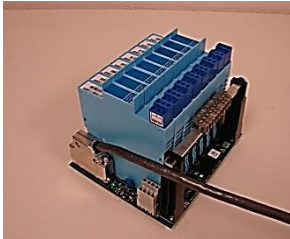


# 3500 Galvanic Isolator Interface

Bently Nevada\* Asset Condition Monitoring

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## Description

The 3500 Galvanic Isolator Interface is an intrinsically safe interface that can be located between a transducer system installed in a hazardous environment and a 3500 monitoring system installed in a safe environment (The isolator interface must be in the safe environment). It consists of vibration transducer interface modules, temperature converter modules and/or process variable modules, backplanes, interface cables, earth rails and installation hardware. Both MTL and Pepperl+Fuchs versions are available.

The Isolator Modules work in an intrinsically safe system to provide galvanic isolation for Proximity, Acceleration, Temperature and Current transducer systems. The Vibration Transducer Interface Module takes a Proximito\* sensor, REBAM\* MicroPROX\* sensor, accelerometer, accelerometer interface module or aeroderivative interface module input to connect directly to a 3500 monitor depending on the backplane as described below. The Temperature Converter Module takes a thermocouple or RTD input and gives a proportional 4 to 20 mA output for use with a 3500/62 Process Variable Monitor. The 4 to 20 mA Process Variable Module takes a 4 to 20 mA input from a 2 or 3 wire transmitter and gives a proportional 4 to 20 mA output for use with a 3500/62 Process Variable Monitor.

Temperature Converter Modules can be easily programmed for different configurations using the 143324 MTL Configurator or the 103M7100 P+F Programming Adapter (See ordering instructions).

There are three backplane types:

- Vibration Backplane is an 8 position (8-channel) backplane for Vibration measurements. It can be connected to any two of the following monitor types: 3500/40, 3500/42, 3500/44, and 3500/50.
- Keyphasor\* Backplane is a 4 position (4-channel) backplane for Keyphasor measurements using Proximito sensor inputs. It can be connected to the 3500/25 monitor.
- Temperature/PV Backplane is a 6 position (6-channel) backplane for Temperature or Process Variable measurements. It can be connected to the 3500/62 monitor.

The safe area signals between the backplane and the 3500 Monitoring System are connected using cable assemblies. The 3500 Monitor and 3500 Galvanic Isolator Interface backplane type determine the cable assembly type. Table 1 shows the 3500 Monitor, Cable, Backplane and Transducer combinations that should be used with the 3500 Galvanic Isolator Interface. The 3500 Field Wiring Package (130432-01, specifically drawings 141669 and 106M7817) shows how to connect transducers, power supplies and monitors to the 3500 Galvanic Isolator Interface.

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## Specifications:

### Isolators

#### MTL

*Vibration  
Transducer  
Interface  
Module:*

MTL 4531

*Temperature  
Converter  
Module:*

MTL 4575

*2 or 3 Wire  
Transmitter  
Module:*

MTL 4541

For complete specifications and approvals information please visit the MTL website:

<http://www.mtl-inst.com/>

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### Pepperl+Fuchs

*Vibration  
Transducer  
Interface  
Module:*

KFD2-VR4-Ex1.26

*Temperature  
Converter  
Module:*

KFD2-UT2-Ex1

*2 or 3 Wire  
Transmitter  
Module:*

KFD2-STC4-Ex1

For complete specifications and approvals information please visit the P+F website:

<http://www.pepperl-fuchs.com/>

---

## Backplanes

### MTL

#### Environmental

*Operating  
Temperature:*

-20°C to +60°C (-4°F to +140°F)  
continuous working

*Storage  
Temperature*

-40°C to +80°C (-40°F to +176°F)

*Relative  
Humidity:*

5% to 95% noncondensing

---

### Electrical

All values assume the device is at room temperature (20° C) unless otherwise specified. All values are per module unless otherwise specified.

*Number of  
channels:*

*Vibration  
Backplane  
(288126):*

Eight

*Keyphasor  
Backplane  
(288127):*

Four

*Temperature/  
Process  
Variable  
Backplane  
(288128):*

Six

*Supply Voltage,  
Vs*

+20 Vdc to +35 Vdc

*Power Supply  
Fuse Rating*

2A

*Power Supply  
Connectors*

Accommodate conductors up to 14 AWG

**LED Indicators**

Green: Two provided for power indication.

**Permitted Location**

Safe area only

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**Hazardous Area Approvals**

The MTL backplanes do not require hazardous area approvals because they are in a safe area. All hazardous area wires connect directly to the isolator modules and not to the backplane. The backplane carries safe area signals only.

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**P+F**

**Environmental**

**Operating Temperature:**

-20°C to +60°C (-4°F to +140°F)  
continuous working

**Storage Temperature**

-40°C to +70°C (-40°F to +176°F)

**Relative Humidity:**

≤ 95 % , non-condensing

---

**Electrical**

All values assume the device is at room temperature (20° C) unless otherwise specified. All values are per module unless otherwise specified.

**Number of channels:**

**Vibration Backplane (103M8641):**

Eight

**Keyphasor Backplane (103M8643):**

Four

**Temperature/ Process Variable**

**Backplane (103M8642):**

Six

**Supply Voltage, Vs**

+21 Vdc to +30 Vdc

**Power Supply Fuse Rating**

2A

**Power Supply Connectors**

24 - 14 AWG

**LED Indicators**

Green: Two provided for power indication.

Red: Two provided for fault indication.

**Permitted Location**

Safe area only

---

**Hazardous Area Approvals**

The P+F backplanes do not require hazardous area approvals because they are in a safe area. All hazardous area wires connect directly to the isolator modules and not to the backplane. The backplane carries safe area signals only.

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**Enclosure (for MTL Backplanes only)**

**Environmental**

**Ambient Temperature Limits**

-20° C to +50° C (-4° F to +122° F)

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**Physical Protection**

Dust-tight and water-jet proof to IEC529:IP65

**Capacity**

One backplane part number 141660A01. If an enclosure for part number 141660A02 or 143320 is required, please

contact your sales or service representative for a mod.

## Construction

Base: GRP (glass-fibre reinforced polyester)  
Lid: transparent high-strength polycarbonate

## Finish

Base: light grey  
Lid: transparent

## Lid Fixing

Captive fixing screws

## Gland Fixing

Side mounted gland plate, detachable for drilling by user

## Permitted Location

Safe area only

## Mounting

By exterior surface-fixing lugs (zinc passivated steel)

## Weight (without backplanes and isolators)

3.7 kg

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## Ordering Considerations

### General

***The MTL and P+F isolator Intrinsic Safety Electrical Parameters may not allow for interchangeability with existing installations. Ensure that all Approvals requirements are met.***

The 3500 Galvanic Isolator Interface (Vibration) can receive inputs from the following approved Bentley Nevada\* transducers:

3300 XL Proximitor  
3300 5/8mm Proximitor  
7200 5/8mm Proximitor  
330400 Accelerometer  
Acceleration Interface Module (p/n 23733-03)

Aeroderivative Interface Module (p/n 86517) (Velocity only)(MTL Backplane version only)

3300 REBAM MicroPROX

7200 REBAM MicroPROX

The 3500 Galvanic Isolator Interface (Temperature) can receive inputs from the following transducers selectable with the appropriate configurator:

B Type Thermocouple

E Type Thermocouple

J Type Thermocouple

K Type Thermocouple

N Type Thermocouple

R Type Thermocouple

S Type Thermocouple

T Type Thermocouple

2 Wire RTD

3 Wire RTD

4 Wire RTD

If thermocouples will be used, the 3500 Temperature Isolator comes with Cold Junction Compensation (CJC) Signal Connectors for the hazardous area inputs.

If using thermocouples with the P+F Temperature Backplane, be sure to select Option G when ordering 103M9110. This will include the user-installed CJC Terminal Blocks. (See Ordering Information)

The 3500 Galvanic Isolator Interface can be used with the following 3500 Monitors. Note the I/O module type must be External Termination unless cable assemblies with flying leads are used.

- 3500/25 Keyphasor Monitor
- 3500/40 Proximitor Monitor
- 3500/42 Proximitor/Seismic Monitor
- 3500/44 Aeroderivative Monitor
- 3500/50 Tachometer Monitor
- 3500/62 Process Variable Monitor
- 3500/72 Rod Position Monitor

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## Ordering Information

For a detailed listing of country and product specific approvals, refer to the *Approvals Quick Reference Guide* (document 108M1756) located at the following website:

[www.GEmeasurement.com](http://www.GEmeasurement.com).

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### MTL

#### 3500 MTL Galvanic Isolator Interface (Vibration)

##### 141660-AXX-BXX-CXX-DXX-EXX-FXX-GXX-HXX-IXX-JXX

A: Backplane Type	<b>01</b>	8 Position Backplane – Vibration
	<b>02</b>	4 Position Backplane – Keyphasor
B: Isolator Backplane Position 1	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4531
C: Isolator Backplane Position 2	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4531
D: Isolator Backplane Position 3	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4531
E: Isolator Backplane Position 4	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4531
F: Isolator Backplane Position 5	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4531
G: Isolator Backplane Position 6	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4531
H: Isolator Backplane Position 7	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4531
I: Isolator Backplane Position 8	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4531
J: Weatherproof Housing	<b>00</b>	No housing
	<b>01</b>	& Weatherproof housing

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#### Spare components

**288112**

Isolator MTL 4531

**03639911**

& Weatherproof Housing

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**288766**

Replacement Fuse

**Note: modification to mounting plate is required for the 4P Keyphasor Backplane**

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#### 3500 MTL Galvanic Isolator Interface (Temperature/PV)

##### 143320-AXX-BXX-CXX-DXX-EXX-FXX-GXX

A: Isolator Backplane Position 1	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4541, PV 4-20 mA input
	<b>03</b>	Isolator MTL 4575, K type TC
B: Isolator Backplane Position 2	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4541, PV 4-20 mA input
	<b>03</b>	Isolator MTL 4575, K type TC
C: Isolator Backplane Position 3	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4541, PV 4-20 mA input
	<b>03</b>	Isolator MTL 4575, K type TC
D: Isolator Backplane Position 4	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4541, PV 4-20 mA input
	<b>03</b>	Isolator MTL 4575, K type TC
E: Isolator Backplane Position 5	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4541, PV 4-20 mA input
	<b>03</b>	Isolator MTL 4575, K type TC
F: Isolator Backplane Position 6	<b>00</b>	No isolator
	<b>01</b>	Isolator MTL 4541, PV 4-20 mA input
	<b>03</b>	Isolator MTL 4575, K type TC
G: Weatherproof Housing	<b>00</b>	No housing
	<b>01</b>	& Weatherproof housing

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#### Spare components

**288114**

Isolator MTL 4575, K type TC

**288416**

Isolator MTL 4541, PV type 4-20 mA

**03639911**

& Weatherproof Housing

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Specifications and Ordering Information  
Part Number 141714-01  
Rev. H (06/15)

288766

Replacement Fuse

& Note: modification to mounting plate is required for the 6P Temperature/PV Backplane

## Ordering Information

### P+F

#### 3500 P+F Galvanic Isolator Interface (Vibration)

103M9109-AXX-BXX-CXX-DXX-EXX-FXX-GXX-HXX-IXX

A: Backplane Type

- 01 8 Position Backplane – Vibration
- 02 4 Position Backplane – Keyphasor

B: Isolator Backplane Position 1

- 00 No isolator
- 01 P+F KFD2-VR4-Ex1.26 Isolator

C: Isolator Backplane Position 2

- 00 No isolator
- 01 P+F KFD2-VR4-Ex1.26 Isolator

D: Isolator Backplane Position 3

- 00 No isolator
- 01 P+F KFD2-VR4-Ex1.26 Isolator

E: Isolator Backplane Position 4

- 00 No isolator
- 01 P+F KFD2-VR4-Ex1.26 Isolator

F: Isolator Backplane Position 5

- 00 No isolator
- 01 P+F KFD2-VR4-Ex1.26 Isolator

G: Isolator Backplane Position 6

- 00 No isolator
- 01 P+F KFD2-VR4-Ex1.26 Isolator

H: Isolator Backplane Position 7

- 00 No isolator
- 01 P+F KFD2-VR4-Ex1.26 Isolator

I: Isolator Backplane Position 8

- 00 No isolator
- 01 P+F KFD2-VR4-Ex1.26 Isolator

#### Spare components

172436

P+F KFD2-VR4-Ex1.26 Isolator

103M7113

Replacement Fuse

#### 3500 P+F Galvanic Isolator Interface (Temperature/PV)

103M9110-AXX-BXX-CXX-DXX-EXX-FXX-GXX

A: Isolator Backplane Position 1

- 00 No isolator
- 01 P+F KFD2-STC4-Ex1 PV 4-20
- 02 P+F KFD2-UT2-Ex1 TEMPERATURE

B: Isolator Backplane Position 2

- 00 No isolator
- 01 P+F KFD2-STC4-Ex1 PV 4-20
- 02 P+F KFD2-UT2-Ex1 TEMPERATURE

C: Isolator Backplane Position 3

- 00 No isolator
- 01 P+F KFD2-STC4-Ex1 PV 4-20
- 02 P+F KFD2-UT2-Ex1 TEMPERATURE

D: Isolator Backplane Position 4

- 00 No isolator
- 01 P+F KFD2-STC4-Ex1 PV 4-20
- 02 P+F KFD2-UT2-Ex1 TEMPERATURE

E: Isolator Backplane Position 5

- 00 No isolator
- 01 P+F KFD2-STC4-Ex1 PV 4-20
- 02 P+F KFD2-UT2-Ex1 TEMPERATURE

F: Isolator Backplane Position 6

- 00 No isolator
- 01 P+F KFD2-STC4-Ex1 PV 4-20
- 02 P+F KFD2-UT2-Ex1 TEMPERATURE

G: Thermocouple CJC Term Blocks

- 00 None (RTDs)
- 01 TC CJC Term Blocks

#### Spare components

102M4383

P+F KFD2-UT2-Ex1 TEMPERATURE

103M2798

P+F KFD2-STC4-Ex1 PV 4-20

103M7113

Replacement Fuse

103M9036

P+F Thermocouple CJC Term Block

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## Configurators

MTL

143324-AXX

A: Configurator Type

**01** MTL PCS45/PCL45USB  
(software and cable)

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P+F

103M7100

P+F K-ADP-USB (Cable only)

Software can be downloaded free of charge from P+F:

<http://www.pepperl-fuchs.com/>

---

## Cables

3500 Galvanic Isolator Interface Cable (Vibration)

141707-AXXXX-BXX

A: Cable Length (ft)

**0005** 5 ft  
**0007** 7 ft  
**0010** 10 ft  
**0015** 15 ft  
**0025** 25 ft  
**0050** 50 ft  
**0100** 100 ft

B: Assembly

**01** Not assembled  
**02** Assembled  
**03** Assembled – Flying lead (no  
connector to 3500 monitor)

---

3500 Galvanic Isolator Interface Cable (Keyphasor)

141708-AXXXX-BXX

A: Cable Length (ft)

**0005** 5 ft  
**0007** 7 ft  
**0010** 10 ft  
**0015** 15 ft  
**0025** 25 ft  
**0050** 50 ft  
**0100** 100 ft

B: Assembly

**01** Not assembled  
**02** Assembled  
**03** Assembled – Flying lead (no  
connector to 3500 monitor)

---

3500 Galvanic Isolator Interface Cable (Temperature/PV)

141709-AXXXX-BXX

A: Cable Length (ft)

**0005** 5 ft  
**0007** 7 ft  
**0010** 10 ft  
**0015** 15 ft  
**0025** 25 ft  
**0050** 50 ft  
**0100** 100 ft

B: Assembly

**01** Not assembled  
**02** Assembled  
**03** Assembled – Flying lead  
(noconnector to 3500  
monitor)

---

3500 Galvanic Isolator Interface Cable (Aeroderivative)

141710-AXXXX-BXX

A: Cable Length (ft)

**0005** 5 ft  
**0007** 7 ft  
**0010** 10 ft  
**0015** 15 ft  
**0025** 25 ft  
**0050** 50 ft  
**0100** 100 ft

B: Assembly

**01** Not assembled  
**02** Assembled  
**03** Assembled – Flying lead (no  
connector to 3500 monitor)

---

## Documents

3500 Galvanic Isolator Interface Documentation

141706-01

3500 Galvanic Isolator Interface  
Manual

130432-01

3500 Field Wiring Package

## Tables and Figures

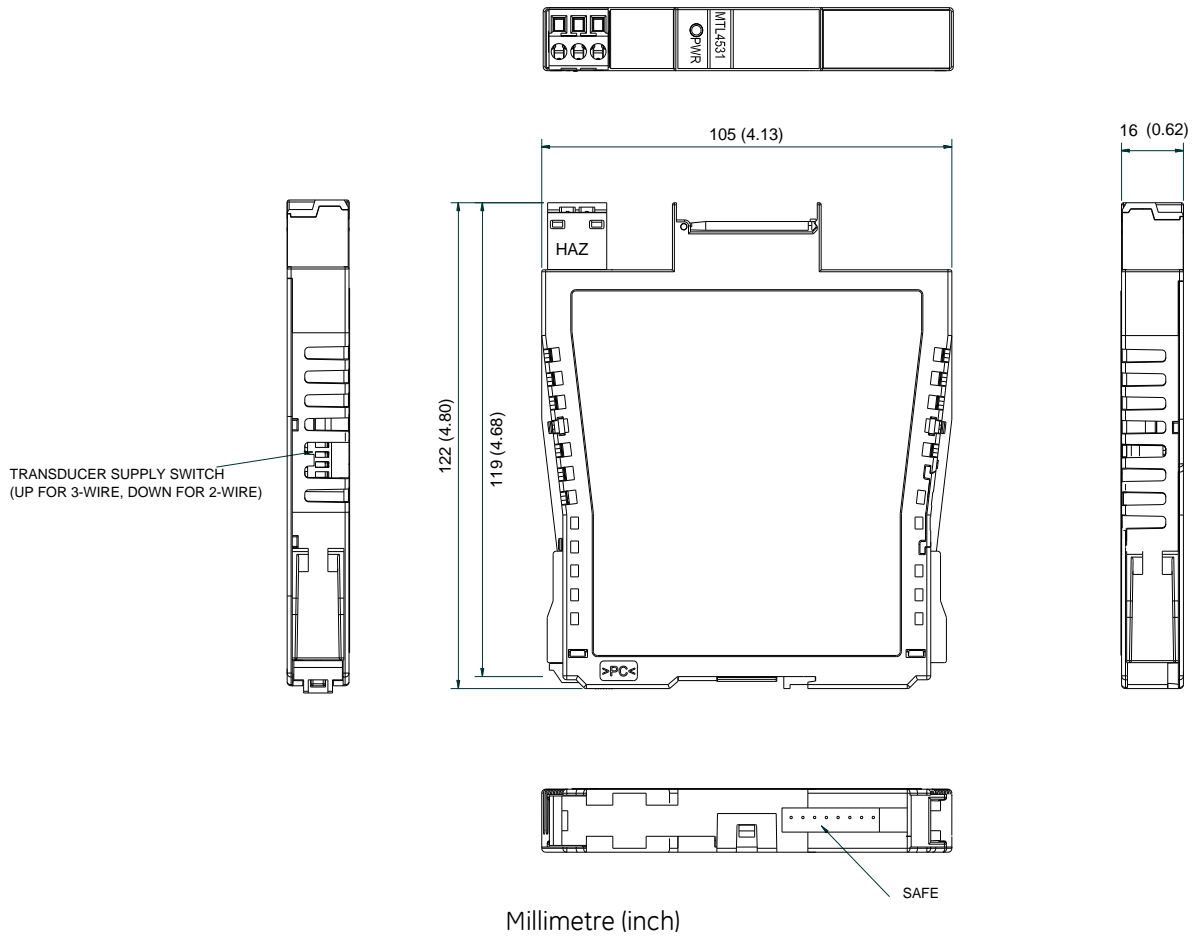
**Table 1: 3500 Galvanic Isolator Interface – 3500 Monitor, Cable, Backplane and Transducer Type Combinations**

3500 Monitor		Cable Type	Backplane <sup>#</sup>		Transducer Type(s)
Type	Channel No.		Type	Module No.	
<b>3500/25 Keyphasor</b>	1 & 2 (top##) or 1 & 2 (bot##)	Keyphasor p/n 141708	Keyphasor p/n 141660A02 (MTL) p/n 103M9109A02 (P+F)	1 & 2 or 3 & 4	Proximitior/ Keyphasor
<b>3500/40 Proximitior</b>	1,2,3 & 4	Vibration p/n 141707	Vibration p/n 141660A01 (MTL) p/n 103M9109A01 (P+F)	1,2,3 & 4 or 5,6,7 & 8	Proximitior
<b>3500/42 Proximitior /Seismic</b>	1,2,3 & 4	Vibration p/n 141707	Vibration p/n 141660A01 (MTL) p/n 103M9109A01 (P+F)	1,2,3 & 4 or 5,6,7 & 8	Proximitior/ Accelerometer
<b>3500/44 Aeroderivative</b>	1,2,3 & 4	Aeroderivative. p/n 141710	Vibration p/n 141660A01 (MTL) p/n 103M9109A01 (P+F)	1,2,3 & 4 or 5,6,7 & 8	Accelerometer Interface (Velocity only)
<b>3500/50 Tachometer</b>	1 & 2	Vibration p/n 141707	Vibration p/n 141660A01 (MTL) p/n 103M9109A01 (P+F)	1 & 3### or 5 & 7###	Proximitior
<b>3500/62 Process Variable</b>	1, 2, 3,4, 5 & 6	Temperature/PV p/n 141709	Temperature/PV p/n 143320 (MTL) p/n 103M9110 (P+F)	1,2,3,4, 5 & 6	TC, RTD/ 2 or 3 wire transmitters
<b>3500/72 Rod Position</b>	1,2,3 & 4	Vibration p/n 141707	Vibration p/n 141660A01 (MTL) p/n 103M9109A01 (P+F)	1,2,3 & 4 or 5,6,7 & 8	Proximitior

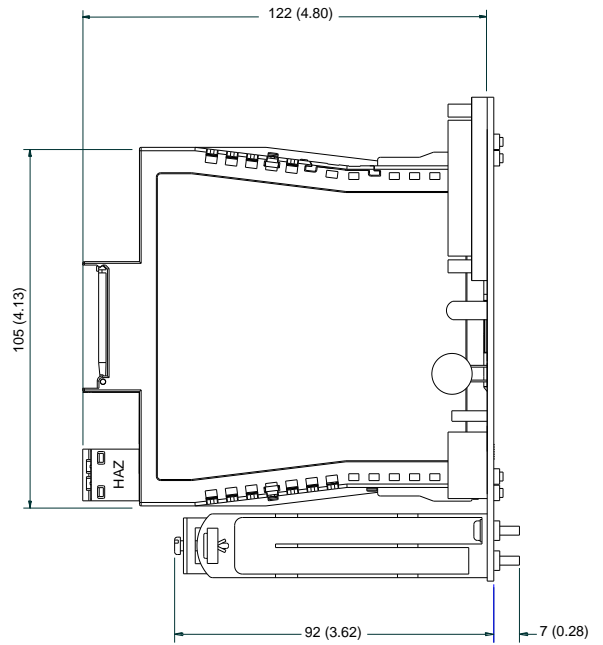
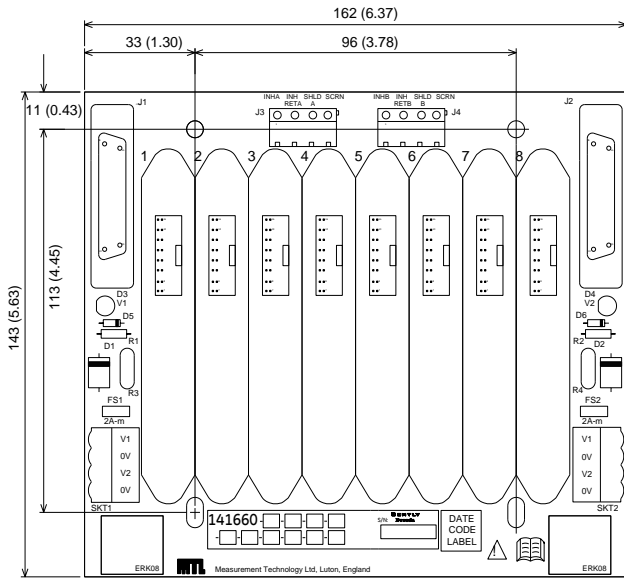
<sup>#</sup> Refer to backplane figures that follow.

<sup>##</sup> The 3500 Keyphasor Module is a half-height module. The top and bottom modules are connected separately.

<sup>###</sup> /50 Tachometer: Positions 2 & 4 or 6 & 8 not available.

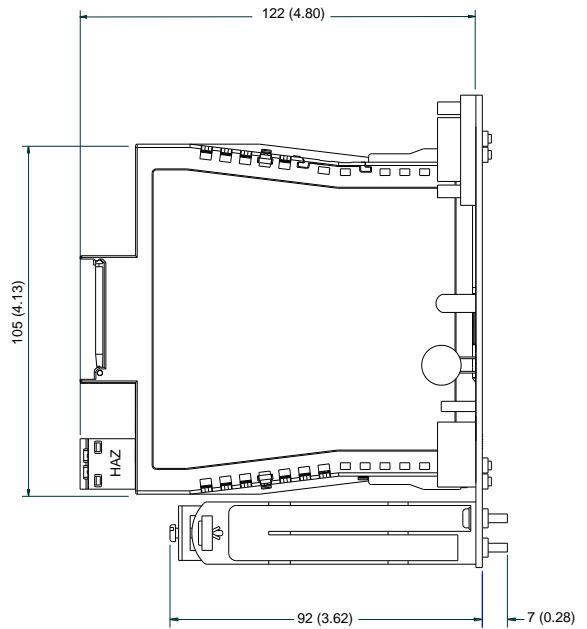
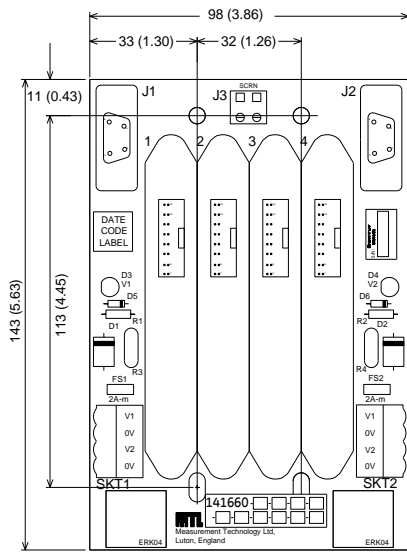


**Figure 1: Dimensions of the MTL Vibration Galvanic Isolator Module, 288112**



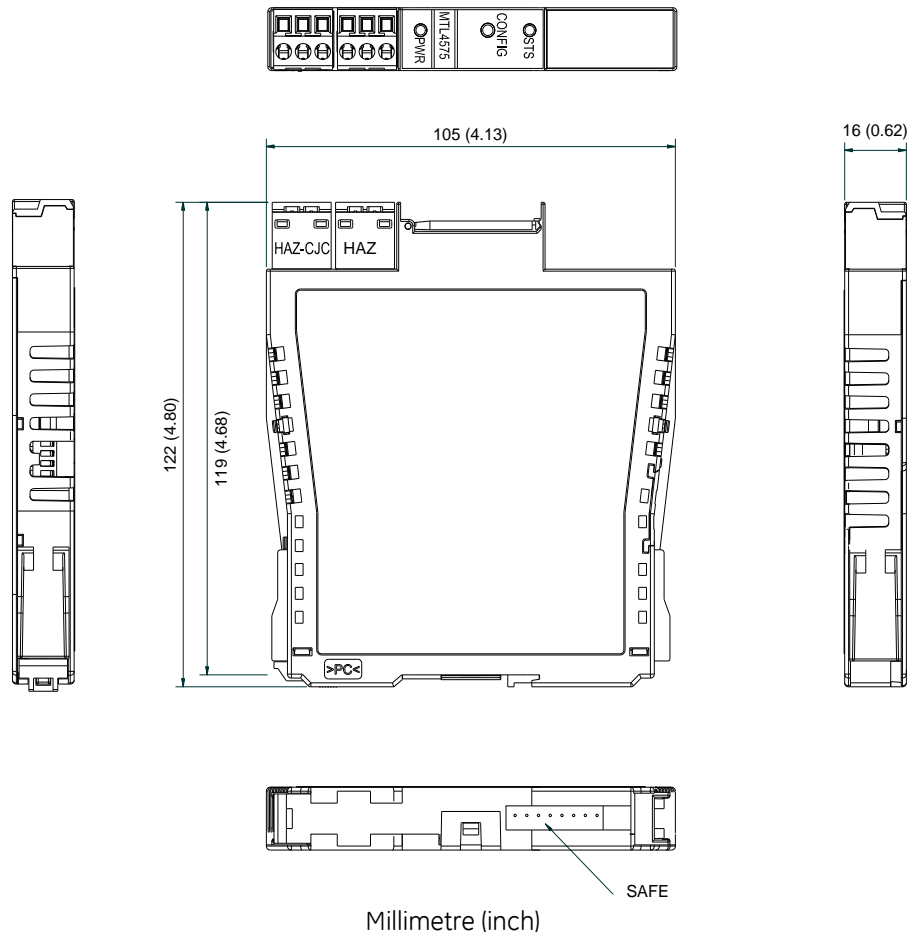
Millimetre (inch)

**Figure 2: Dimensions of the MTL 8P Backplane, Vibration (288126)**

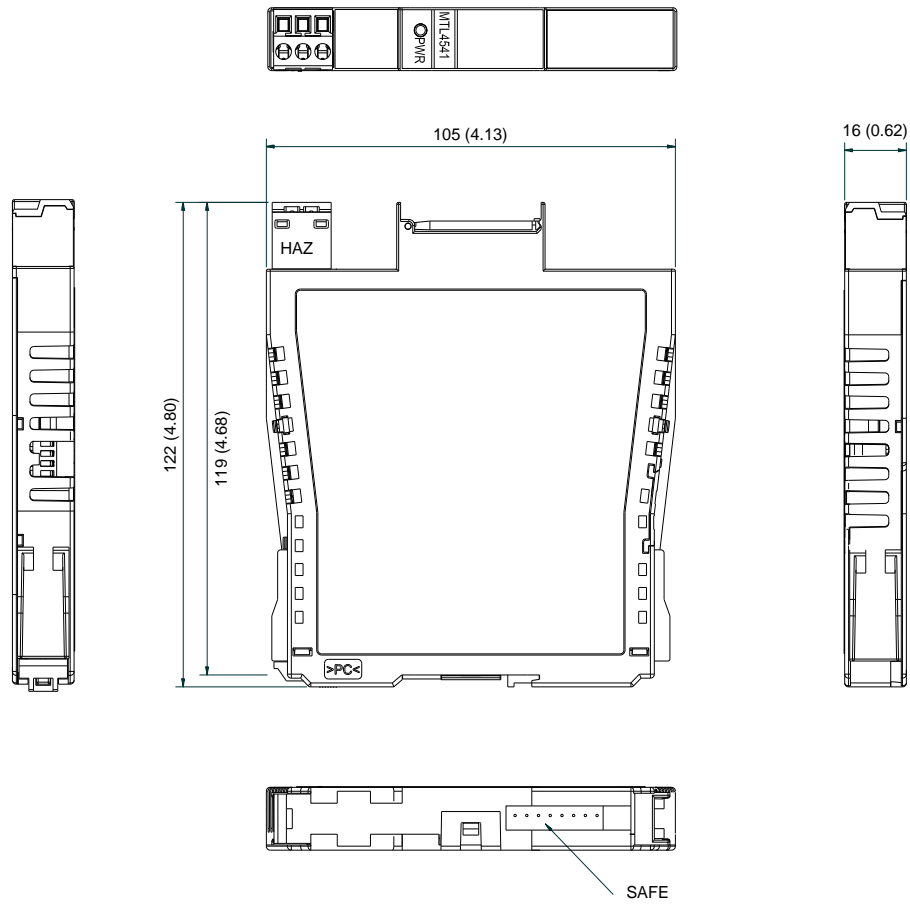


Millimetre (inch)

**Figure 3: Dimensions of the MTL 4P Backplane, Keyphasor (288127)**

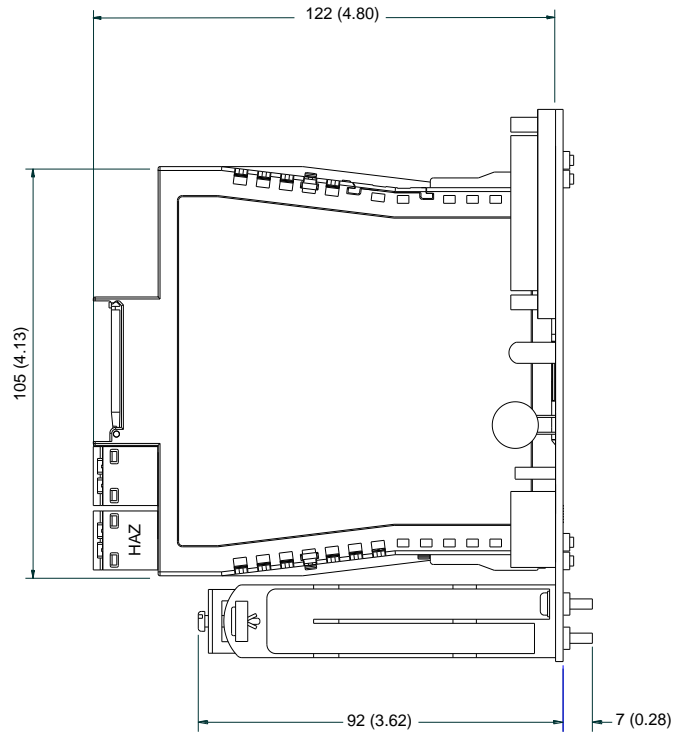
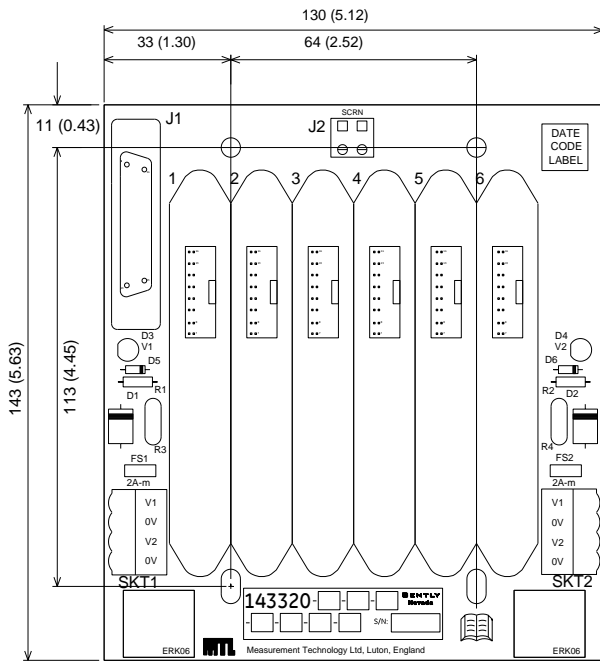


**Figure 4: Dimensions of the MTL Temperature Galvanic Isolator Module, 288114**



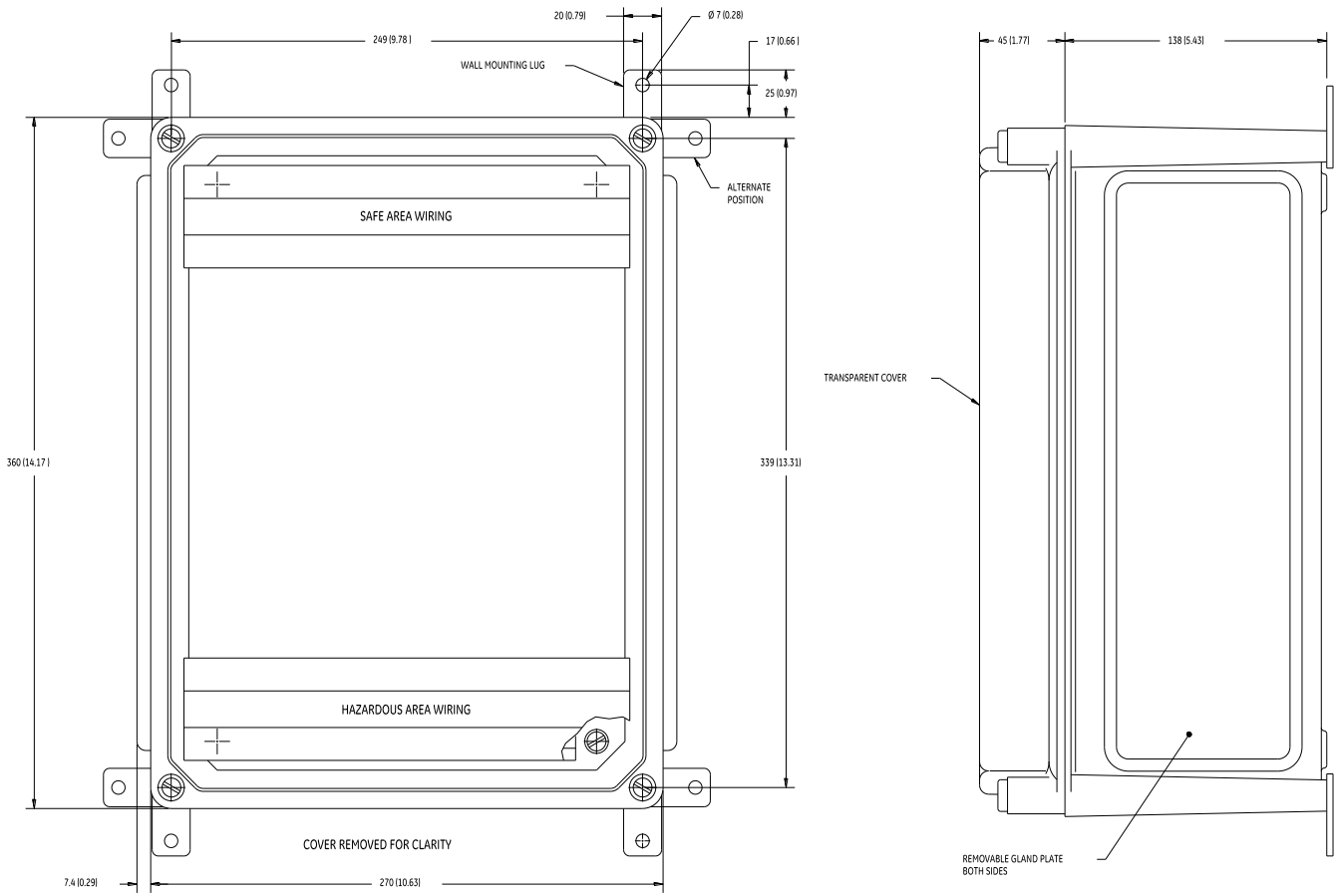
Millimetre (inch)

**Figure 5: Dimensions of the MTL Process Variable Galvanic Isolator Module, 288416**



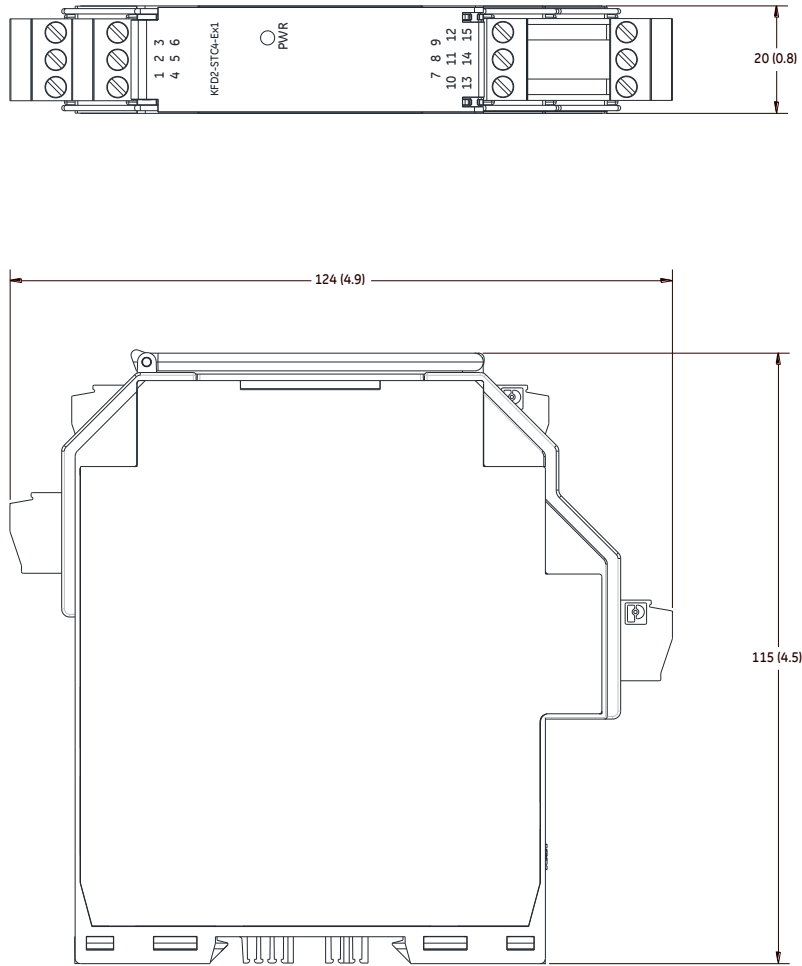
Millimetre (inch)

**Figure 6: Dimensions of the MTL 6P Backplane, Temperature/PV (288128)**

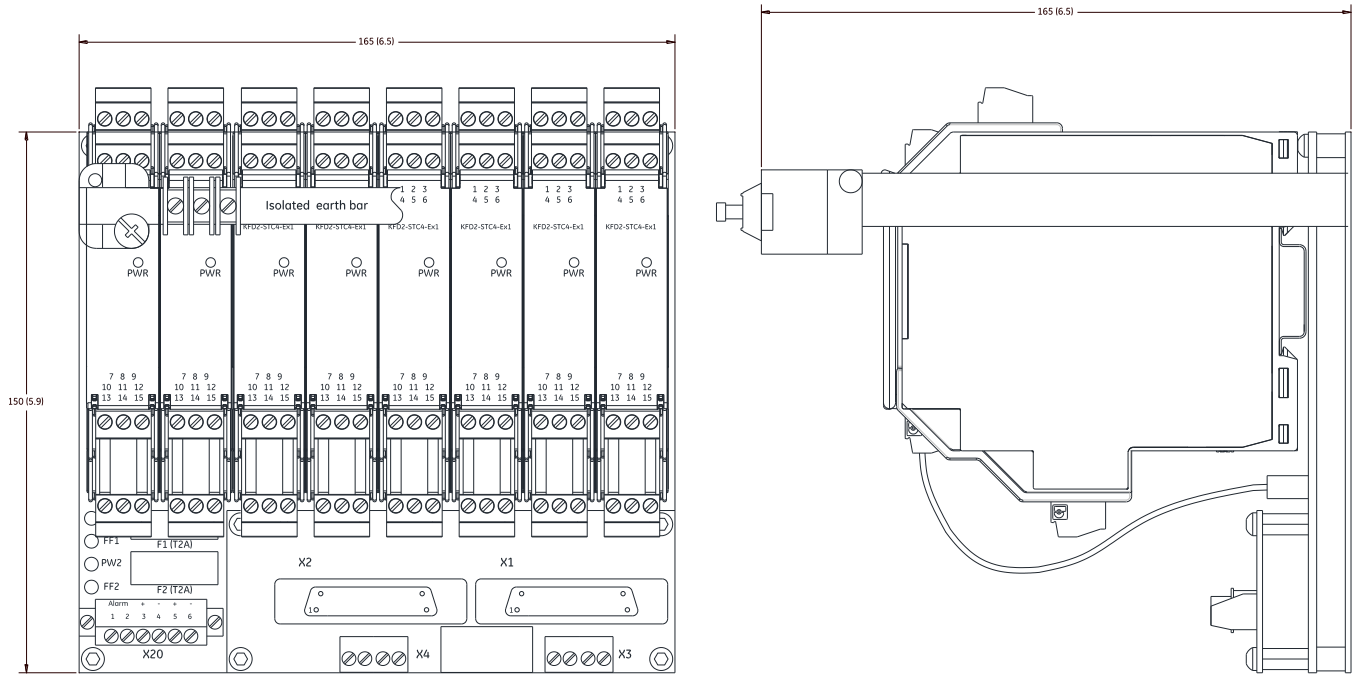


Millimetre (inch)

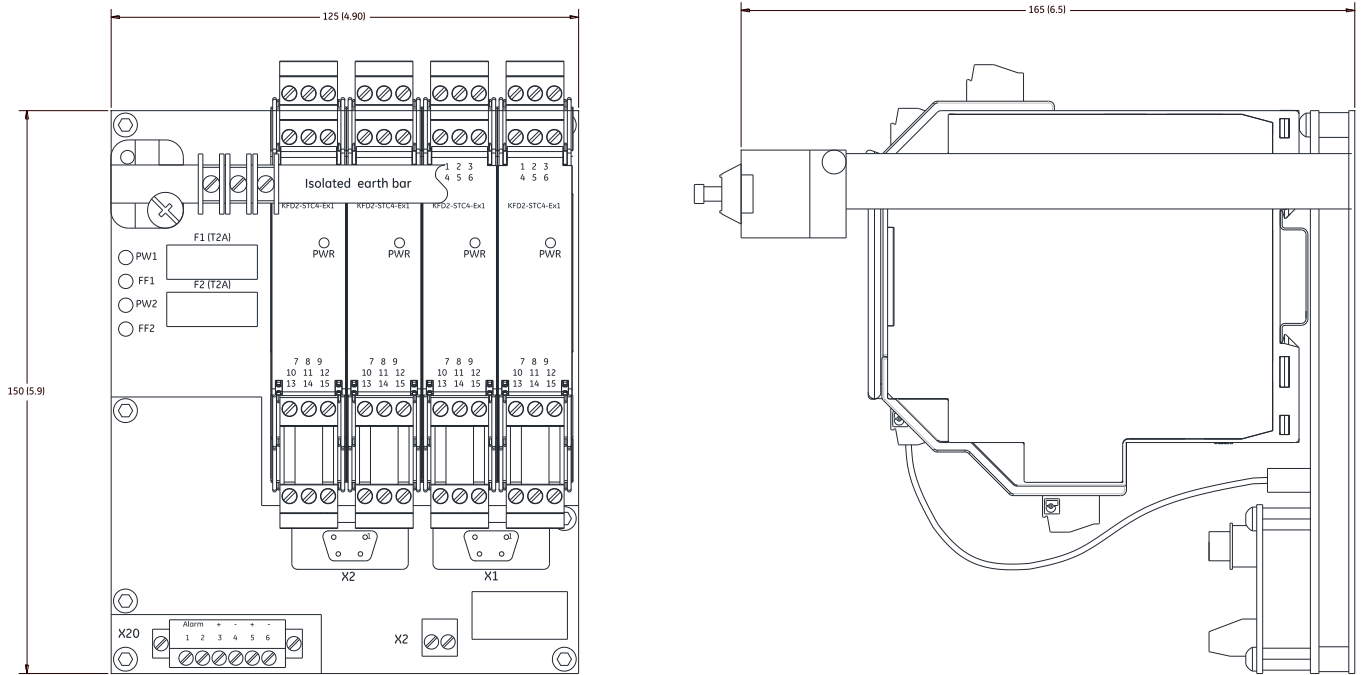
**Figure 7: Dimensions of the MTL WP Housing (03639911)**



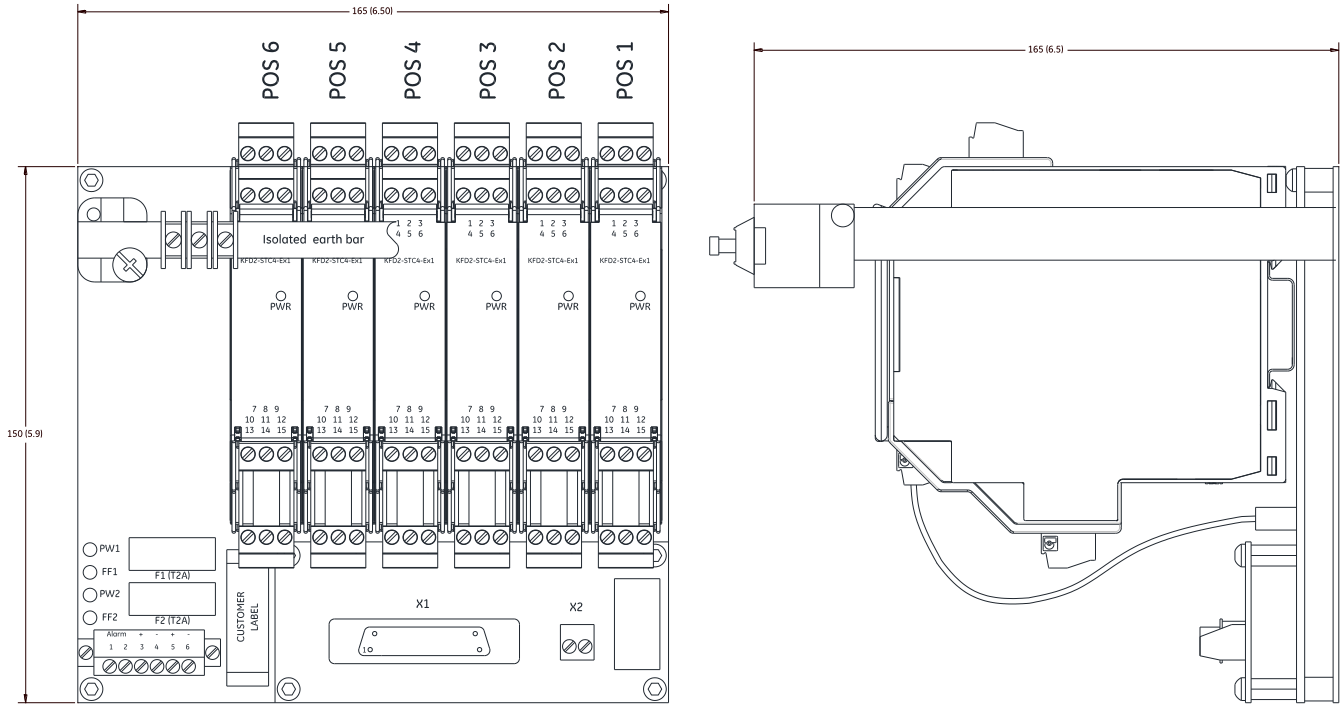
**Figure 8: Dimensions of the P+F Isolator Modules (172436, 102M4383, 103M2798)**



**Figure 9: Dimensions of the P+F 8P Backplane, Vibration (103M8641)**



**Figure 10: Dimensions of the P+F 4P Backplane, Keyphasor (103M8643)**



**Figure 11: Dimensions of the P+F 6P Backplane, Temperature/PV (103M8642)**

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