Your Global Automation Partner

TURCK

Hazardous/Non-Hazardous Area Interface Technology

Prevent Unplanned Disruptions with Interface Technology
Barriers, isolators, remote I/O & cabinet monitors

Reduce the risk of explosions and limit energy to the field with Turck's innovative interface technology. These solutions are ideal in process automation applications for both hazardous and non-hazardous signal conditioning. Products include a broad range of point-to-point, remote I/O, and Foundation Fieldbus products approved for use in North America, Europe, and many other countries around the world. Our interface technology products such as remote I/O, intrinsically safe barriers, isolators and condition monitoring solutions help ensure reliable data, allowing your applications to operate efficiently without the fear of unplanned disruptions.

Customers in a variety of industries have utilized interface technology solutions from Turck, including:

- Chemical Processing
- Factory Automation
- Mobile Equipment
- Oil and Gas
- Pharmaceutical
- Wastewater Treatment

Cost-effective & Safe Chemical Storage

Chemical processing plants with instrumentation will need to limit their voltage and/or current in hazardous areas. Zener or intrinsically safe barriers are designed to limit voltage to and from these locations to prevent electrical explosions while connecting/disconnecting instrumentation in the field. Their slim profiles ensure cabinet space is maximized while providing cost-effective protection for electrical signals within hazardous areas.

Explosion Protection During Processing

Flammable materials in oil and gas production present potential hazards during processing. At these facilities, flammable or explosive substances may be present at all times, so using electrical equipment certified for use in hazardous areas is mandatory. Turck offers a wide range of barrier solutions that limit or isolate currents for intrinsically safe protection for field devices.

Reduce Plant Downtime with Multipurpose Cabinet Monitoring
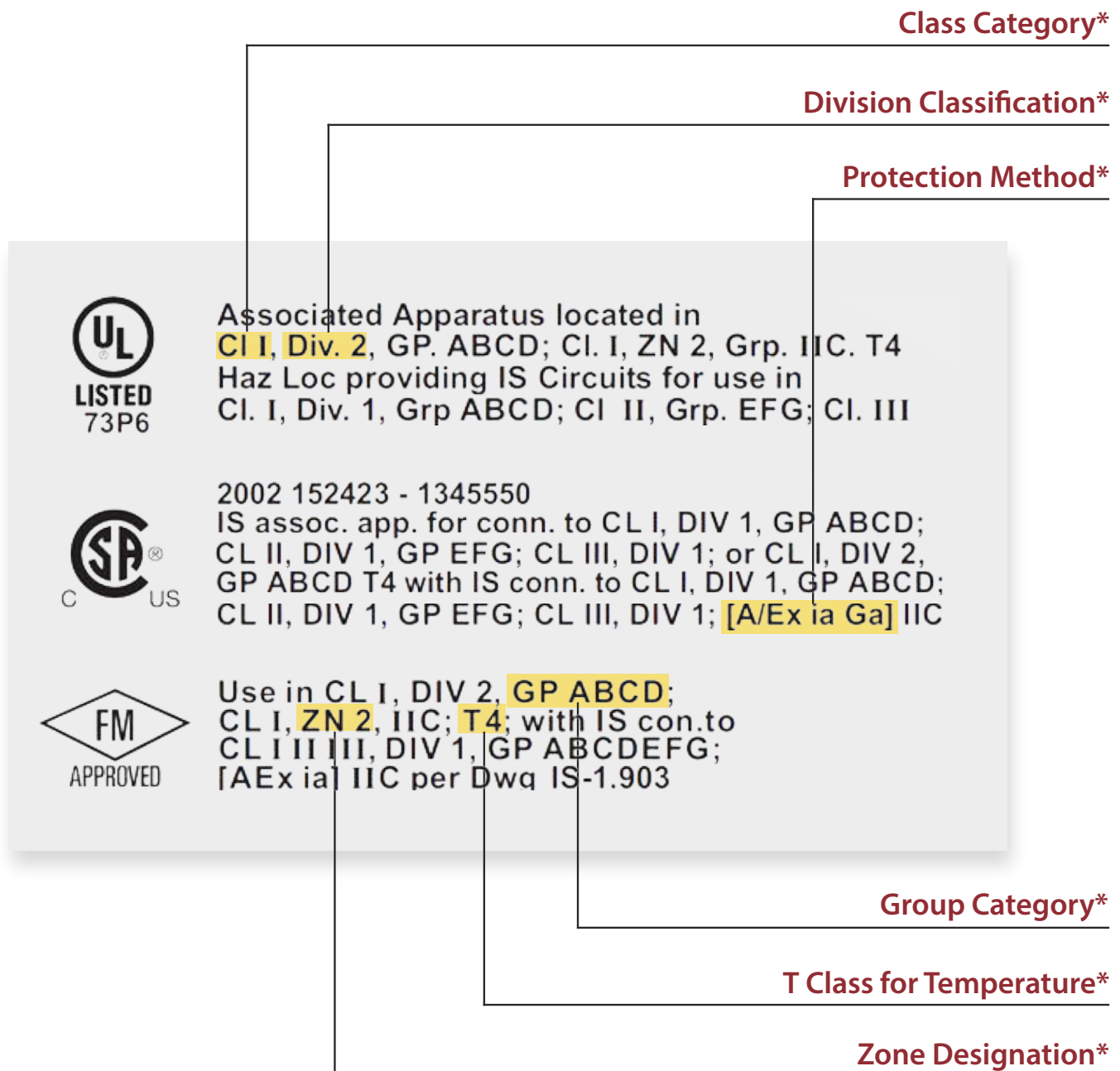
In pharmaceutical manufacturing it is vital to monitor environmental changes in the control cabinet. Turck's cabinet guards combine multiple applications into one device: interface technology sensor, temperature sensor, humidity sensor, and one sensor that monitors door closure. As soon as the taught-in threshold value is exceeded, it signals an alarm, reducing costly downtime.

Hazardous Area Overview

Hazardous areas are classified into Zones based on the frequency and duration of an explosive atmosphere. The National Electrical Code (NEC) defines hazardous locations as those areas "where fire or explosion hazards may exist due to flammable gases or vapors, flammable liquids, combustible dust, or ignitable fibers or flyings."

Typical Equipment Marking with Multiple Listings

* click to view table for detail

Class Category*

Division Classification*

Protection Method*

(UL) LISTED 73P6

Associated Apparatus located in
Cl I, Div. 2, GP. ABCD; Cl. I, ZN 2, Grp. IIC. T4
Haz Loc providing IS Circuits for use in
Cl. I, Div. 1, Grp ABCD; Cl II, Grp. EFG; Cl. III

(CSA) C ® US

2002 152423 - 1345550
IS assoc. app. for conn. to CL I, DIV 1, GP ABCD;
CL II, DIV 1, GP EFG; CL III, DIV 1; or CL I, DIV 2,
GP ABCD T4 with IS conn. to CL I, DIV 1, GP ABCD;
CL II, DIV 1, GP EFG; CL III, DIV 1; [A/Ex ia Ga] IIC

(FM) APPROVED

Use in CL I, DIV 2, GP ABCD;
CL I, ZN 2, IIC; T4; with IS con.to
CL I II III, DIV 1, GP ABCDEFG;
[AEx ia] IIC per Dwg IS-1.903

Group Category*

T Class for Temperature*

Zone Designation*

Hazardous Area Descriptions

Class and Groups

Class	Substance	Group	
		NEC500	**NEC505/CENELEC/IEC**
Class I (gas)	Acetylene Hydrogen Ethylene Propane	A B C D	— IIC IIB IIA
Mining	Methane	—	I
Class II (dust)	Metal dust Coal dust Grain dust	E F G	Note: see zones below
Class III (fibers)	Fibers	—	—

Division/Zone

Flammable Material	NEC500	NEC505	CENELEC/IEC
Continuously present	Division 1	Zone 0	Zone 0 (Zone 20 - dust)
Likely/can be present		Zone 1	Zone 1 (Zone 21 - dust)
Not normally present	Division 2	Zone 2	Zone 2 (Zone 22 - dust)

Temperature

Maximum Surface Temp. °C	Temperature Class	
	NEC500	**NEC505/CENELEC/IEC**
450	T1	T1
300	T2	T2
280	T2A	
260	T2B	
230	T2C	
215	T2D	
200	T3	T3
180	T3A	
165	T3B	
160	T3C	
135	T4	T4
120	T4A	
100	T5	T5
85	T6	T6

IS Barrier Equipment

NEC500 (Class & Division Method)

| Class I | Div 1 | Groups A, B, C, D | T4 |

Flammable Gas or Vapor

Area Classification

Gas Group

Temperature Class

IS Barrier Circuit

NEC500 (Class & Division Method)

| Class I | Div 1 | Groups A, B, C, D | [| A | Ex | ia | Ga |] | IIC |

Flammable Gas or Vapor

Area Classification

Gas Group

Conformity to US Requirements

Explosion Protected

Protection Method

EPL = Equipment Protection Level

Gas Group
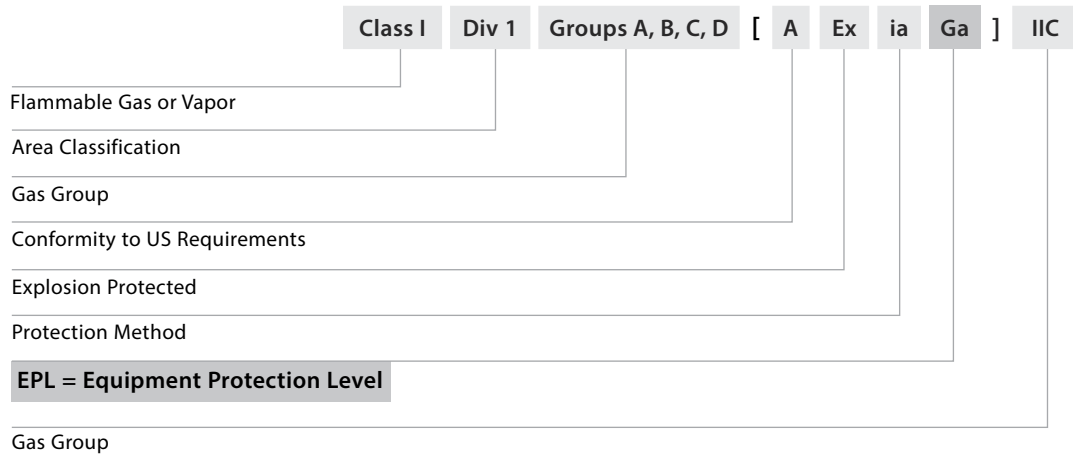
Excom: In-Cabinet Remote I/O

The Excom modular I/O system combines both remote I/O and intrinsically safe into a single backplane, which reduces cabinet size, installation time, and hardware costs. Ideal for reliable signal processing in non-hazardous applications in a control cabinet.

Non-Hazardous System

- Available in 8, 16, or 24 slots
- Up to 192 field devices
- Redundancy (power and communication)
- HART and non-HART capable
- Standard inputs/outputs
- Channel diagnostics
- Profibus DP or Multiprotocol (Ethernet IP, Profinet Modbus TCP/IP)

Benefits

- Simplifies non-Ex and Ex installation
- Intrinsically safe or non-intrinsically safe I/O
- Reduces costs/inventory
- Decreases downtime
- No additional software necessary

Zone 2 (Class I, Div 2) System

- Available in 8, 16, or 24 slots
- Up to 192 field devices
- Redundancy (power and communication)
- HART capable
- Intrinsically safe inputs/outputs
- Channel diagnostics
- Profibus DP or Multiprotocol (Ethernet IP, Profinet Modbus TCP/IP)

Benefits

- Intrinsically safe I/O
- Decreases downtime
- No additional software necessary
- Easy to install
- Troubleshoot without turning off power
- Worldwide approvals

Zone 1 (Class I, Div 2) System

- Available in 8 (non-redundant) or 16 (redundant) slots
- Up to 128 field devices
- Redundancy (power and communication)
- HART capable
- Intrinsically safe inputs/outputs
- Channel diagnostics
- Available in Marine Shipboard Approved (MSA) version
- Profibus DP or Multiprotocol (Ethernet IP, Profinet Modbus TCP/IP)*
  * pending

Benefits

- Intrinsically safe I/O
- Decreases downtime
- No additional software necessary
- Easy to install
- Troubleshoot without turning off power
- Worldwide approvals

Fiber Optic Couplers

- Profibus DP to Fiber-IS converter
- Zone 2 or Zone 1 versions
- Galvanic isolation
- LED indication
- Powder-coated die-cast aluminum housing
- Profibus DP to Fiber-IS converter (Zone 2)
- RS485IS to Fiber-IS converter (Zone 1)
- Single or Dual channel Fiber

Benefits

- Extends Profibus network
- Easy to install
- Worldwide approvals
- High speed output
- Din rail mount

Segment Coupler

- Profibus DP to RS485IS converter
- Automatic baud rate detection
- Anodized aluminum housing
- LED indication

Benefits

- Extends Profibus network
- Easy to install
- Worldwide approvals
- High speed output
- Din rail mount

IMX12-CCM Cabinet Monitor

The IMX12-CCM cabinet monitor can be installed in virtually any protective enclosure to continuously check the IP integrity. If a door is improperly opened/closed, or if the temperature/humidity is exceeded, two independent output transistors will notify the control system. This innovative device has an intrinsically safe 2-wire transducer interface and can be used in hazardous areas. Teach-in is done directly on the device without additional aids.

Features

- Ex (HART) & non-Ex (IOL) versions available
- C1D2 mountable (ATEX, IECEX, UL pending)
- Asset management (DTM available)
- Monitor door open/close (40 mm...500 mm) or (40 mm...130 cm)
- Monitor temperature (-25 °C...+70 °C)
- Monitor humidity (0...80%) or (10...90%)

Benefits

- Standalone monitoring with automatic teach
- Din rail mountable
- Supports up to 2 devices inside enclosure
- Configurable alarm outputs
- Highly cost effective and simple to install

MBD: On-Machine Multibarrier

The MBD Foundation Fieldbus multibarrier provides intrinsically safe protection for up to 32 FISCO or entity devices in a Class I, Division 1 or Zone 0 area. Unlike traditional FISCO power supplies, the MBD reduces installation time because it requires no additional spur blocks to connect to field devices.
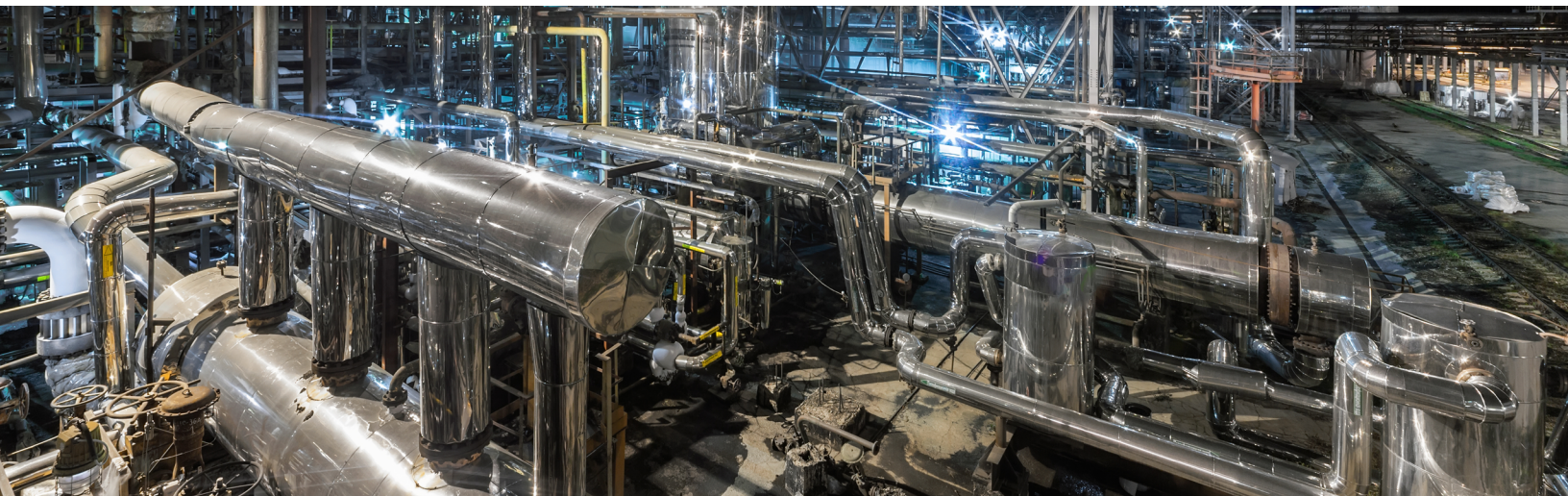

Features

- Class I, Division 2 mountable (Zone 2)
- Available in 4 or 8 port
- Integrated terminating resistor
- Short-circuit protected spurs
- FISCO and entity compliant
- Galvanic isolation
- LED indication
- Pre-installed cable glands
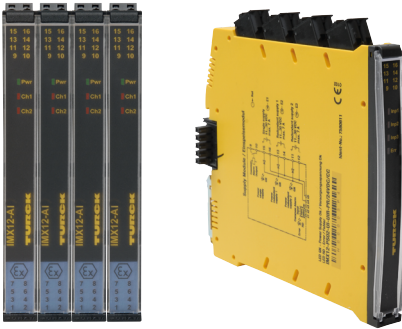- Powder-coated die-cast aluminum housing

Benefits

- Simplifies FISCO installations
- Eliminates need for FISCO power supply

IMX12: In-Cabinet Interface Amplifier

The IMX amplifier combines the newest interface technology in a slim 12.5 mm wide housing, and the optional power rail ensures complete power availability to all connected amplifiers.

Features

- Class I, Division 2 mountable (Zone 2)
- 10-30 VDC
- Removable screw/spring terminals
- Short-circuit protected
- Wire break/short-circuit monitoring
- SIL approved

Benefits

- Three-way galvanic isolation
- LED indication
- Line fault monitoring relay, transistor, or analog outputs
- Asset management via DTM technology
- Optional power bridge

IMXK: In-Cabinet Interface Amplifier

For control cabinets with a shallow depth, Turck offers the IMXK12, a single-channel solution with a depth of only 77 millimeters. These interface devices fit perfectly into control cabinets with limited space such as in process automation plants.
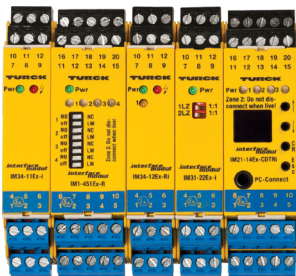
Features

- Device depth is 35% less than Turck conventional isolation switching amplifiers
- Suitable for connecting intrinsically safe field devices up to Zone 0
- Improved temperature range

Benefits

- Fast, reliable, and precise signal processing in a range of variants
- Solution for applications where the housing space is a concern
- Ideal for process applications such as pharma, oil and gas and mobile equipment

IM: In-Cabinet Interface Amplifier

The IM amplifier comes standard with intrinsically safe inputs/outputs or optional standard input/outputs. The three-way galvanic isolation allows the IM amplifier to be installed in traditional control cabinets without any additional hardware.

Features

- Available in 10-30 VDC or 20-250 VAC…20-125 VDC
- Class I, Division 2 mountable (Zone 2)
- Available in non-LCD version (18 mm wide), or LCD version (27 mm wide)
- Optional non-intrinsically safe versions
- SIL approved

Benefits

- Three-way galvanic isolation
- Signal conditioning
- Wire break/short-circuit monitoring
- LED indication
- Relay, transistor, or analog outputs
- Asset management via DTM technology
- LCD with programmable push buttons

IMC: On-Machine Cartridge Barrier

Exceptionally compact and rugged, the intrinsically safe IMC can be mounted in any Class I, Division 2 area without the need for an enclosure when used with an IMC-SG (stainless guard) and IMC-MP-ALUM (aluminium mounting plate). Applications include analog input/output, analog transducers and discrete input/output.

Features

- Class I, Division 2 mountable (Zone 2)
- IP67 protection
- Ambient temperature (-25 to +70 °C)
- M12x1 connections
- SIL approved

Benefits

- Reduces enclosure size
- Provides factory approved intrinsically safe install
- Cables approved for C1D2

MZB: In-Cabinet Zener Diode Barrier

They are ideal for electrical signals within hazardous areas in process automation applications such as chemical, pharma and oil and gas. Uses include strain gauges, thermocouples, RTDs, IP transmitters and more.

Features

- Class I, Division 2 mountable
- Removable terminals
- Built-in fuse (non-removable)
- Shielding terminal
- CSA, FM, UL approved, IECEx

Benefits

- Simple to install/use
- Reliable, fast, and cost effective
- Requires no additional power to operate
- Din rail mountable

IMS: In-Cabinet Signal Conditioners

Increase plant safety and help eliminate dangerous over-voltages with the IMS. Turck's signal conditioners provide a more reliable solution to connect the controller to the field. Applications include monitoring signals in non-hazardous areas such as analog input and transducers.

Features

- Class I, Division 2 mountable
- Galvanic isolation (up to 1.5 kV)
- Screw terminals (non-removable)
- UL approved

Benefits

- Simple to install/use
- Reliable, fast, and cost effective
- Easy din rail mounting, saves time
- Slim housing, maximizes cabinet space

TURCK

30 subsidiaries and over
60 representations worldwide!

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