

PERTRONIC INDUSTRIES LTD

INSTALLATION NOTE



Galvanic Isolator Interface Issue: 1.0 ISGAIFNZ

Overview

Hazardous areas require that intrinsically safe fire alarm detection components be located behind an intrinsically safe barrier device. Since Intrinsically Safe Isolators are not able to exactly mirror input-to-output conditions, this Conventional Zone to Galvanic Isolator interface provides the panel with the appropriate responses for Normal, Alarm, and Defect/Fault conditions originating from the hazardous side. The Conventional Zone to Galvanic Isolator Interface allows controlling one hazardous zone in conjunction with MTL5561 or Pepperl+Fuchs KFD0-CS-Ex1.52 Galvanic Isolators.



Features

- New Zealand and Australia versions available.
- Interface is powered from conventional zone +20V and 0V.
- Circuit interfaces a conventional zone and ½ of an MTL5561 or KFD0-CS-Ex1.52 Galvanic Isolator.
- Translates conditions from the hazardous side of an Intrinsically Safe Isolator to Pertronic M-voltage levels.
- LED indications for NORMAL (green), ALARM (red), and DEFECT (yellow).
- Wiring open or Short Circuits between Interface and Galvanic Isolator result in a Defect.
- 10-pulse indication for current and historic Defects.
- Missing 20V, 0V, or M causes a Defect.
- Maintains Conventional and Analogue Addressable Panel **Earth defect monitoring integrity**.
- Terminates the Conventional Panel or Loop Responder Zone with 10 kΩ.
- 22kΩ NZ input terminator used on safe side of Galvanic Isolator.
- Hazardous side of Galvanic Isolator End-of-Line Resistor is 7.5kΩ.
- Suitable for Pertronic NZS4512-2003/2010 conventional circuits, including Loop Responder, F16e, and F4.
- To be mounted inside or in close proximity of a panel or Loop Responder.
- Maximum cable resistance between Interface and galvanic Isolator or hazardous zone is 50Ω.
- A limit of 2 Interfaces may be connected to a Loop Responder (1 per zone).
- With an isolated, separate +20V supply for the Galvanic Isolator Interfaces, Loop Responders may have all 8 Zones connected to an Interface. This way, it is also possible to use multiple Loop Responders.

Specification

Dimensions of Interface:	78mm x 22mm x 74mm (excluding mounting tabs) Allow minimum 120mm (L) x 120mm (H) if Galvanic Isolator is housed in enclosure.
Colour:	Phoenix Green
Mounting:	35mm DIN rail in close proximity to Galvanic Isolator
Connections:	Panel to Interface: 4-wire (0V, 'M', +20V, Earth) Interface to isolator: 2-wire (+, 'M') Isolator Zone output: 2-wire (+ and -)
Electrical:	
Terminators:	22kΩ on isolator input and 7k5 hazardous zone End of Line
Current consumption:	Normal 25mA + detector load Alarm 47mA (<50mA) Defect 36mA (<40mA) Note: This current consumption includes the panel zone current.
Environmental:	0°C to 45°C 65% RH IP32
Supported Galvanic Isolators:	MTL5561 (dual channel) Pepperl + Fuchs KFD0-CS-Ex1.52 (dual channel)
Supported alarming devices:	See table on page 4.

Installation:

Important Note: Incorrect wiring may result in damage to the Galvanic Isolator Interface!

Assuming the hazardous area is outfitted with the appropriate cabling and alarming devices...

- ▶ Ensure that non-indicating MCP's and non-indicating Heat detectors are installed closest to the Galvanic Isolator (to allow an MCP alarm to override a detector alarm).
- ▶ Verify that a **7k5 End-of-Line resistor** is fitted at the end of the **hazardous area** wiring.
- ▶ Connect the Hazardous Area wiring—while **ensuring correct polarity** to the Galvanic Isolator output.
- ▶ Fit the provided **22kΩ input terminator** to the **Galvanic Isolator safe side** input.
- ▶ Connect Safe Area wiring in **correct signal & polarity** between the Galvanic Isolator and conventional zone.
- ▶ Fit the MTL 5561 or Pepperl + Fuchs KFD0-CS-Ex1.52 on the pre-prepared 35mm DIN Rail.
- ▶ Connect any cable shielding to Electrical Earth and check the Earth wiring resistance as required.
- ▶ Recheck/verify the installation, and correct any mistakes.
- ▶ Power up, and wait for the system to initialize; once normalised, it is ready for commissioning, testing, and operation.
- ▶ Verify panel responses for Normal, Smoke, and MCP alarm conditions.
- ▶ To reset historic defects, depower the interface for 5 seconds—remove/reinstall the +20V or 0V connection.

Notes:

- A diagram on the Galvanic Isolators and interfaces illustrates the wiring connections and polarities.
- An unused MTL5561 or KFD0-CS-Ex1.52 channel need not be connected.
- No earth connection is needed on the isolators since input and outputs are galvanically isolated.
- An Interface terminal is provided for connecting protective Electrical Earth to the safe area wiring.

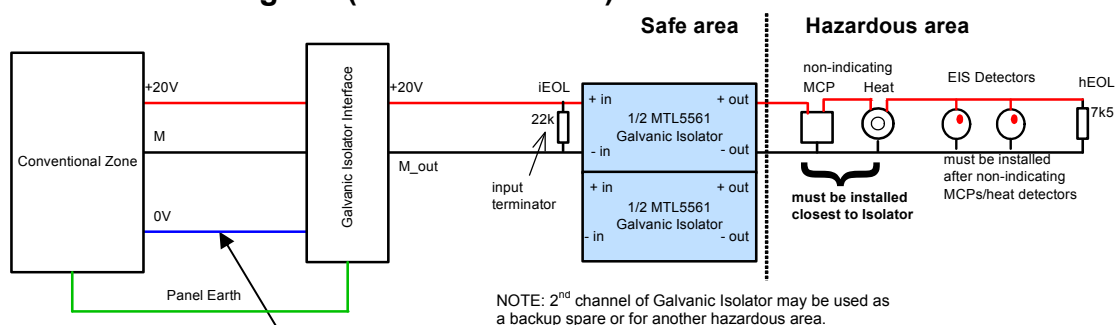
Galvanic Isolators

Hazardous Side Terminals			MTL5561 Galvanic Isolator		Safe Side Terminals		
Not connected	6	Earth	Channel 2		Not used	7	N/A
Detectors	5	+			-	8	Zone 'B' M
	4	-	+	9	Zone 'B' +		
Not connected	3	Earth	Channel 1		Not used	10	N/A
Detectors	2	+			-	11	Zone 'A' M
	1	-			+	12	Zone 'A' +

Hazardous Side Terminals			Pepperl + Fuchs KFD0-CS-Ex1.52 Galvanic Isolator		Safe Side Terminals		
Not connected	6	Not used	Channel 2		+	7	N/A
Detectors	5	-			-	8	Zone 'B' M
	4	+	Not used	9	Zone 'B' +		
Not connected	3	Not used	Channel 1		Not used	10	N/A
Detectors	2	-			+	11	Zone 'A' +
	1	+			-	12	Zone 'A' M

Galvanic Isolator connections

Interface connection diagram (MTL5561 shown)



Connect a wire from the Interface 0V to the 0V reference of the conventional circuit—that is, *Battery 0V* for F16e and F4 and *Loop negative* for the Loop Responder.

IMPORTANT:

For one or two interfaces, the conventional zone +20V is used to power Galvanic Isolator Interfaces. A separate, isolated 20V supply is required when powering multiple Interfaces. See Application Note 09-11.

Note:

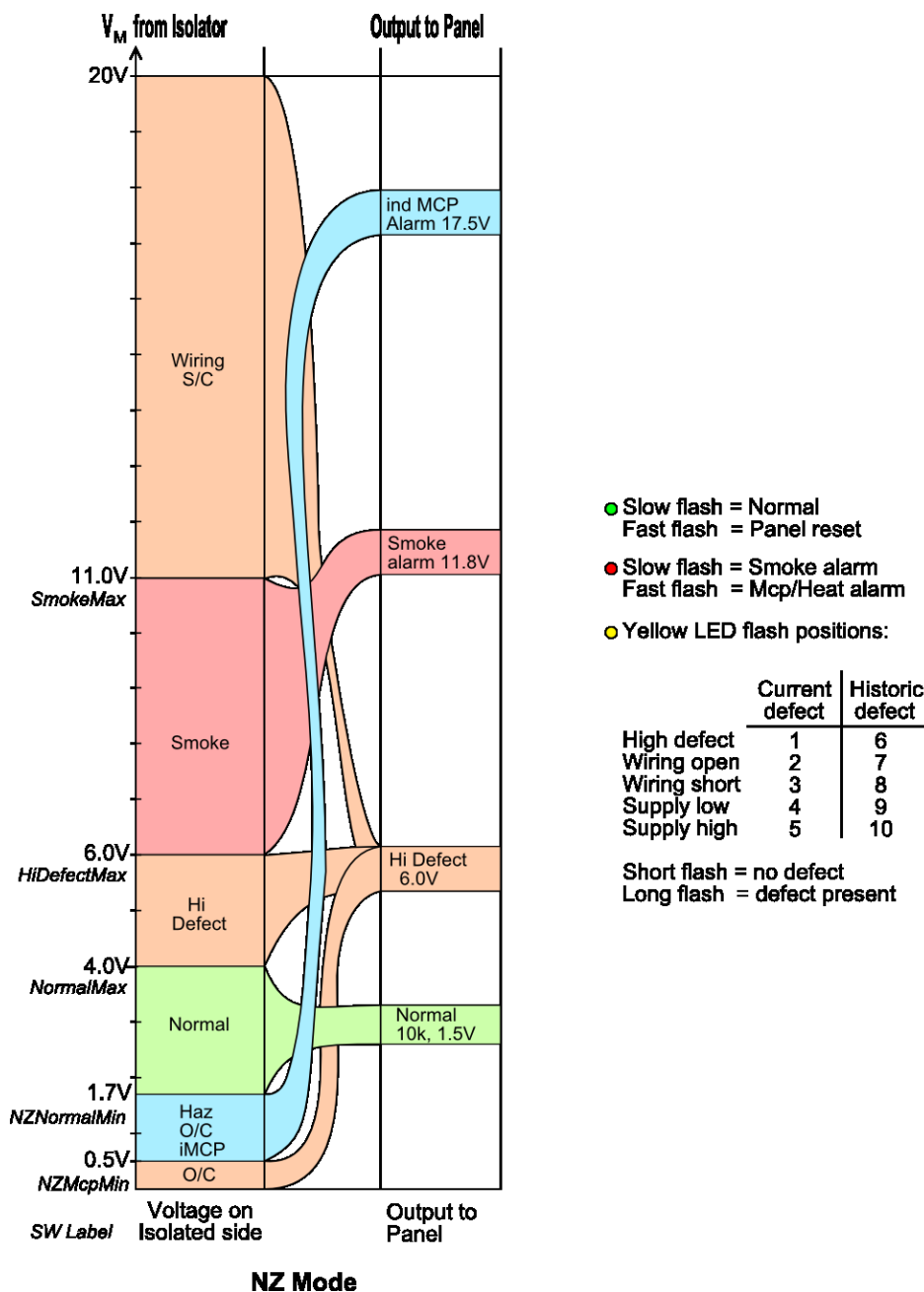
A 22kΩ input terminator **must** be fitted to differentiate between a MCP/Heat alarm and wiring open circuit.

Approximate Isolator Response

State	Condition	Green LED	Red LED	Yellow LED	Output to Panel
Normal	$V_{ISO} 1.7V...4.0V$	1Hz Flash			10k Ω EOL
Panel Reset	Loop Current <1mA	2Hz Flash			10k Ω EOL
NZ MCP Alarm	$V_{ISO} 0.5V...1.7V$		2Hz Flash		NZ iMCP iHeat
Smoke Alarm	$V_{ISO} 5.2V...10.0V$		1Hz Flash		Smoke Alarm
High Defect	$V_{ISO} 4.0V...6V$			1 st (6 th) Flash long	Hi Defect
Wiring O/C	$V_{ISO} < 0.5V$			2 nd (7 th) Flash long	Hi Defect
Wiring S/C	$V_{ISO} > 10.0V$			3 rd (8 th) Flash long	Hi Defect
Supply Low	+20Vs < 18.0V			4 th (9 th) Flash long	Hi Defect
Supply High	+20Vs > 22.0V			5 th (10 th) Flash long	Hi Defect
Supply missing	V+ or 0V missing	N/A	N/A	N/A	Hi Defect

Notes: Defect indications shown in brackets indicate historic defects.
 A repeated train of 10 pulses indicates current and historic defects as shown in the table above.
 'Historic only' indications signify that a defect had occurred in the past but is no longer present.
 Depower interface for 5 seconds to reset 'historic only' defect indications.

Isolator to panel response



Powering Multiple Galvanic Isolator Interfaces

Analogue Loops, Loop Responders, and conventional zones themselves normally have current capability limitations that prevent more than 2 Galvanic Isolator Interfaces to be directly connected to the same Loop Responder. However, a separate isolated '+20V' power supply can be added to allow the use of multiple Galvanic Isolators in excess of that limit, up to 8 per Loop Responder.

The additional separate power supply should conform to the following specifications and provisions:

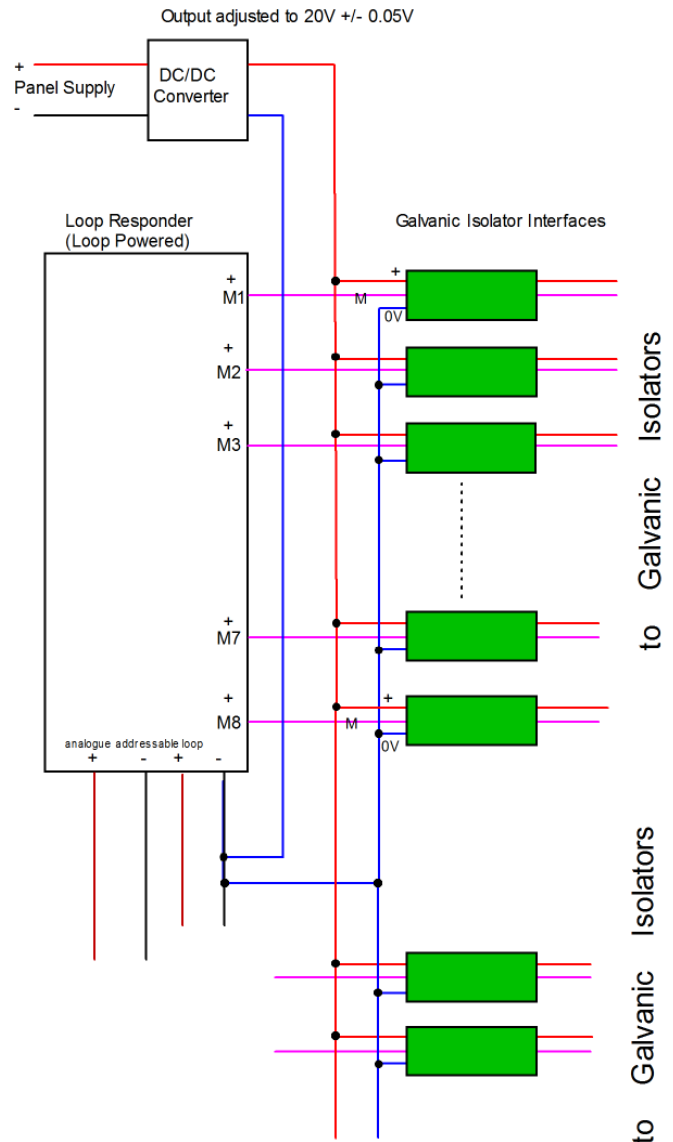
- A 24V-24V DC/DC converter, adjusted for an output voltage of 20V, with a tolerance of $\pm 0.05V$.
- The 20V power supply (DC/DC converter) can **only** power the Galvanic Isolator Interfaces connected to Loop Responders on the same analogue addressable loop.
- The additional power supply, the Loop Responders, and the Galvanic Isolator Interfaces should be mounted in close proximity with each other to avoid possible interference.
- The DC/DC converter needs to be an isolated input-to-output type, and it may be powered from the panel supply or by some other suitable means, such as from an auxiliary power supply.

Proper wiring polarity and routing is critical for such an application. The diagram on the right illustrates the basic wiring requirements.

For more information or assistance with this product, call your nearest Pertronic Technical Support Team.

Order Code

Product	Order Code
Panel to Galvanic Isolator Interface NZ	ISGAIFNZ
NZ Safe Side Input Terminator 22k Ω	REMRS22k
End of Line Resistor 7.5k (or 2 x 15k Ω in parallel)	REMRS7k5 or 2 x REMRS15k
MTL5561 dual Galvanic Isolator DIN rail mount	ISMTL5561
Pepperl + Fuchs KFD0-CS-Ex1.52 dual Galvanic Isolator DIN rail mount	ISPFKFD0-CS-Ex1.52
1151EISE Intrinsically Safe Ionisation Smoke detector (no base)	1151IESE
1151EISE Intrinsically Safe Ionisation Smoke detector + B401 Base	1151IESE+B
5451EISE Intrinsically Safe Rate of rise Heat detector	5451EISE
5451EISE Intrinsically Safe Ionisation Smoke detector + B401 Base	5451EISE+B
Non indicating MCP NZS4512:1997	CPP
Non indicating Heat detector NZS4512:1997	HDB, HDY, HDBLK etc
DC to DC converter 24V to 24V 1.1A	SD-25B-24



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