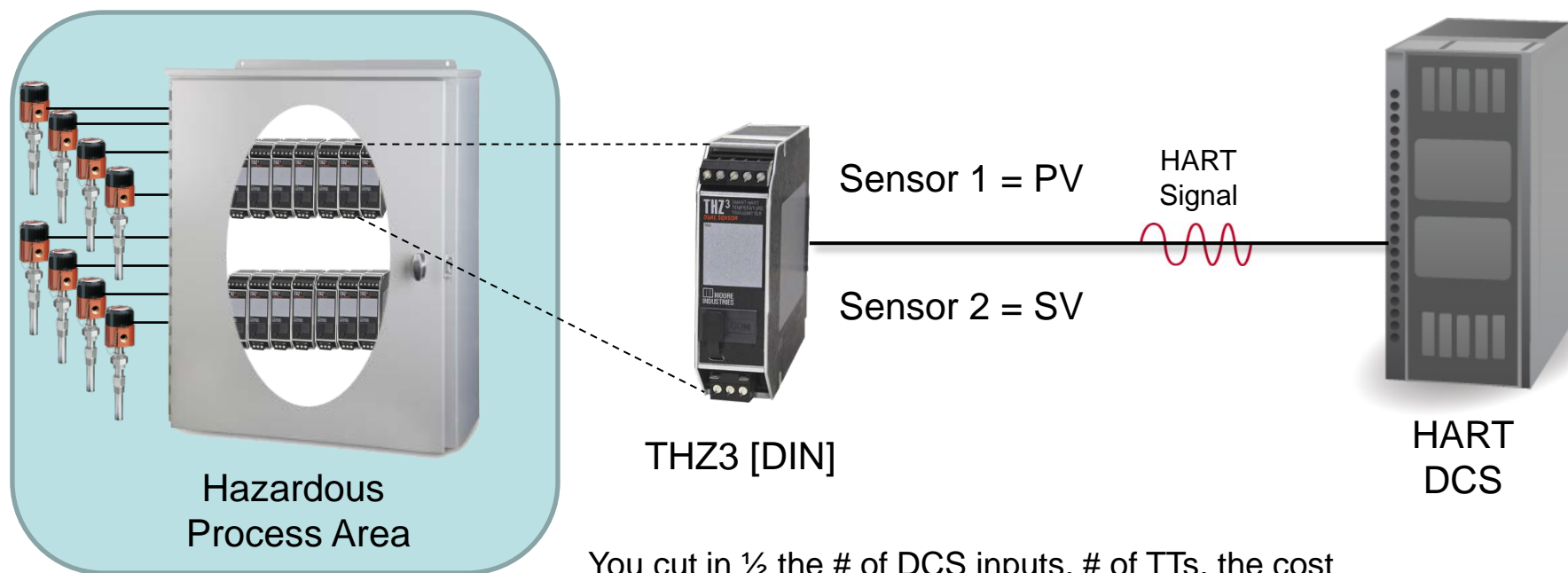
# High Density Temperature Monitoring

Class 1, Div 1 Intrinsically-Safe  
Class 1, Div 2 Non-Incendive  
-40°F to 185°F



# DIN Rail Mount Temperature Transmitters

- Mount temperature transmitters in junction boxes close to the process unit to **reduce thermocouple extension wire** and all the associated problems
- If you have HART input cards available you can radically **reduce your costs** by wiring two sensors into each TT and reading them digitally



You cut in ½ the # of DCS inputs, # of TTs, the cost of each, the j-box space needed for the TTs & # of wires needed back to the DCS

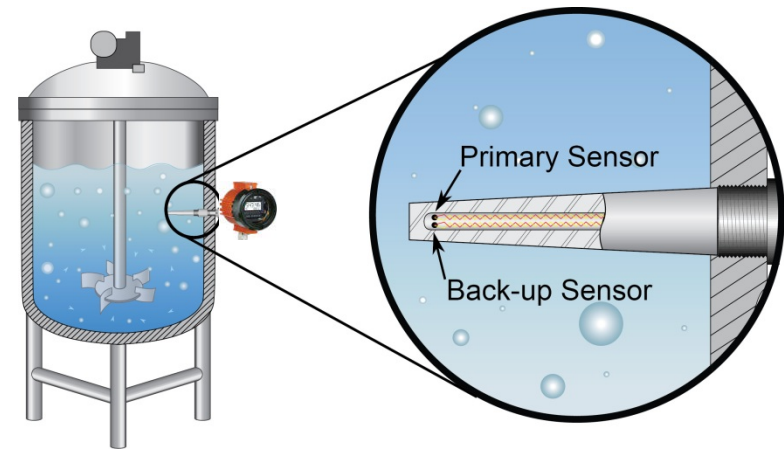
# Dual Sensor Input – Backup / Failover

TDZ3



Backup and Failover protection:

Ensure processes don't stop when a sensor fails

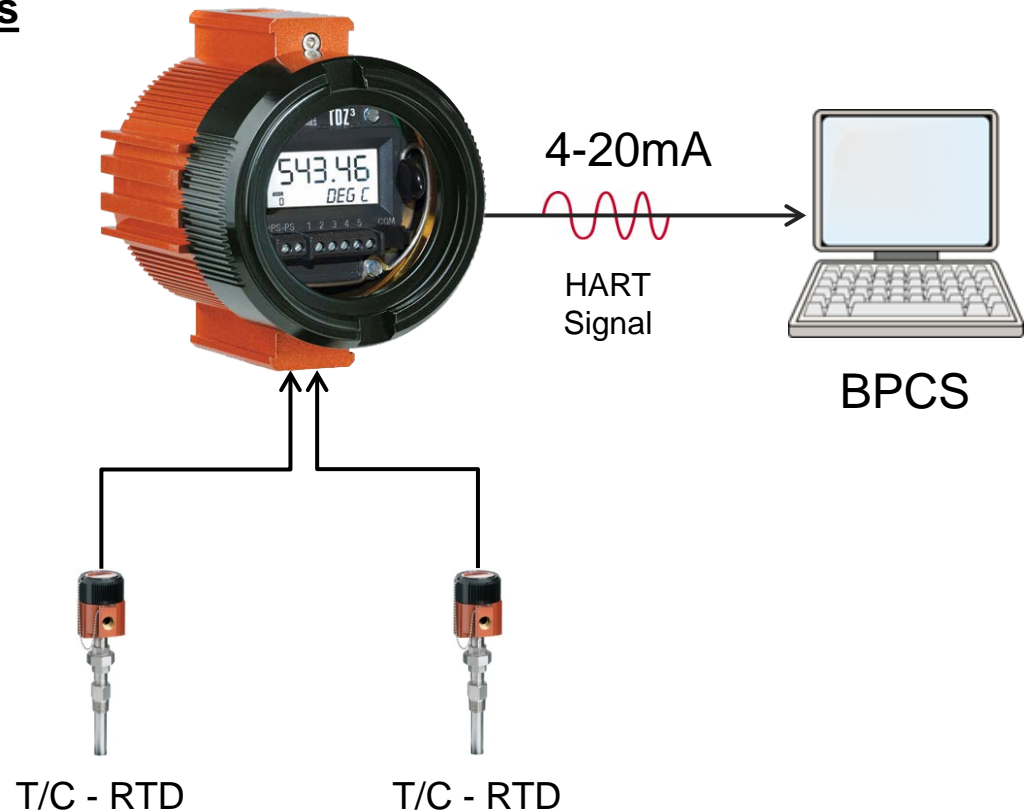


Implement Backup with two sensors or with a dual sensor

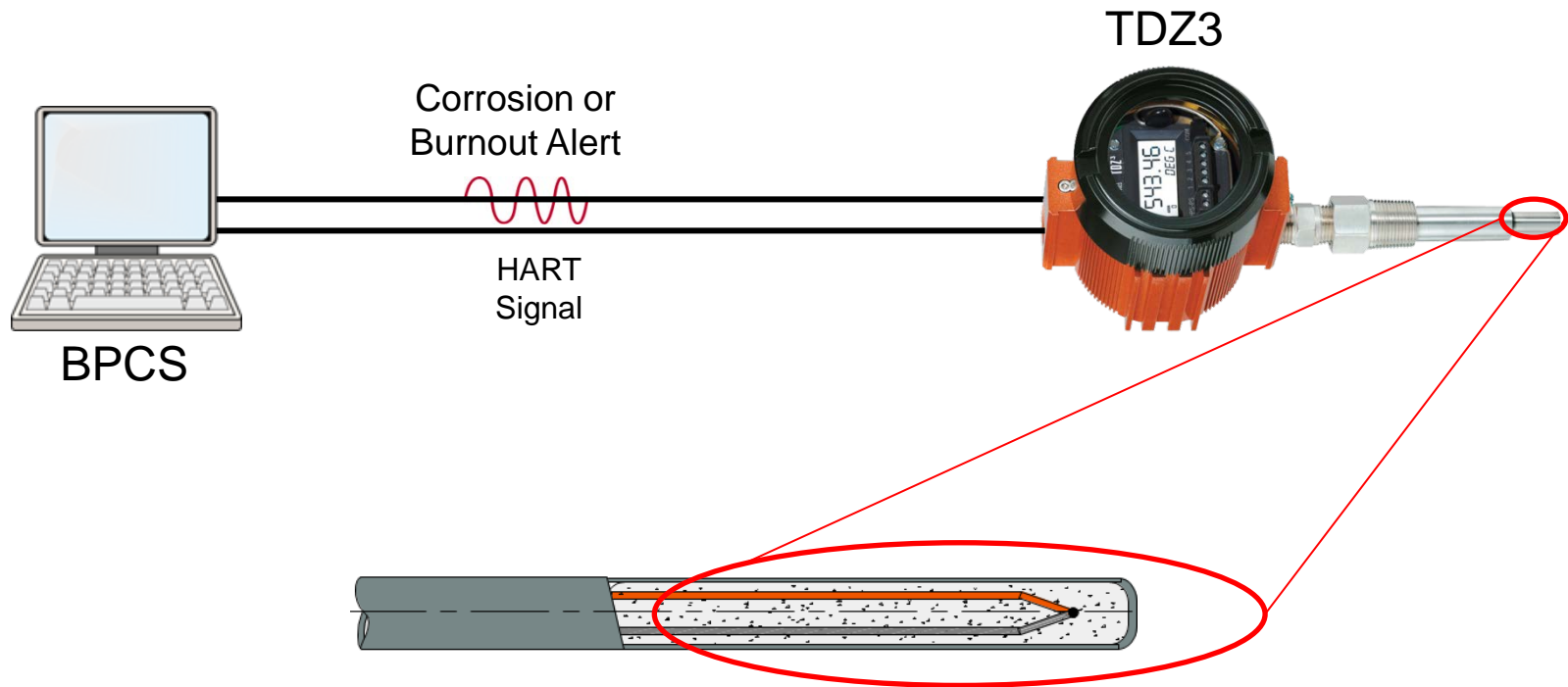
# Dual Input Capabilities for Temperature Measurements

## Dual Input Configuration Options

- Sensor Backup 1-2
- Sensor Backup 2-1
- Average
- Differential 1-2
- Differential 2-1
- Absolute Differential (1-2)
- High Select
- Low Select



# Corrosion Detection/Burnout Indication



TC junctions start to break down before burnout - an increase in the junction resistance can be an early indication of TC degradation or pending failure

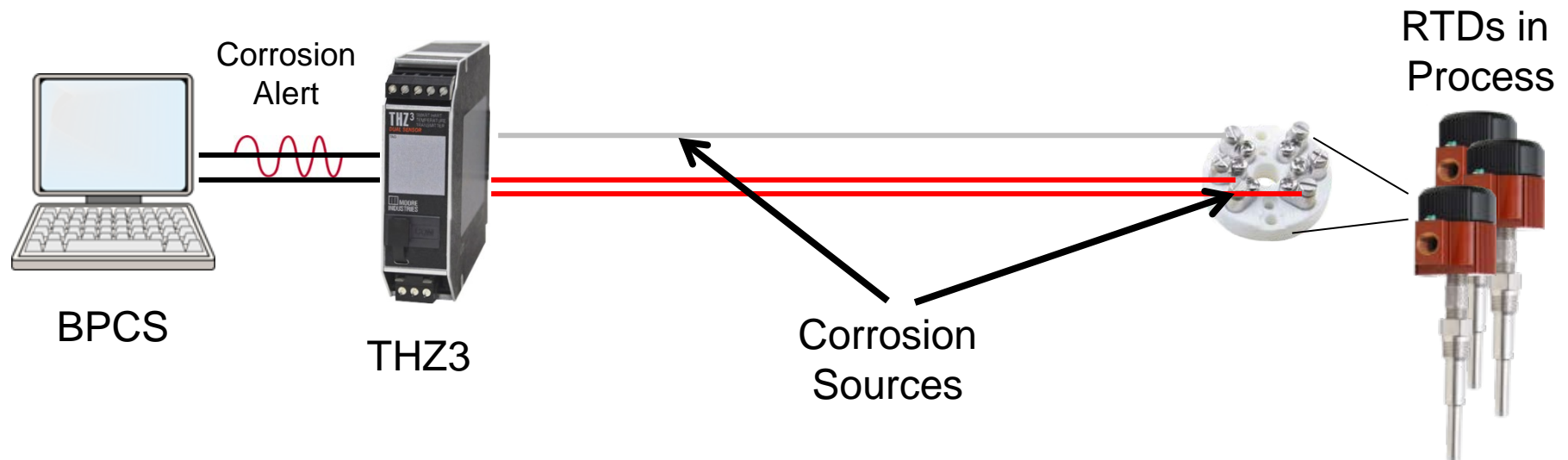
# Temperature Sensor Drift Alert – Advanced Diagnostics



Dual or redundant measurements can help detect sensor drift

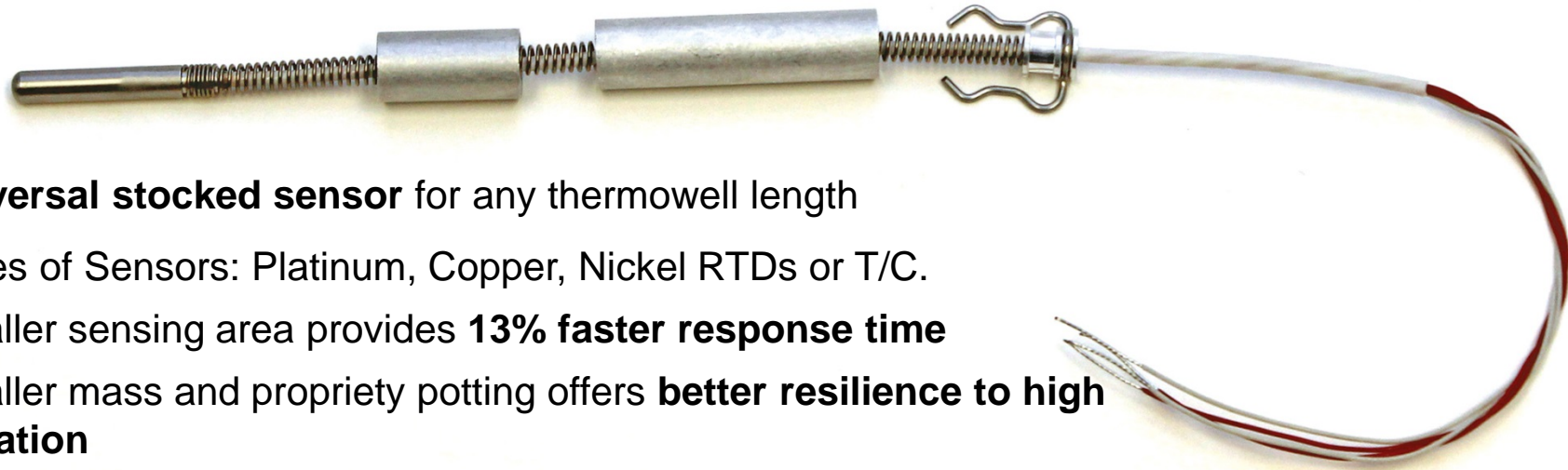


# Temperature Sensor Corrosion Detection - RTD



Corrosion alerts for 3-wire and 4-wire RTDs

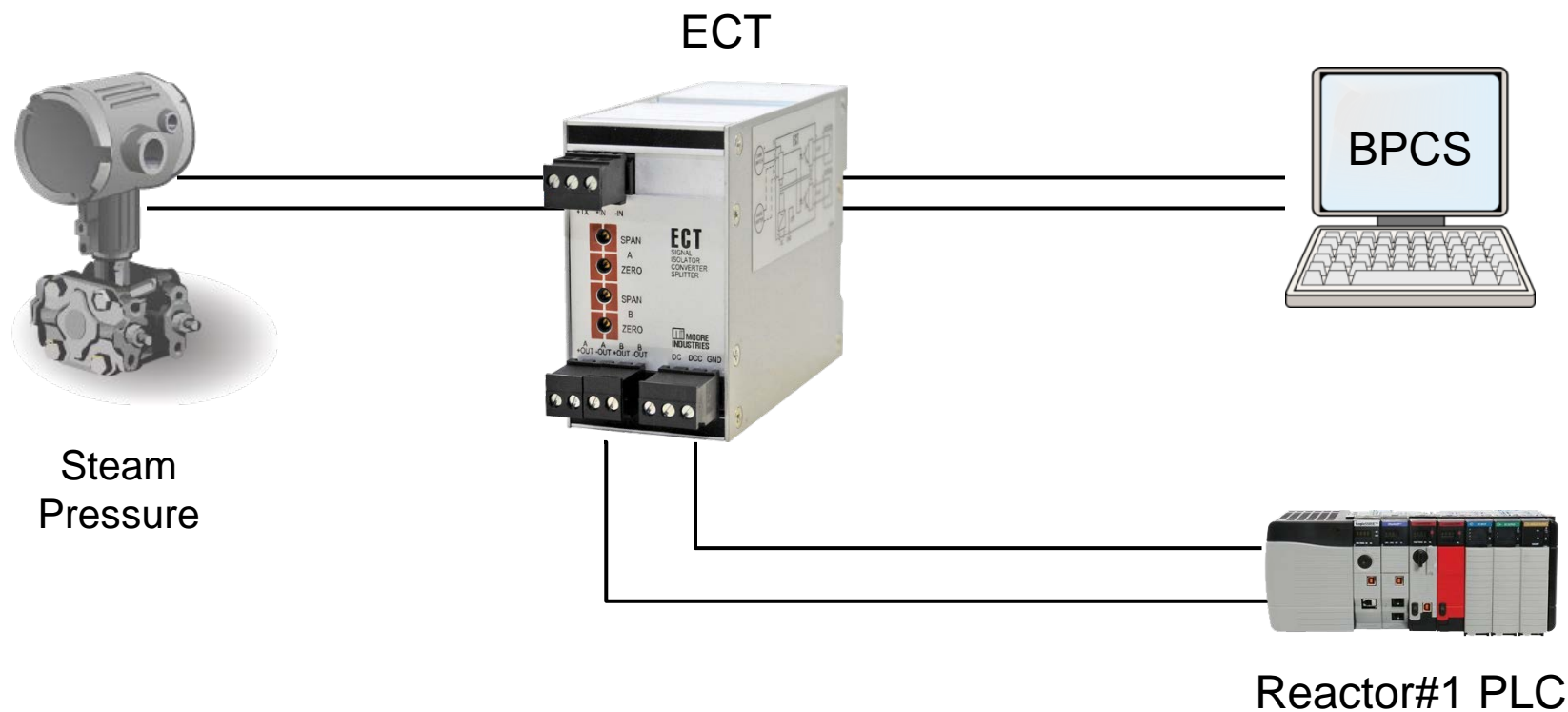
# the WORM – Field Cuttable Temperature Sensor



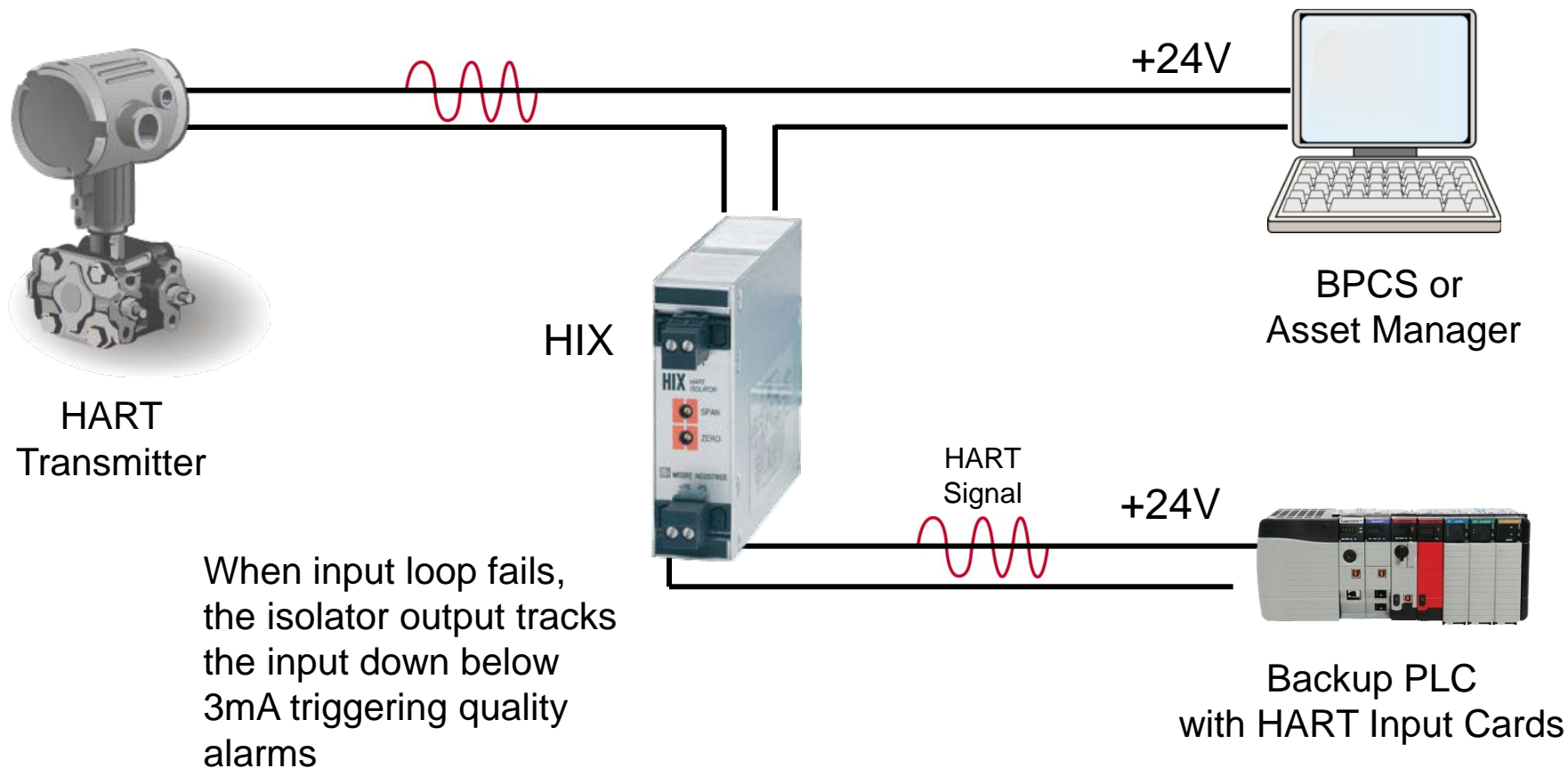
- **Universal stocked sensor** for any thermowell length
- Types of Sensors: Platinum, Copper, Nickel RTDs or T/C.
- Smaller sensing area provides **13% faster response time**
- Smaller mass and propriety potting offers **better resilience to high vibration**
- The short 1.5" sheath, **minimizes ambient temperatures effects**
- Single WORM kits; Triple WORM kit
- Can of 10 WORM kits



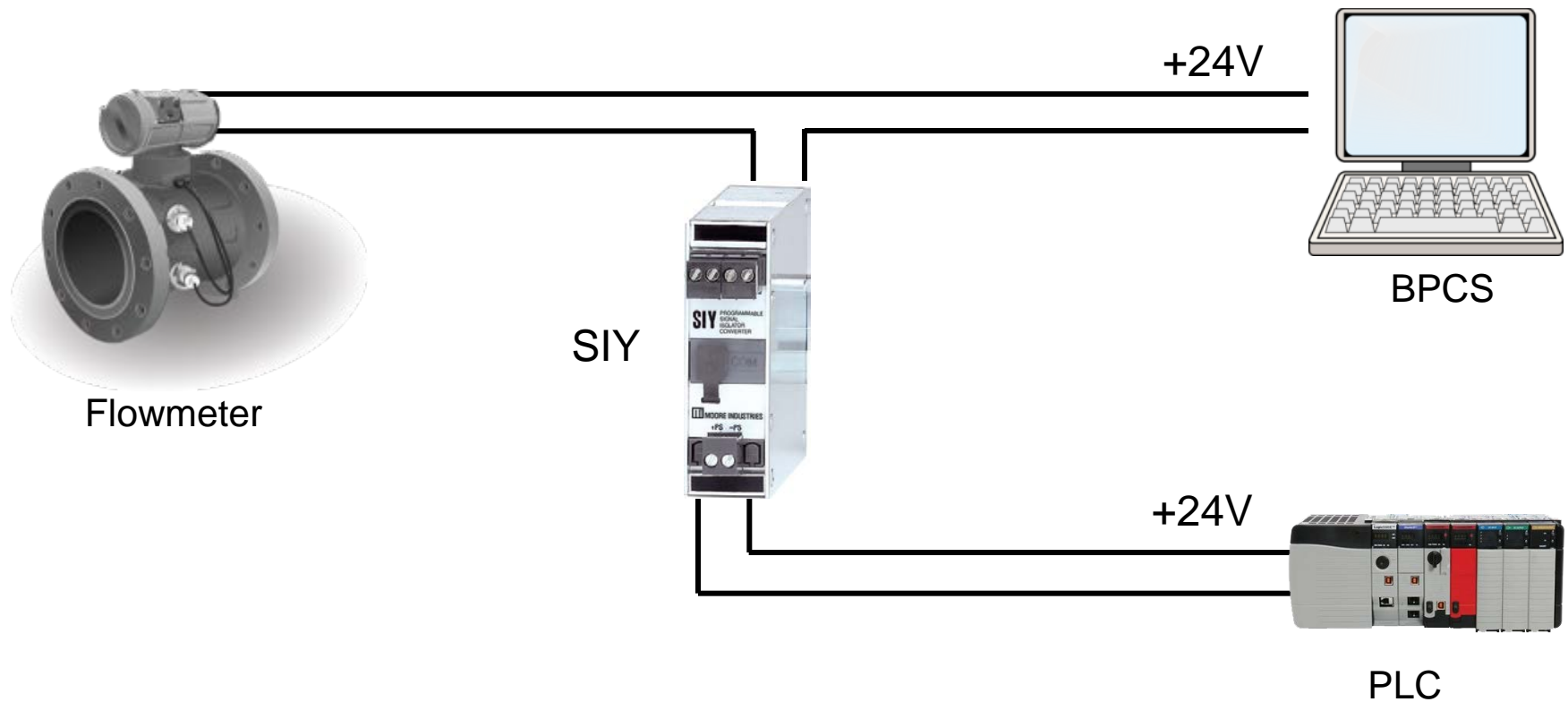
# Signal Splitter - Sharing Critical Signals



# HART Pass-Through Signal Isolator/Repeater



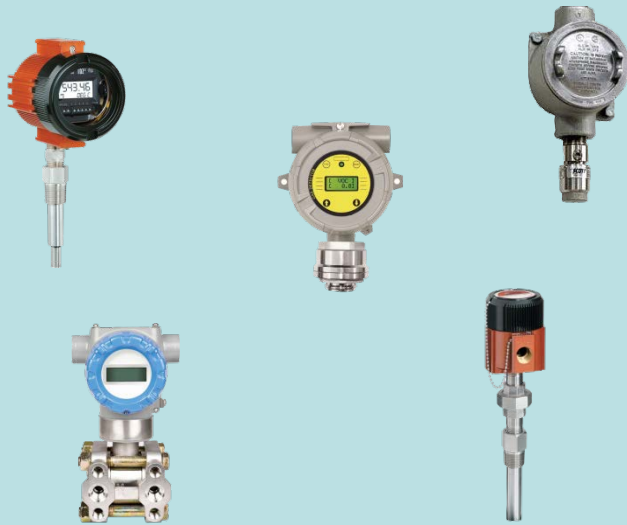
# Signal Isolator and Converter - PC Programmable



PC Programmable for Universal Input  
and Custom Ranges

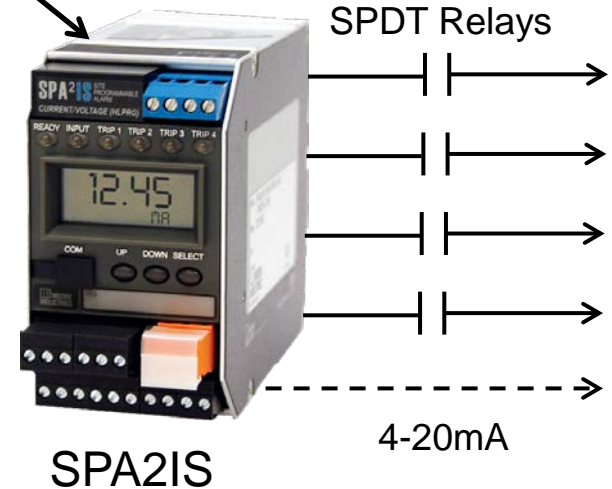
# Associated Intrinsically Safe Alarm Trip

Class 1, Div 1/Zone 0



IS barrier  
inside

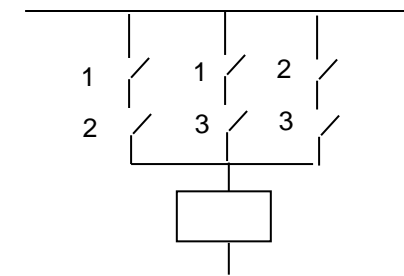
Class 1, Div 2/Zone 2 or  
General Location



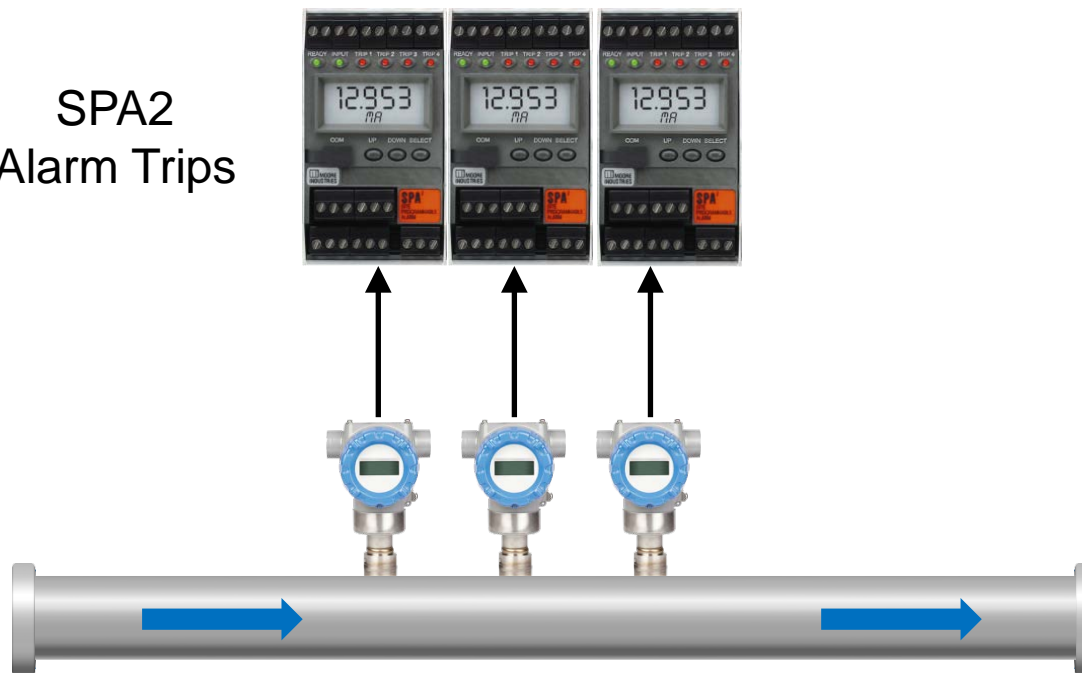
No IS Barrier  
Required

# High Availability Alarm System: 2oo3 Voting

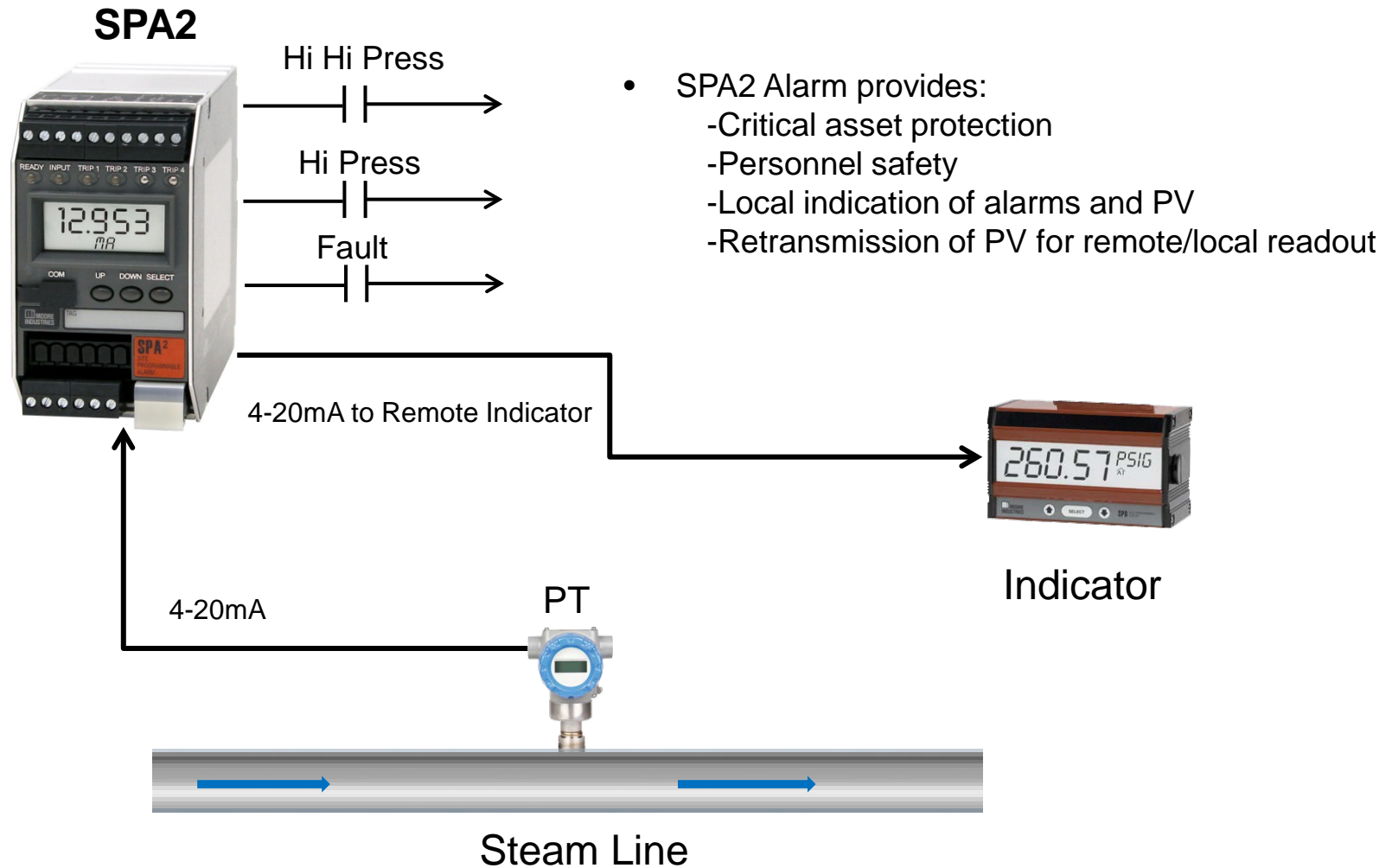
Trip Amp Relays  
wired for 2oo3  
Voting



SPA2  
Alarm Trips

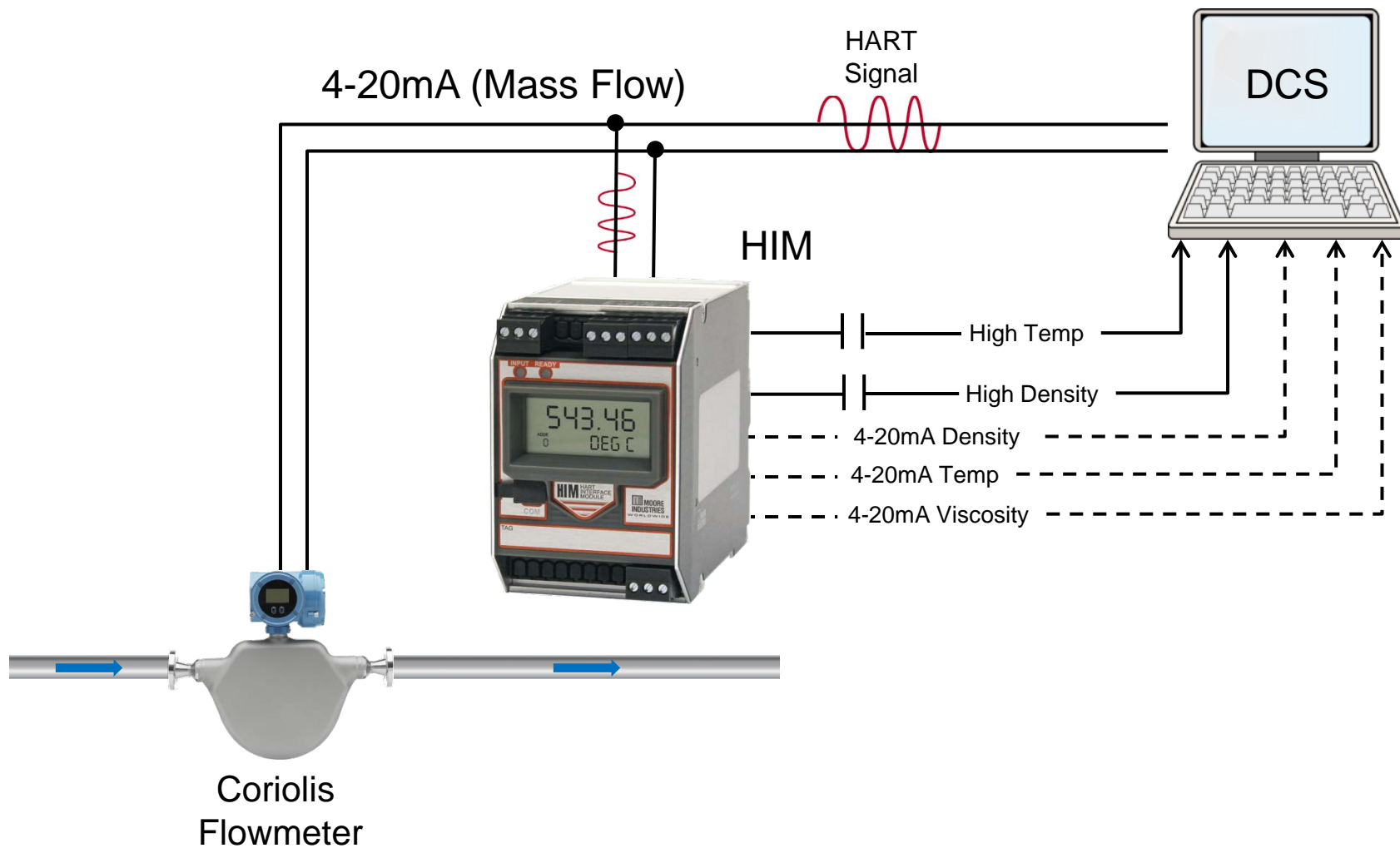


# Pressure Protection – Alarm Trip

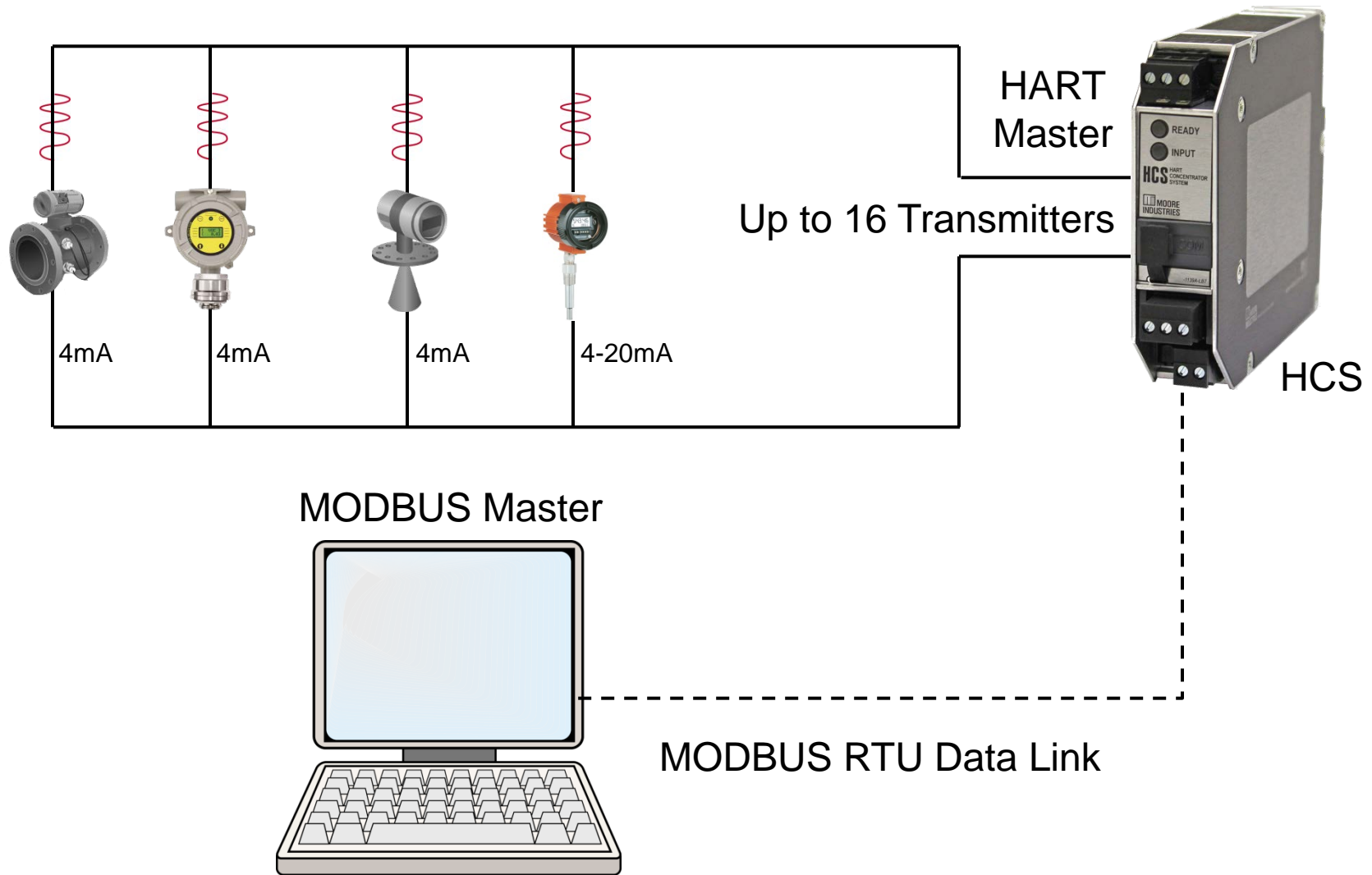




# HART Interface Module and HART Mux

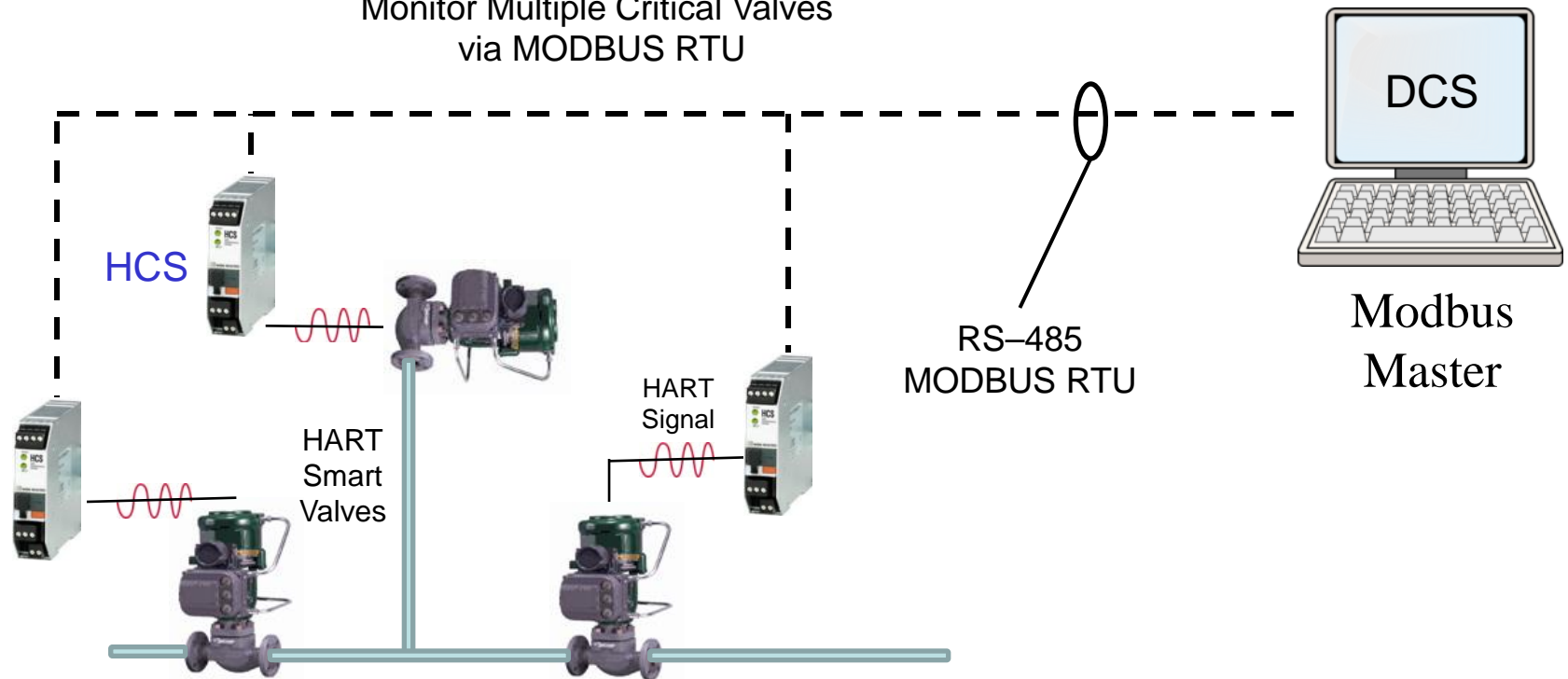


# HART to MODBUS Gateway

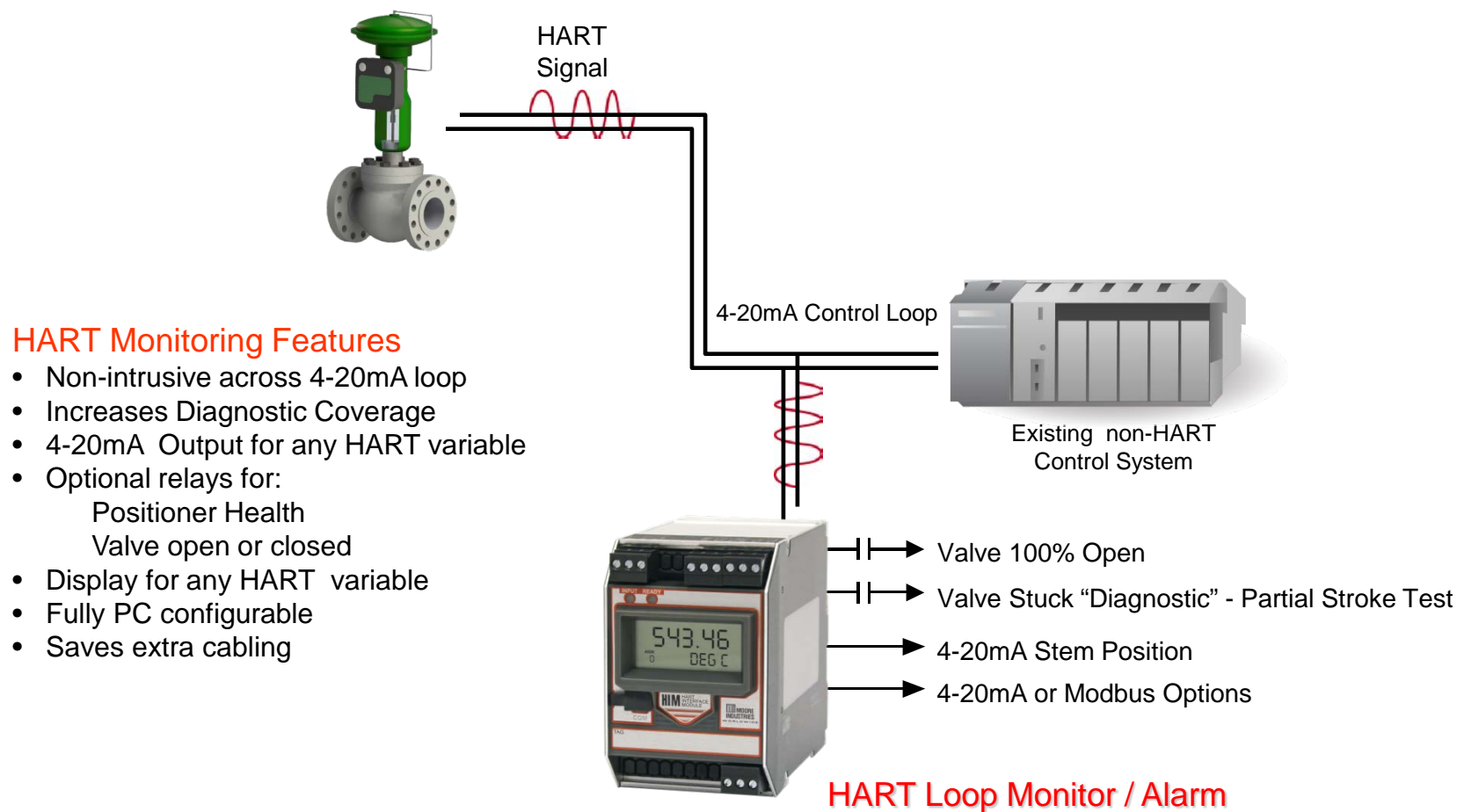


# HART to MODBUS Gateway – Smart Valves

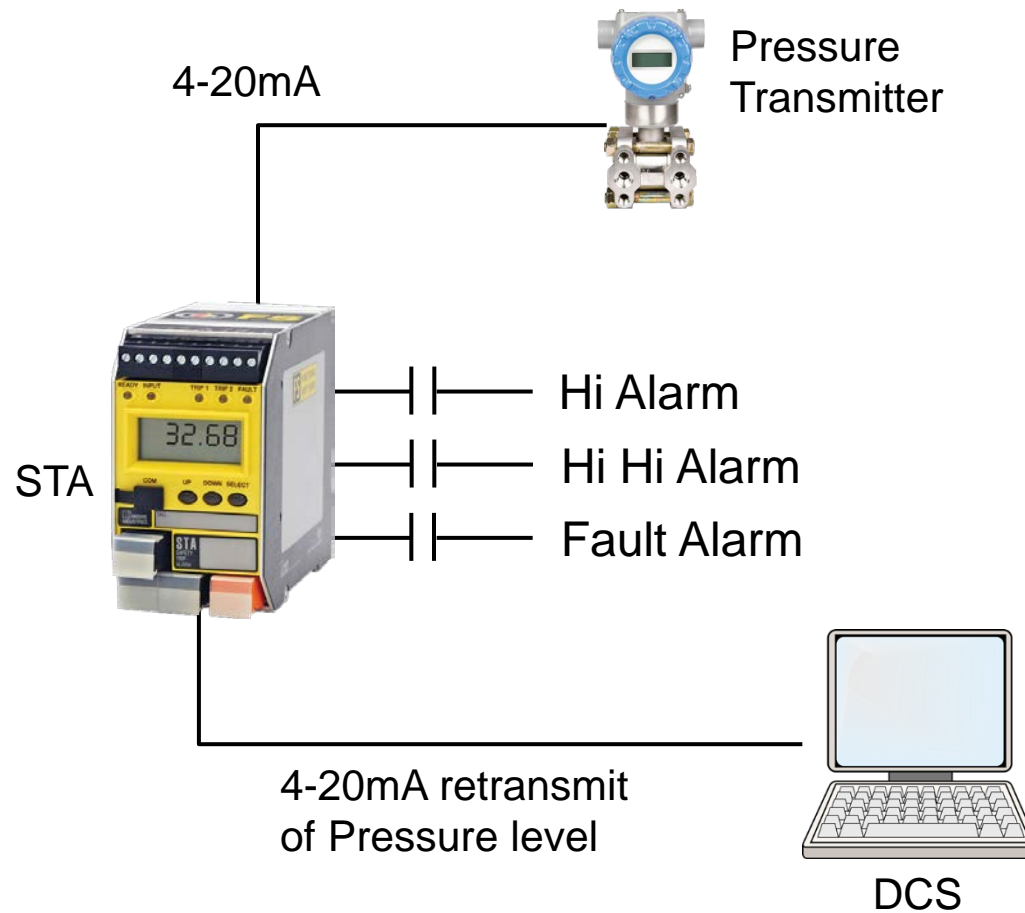
Use the HCS (HART to Mbus)  
Monitor Multiple Critical Valves  
via MODBUS RTU



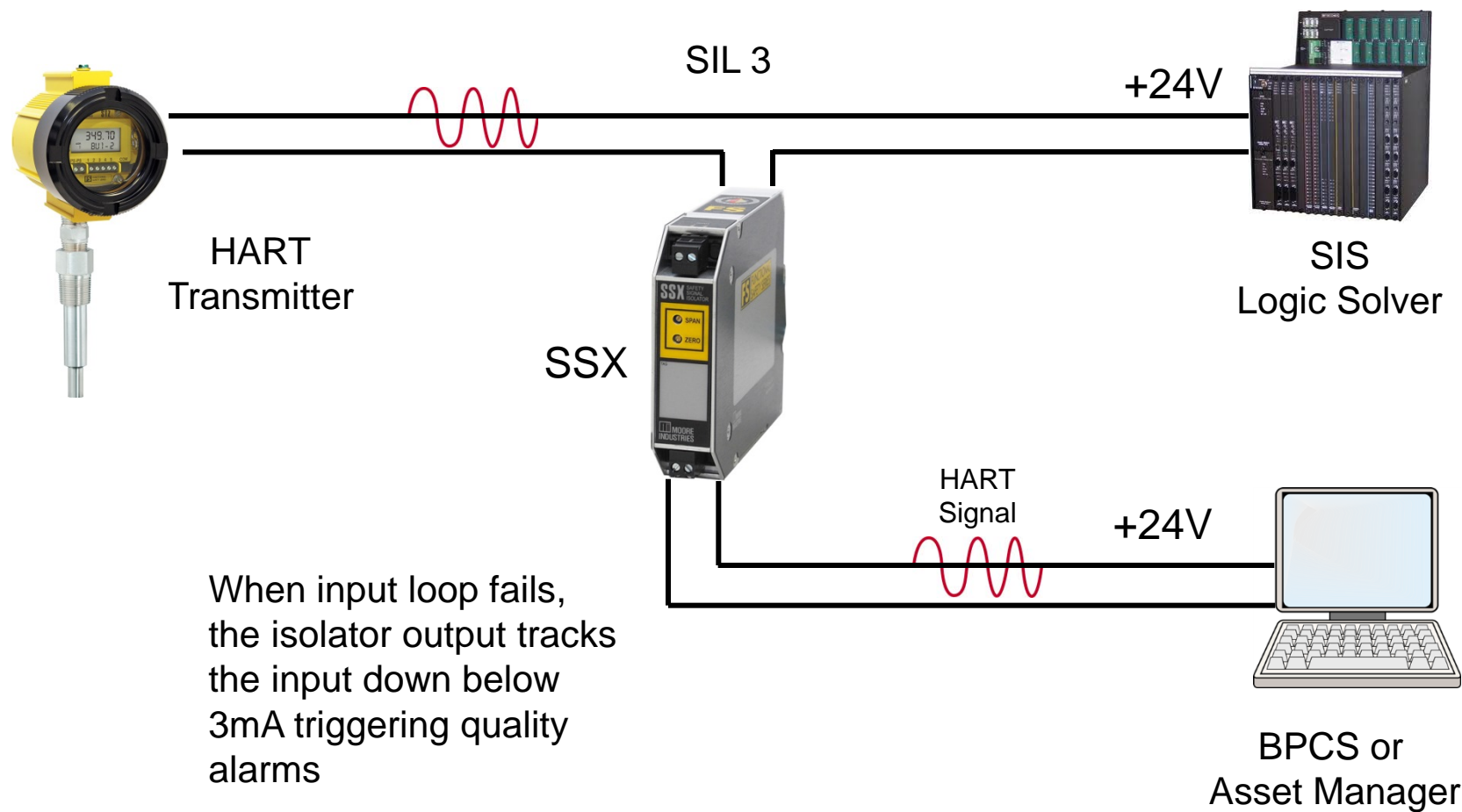
# HART Mux – Smart Valve Diagnostics



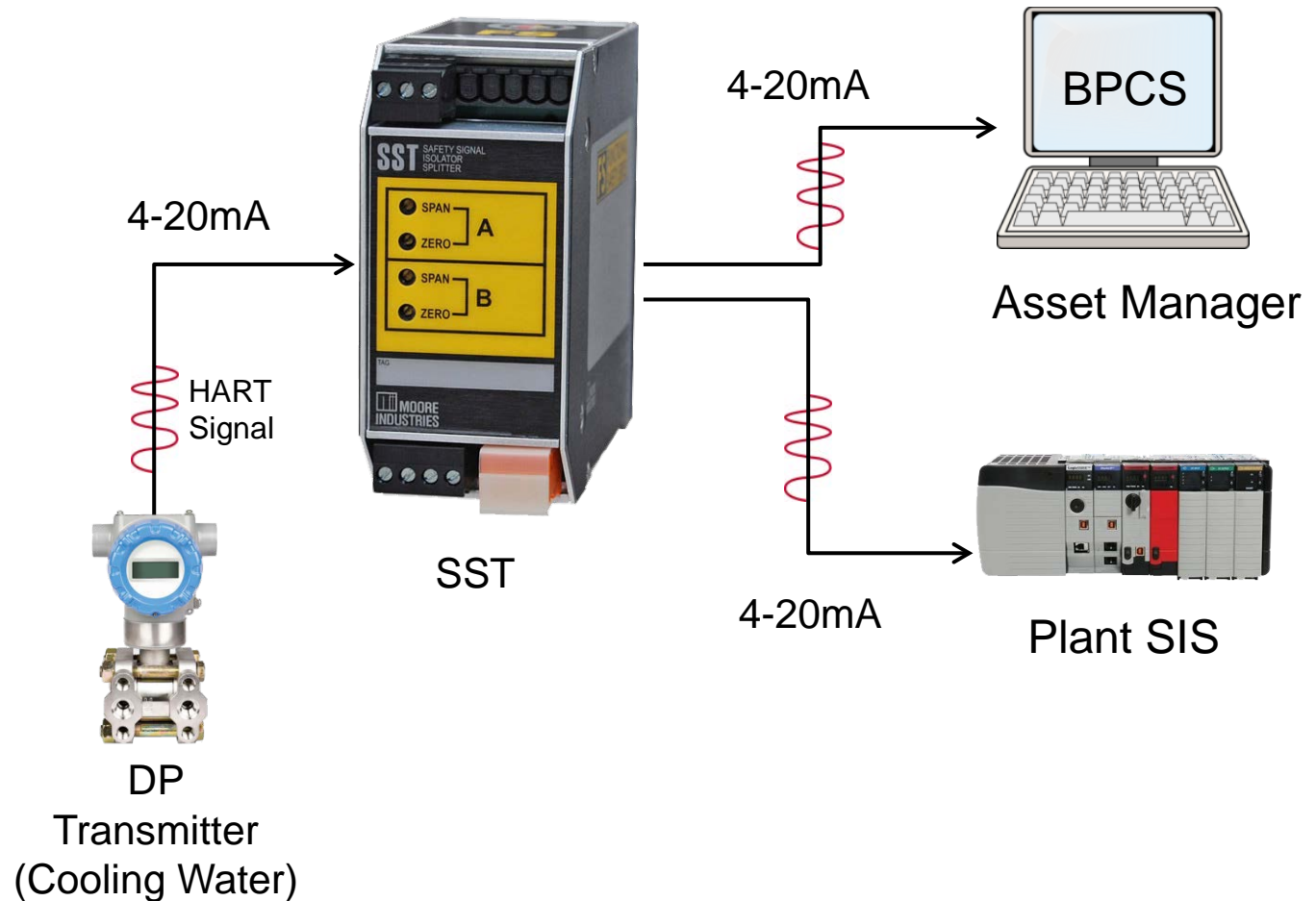
# SIL 3 Capable Logic Solver – Pressure



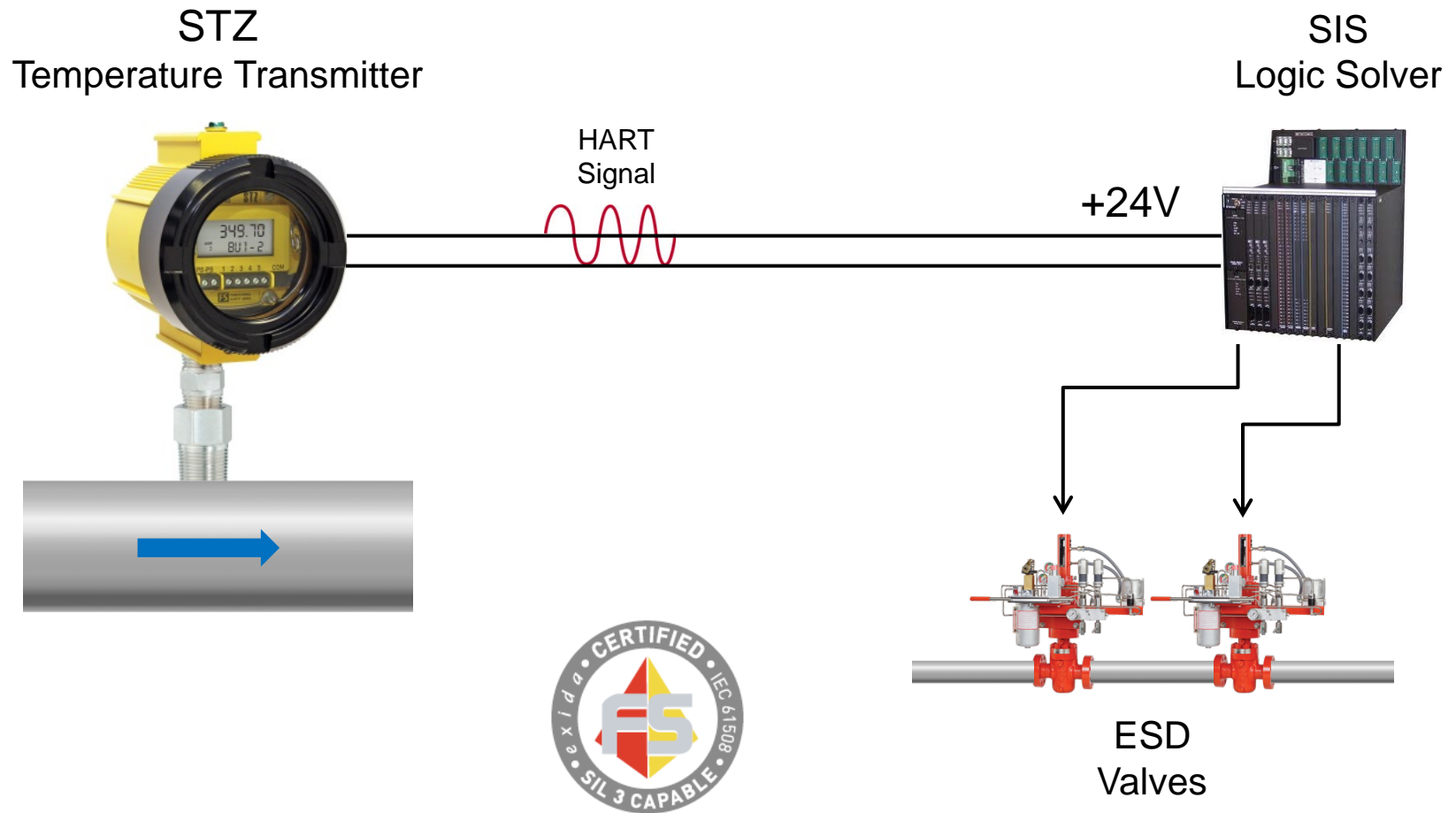
# IEC 61508 Certified SIL 3 Capable Signal Isolator/Repeater



# Critical Flow Monitoring – Safety Signal Splitter



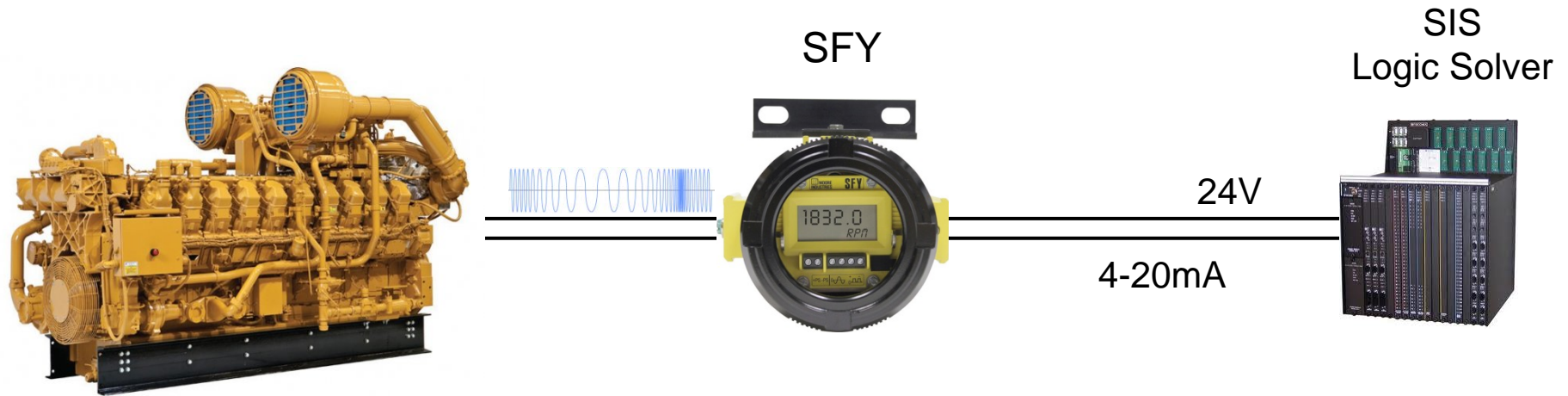
# SIL 3 Capable Temperature Transmitter





# SIL 3 Capable Frequency to DC Converter

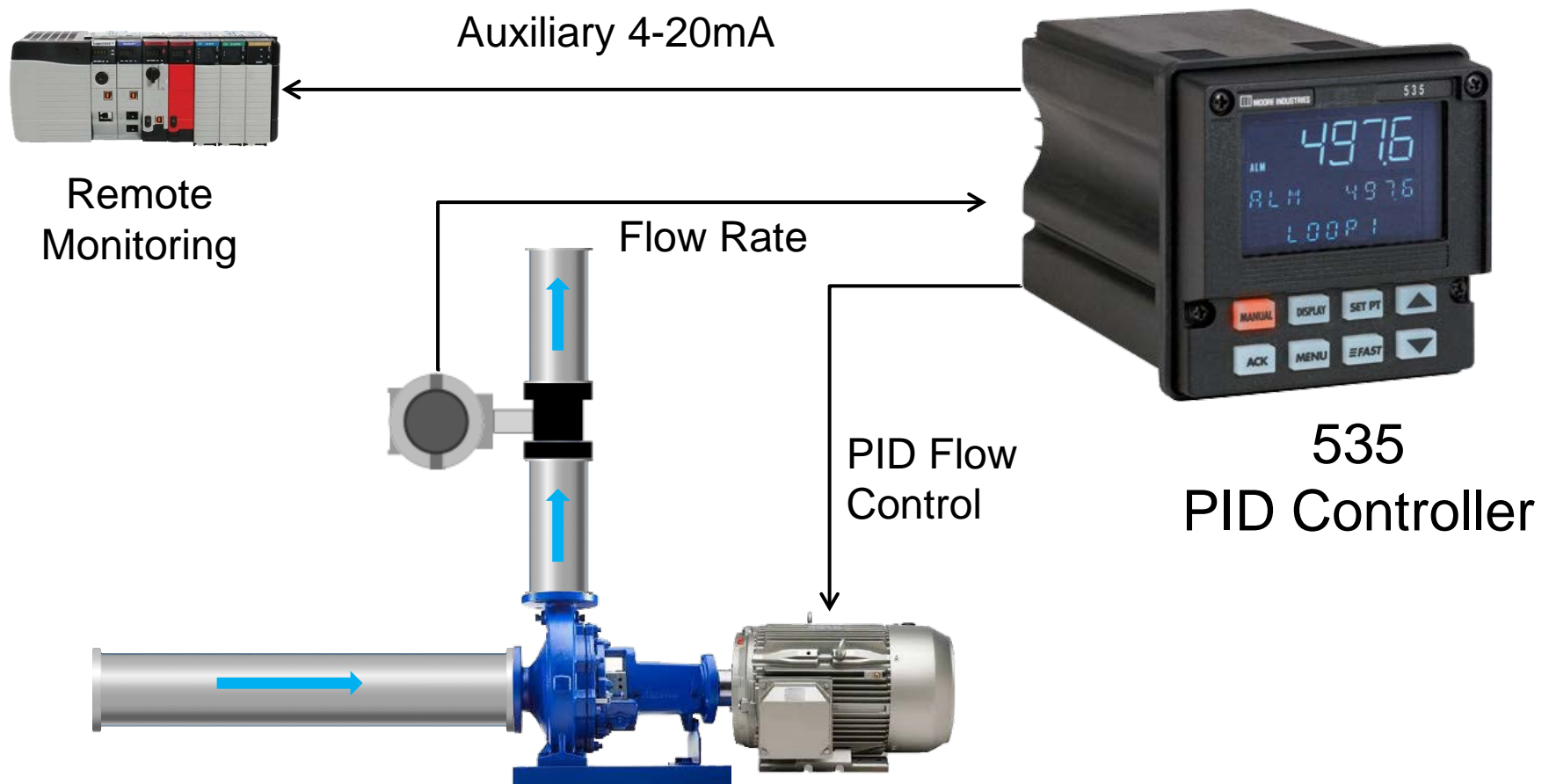
## Compressor Over-speed Protection



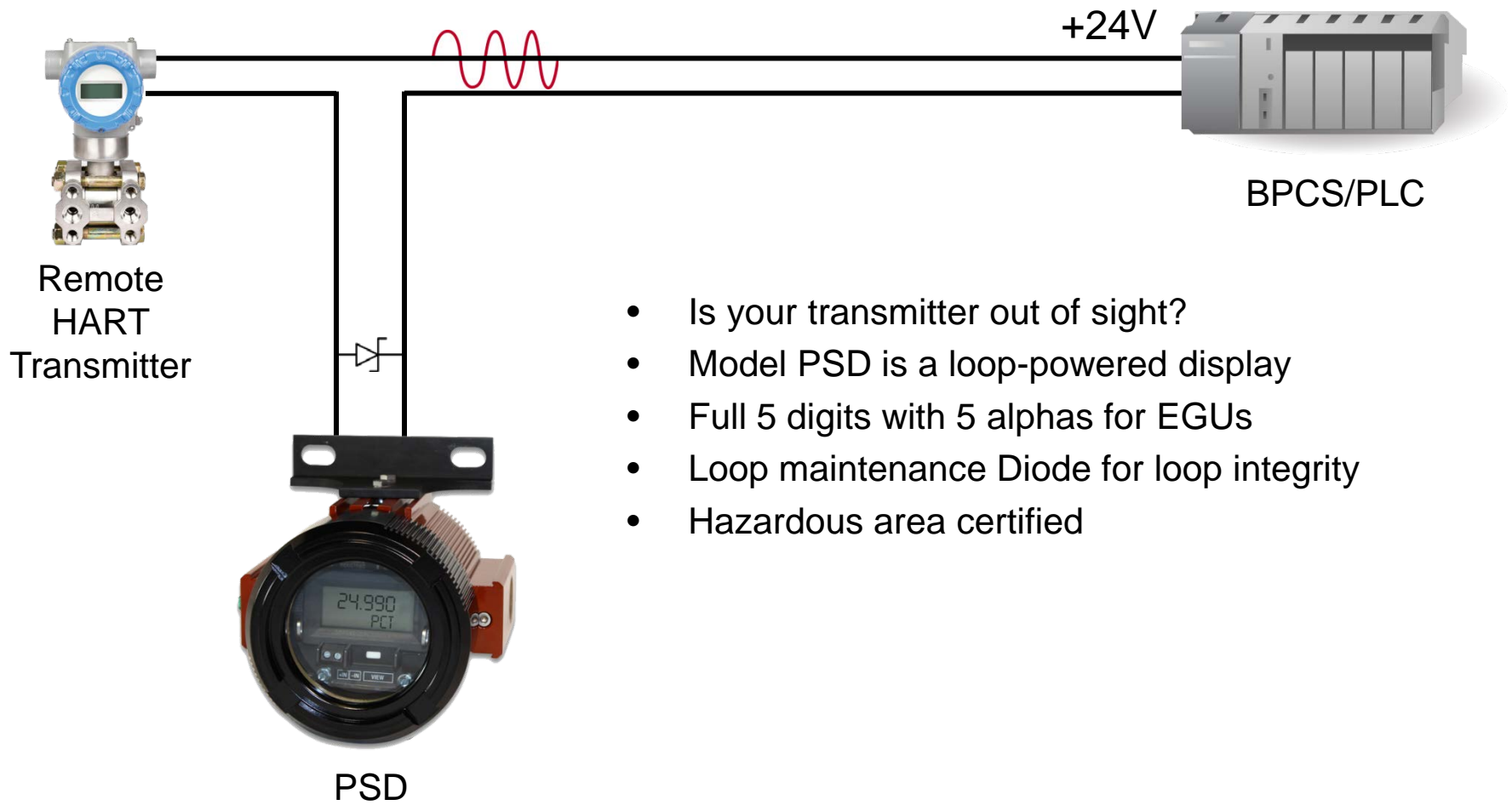
### IEC 61508 Certified Frequency / Speed transmitter

- High Accuracy Frequency to 4-20mA
- Input Spans: 0.1 Hz to 25,000Hz
- Accuracy: 0.01 to 0.05% of reading
- Hazardous area certified
- Ambient: -40°F to 185°F

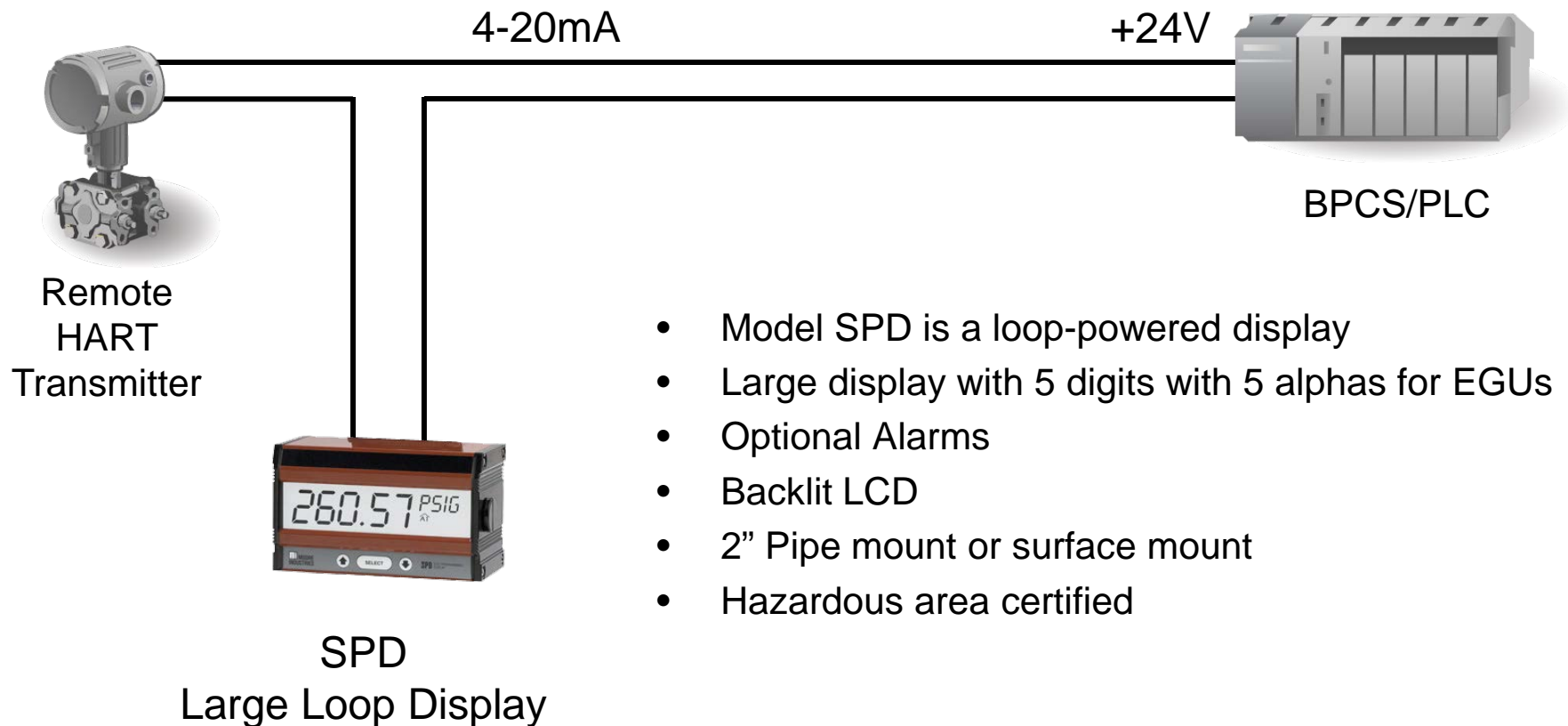
# Motor or Belt Speed Protection and Monitoring



# Field Mount Loop Indicator/Display



# Large Field Mount Loop Indicator/Display



# 1/8 DIN Panel Display/Meter



Nema 4X Panel



## 330R

1/8 DIN Panel Meter & Alarm