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 Proximiton sensor, REBAM MicroPROX sensor, accelerometer, accelerometer interface module or aerodervative 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 Information for specific instructions).
There are three backplane types:

- The 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.

- The Keyphasor Backplane is a 4 position (4-channel) backplane for Keyphasor measurements using Proximitor sensor inputs. It can be connected to the 3500/25 monitor.

- The 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. See Graphs and Figures on page 10. This shows the 3500 Monitor, Cable, Backplane and Transducer combinations that should be used with the 3500 Galvanic Isolator Interface. The 3500 Field Wiring Package (Document 130432, specifically drawings 141669 and 106M7817) shows how to connect transducers, power supplies and monitors to the 3500 Galvanic Isolator Interface.
Specifications

Isolators

MTL

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibration Transducer Interface Module</td>
<td>MTL 4531</td>
</tr>
<tr>
<td>Temperature Converter Module</td>
<td>MTL 4575</td>
</tr>
<tr>
<td>2 or 3 Wire Transmitter Module</td>
<td>MTL 4541</td>
</tr>
</tbody>
</table>

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

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

Pepperl+Fuchs (P+F)

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibration Transducer Interface Module</td>
<td>KFD2-VR4-Ex1.26</td>
</tr>
<tr>
<td>Temperature Converter Module</td>
<td>KFD2-UT2-Ex1</td>
</tr>
<tr>
<td>2 or 3 Wire Transmitter Module</td>
<td>KFD2-STC4-Ex1</td>
</tr>
</tbody>
</table>

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

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

Backplanes

MTL

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-20°C to +60°C (-4°F to +140°F) continuous working</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°C to +80°C (-40°F to +176°F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>5% to 95% noncondensing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All values assume the device is at room temperature (20°C) unless otherwise specified. All values are per module unless otherwise specified.</td>
<td></td>
</tr>
</tbody>
</table>

Number of channels

<table>
<thead>
<tr>
<th>Backplane Type</th>
<th>Number of Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibration Backplane (288126)</td>
<td>Eight</td>
</tr>
<tr>
<td>Keyphasor Backplane (288127)</td>
<td>Four</td>
</tr>
<tr>
<td>Temperature/Process Variable Backplane (288128)</td>
<td>Six</td>
</tr>
<tr>
<td>Supply Voltage, Vs</td>
<td>+20 Vdc to +35 Vdc</td>
</tr>
<tr>
<td>Power Supply Fuse Rating</td>
<td>2A</td>
</tr>
</tbody>
</table>

Power Supply Connectors: Accommodate conductors up to 14 AWG

LED Indicators: Green: Two provided for power indication

Permitted Location: Safe area only

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.

Pepperl+Fuchs (P+F)

Environmental

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous</td>
<td>-20°C to +60°C (-4°F to +140°F)</td>
</tr>
<tr>
<td>Storage</td>
<td>-40°C to +70°C (-40°F to +176°F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>≤ 95% noncondensing</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibration Backplane (108M8641)</td>
<td>Eight</td>
</tr>
<tr>
<td>Keyphasor Backplane (103M8643)</td>
<td>Four</td>
</tr>
<tr>
<td>Temperature/Process Variable Backplane (103M8642)</td>
<td>Six</td>
</tr>
<tr>
<td>Supply Voltage, Vs</td>
<td></td>
</tr>
<tr>
<td>Power Supply Fuse Rating</td>
<td>2A</td>
</tr>
<tr>
<td>Power Supply Connectors</td>
<td>24 – 4 AWG</td>
</tr>
<tr>
<td>LED Indicators</td>
<td></td>
</tr>
<tr>
<td>Permitted Location</td>
<td>Safe area only</td>
</tr>
</tbody>
</table>

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.

Enclosure (for MTL Backplanes only)

Environmental

| Ambient Temperature Limits | -20°C to +50°C (-4°F to +122°F) |

Physical

<table>
<thead>
<tr>
<th>Protection</th>
<th>Dust-tight and water-jet proof to IEC529:IP65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>One backplane part number 141660A01. If an enclosure for part number 141660A02 or 143320 is required, please contact your Bently Nevada sales or service representative for a mod.</td>
</tr>
<tr>
<td>Construction</td>
<td>Base: GRP (glass–fiber reinforced polyester) Lid: transparent high-strength polycarbonate</td>
</tr>
<tr>
<td>Finish</td>
<td>Base: light grey Lid: transparent</td>
</tr>
<tr>
<td>Lid Fixing</td>
<td>Captive fixing screws</td>
</tr>
<tr>
<td>Gland Fixing</td>
<td>Side mounted gland plate, detachable for drilling by user</td>
</tr>
<tr>
<td>Permitted Location</td>
<td>Safe area only</td>
</tr>
<tr>
<td>Mounting</td>
<td>By exterior surface–fixing lugs (zinc passivated steel)</td>
</tr>
<tr>
<td>Weight</td>
<td>3.7 kg</td>
</tr>
</tbody>
</table>
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 Bently Nevada transducers:

- 3300 XL Proximit
- 3300 5/8mm Proximit
- 7200 5/8mm Proximit
- 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 Proximit Monitor
- 3500/42 Proximitor/Seismic Monitor
- 3500/44 Aeroderivative Monitor
- 3500/50 Tachometer Monitor
- 3500/62 Process Variable Monitor
- 3500/72 Rod Position Monitor
Ordering Information


MTL

3500 MTL Galvanic Isolator Interface (Vibration)


A: Backplane Type
01  8 Position Backplane – Vibration
02  4 Position Backplane – Keyphasor

B: Isolator Backplane Position 1
00  No isolator
01  Isolator MTL 4531

C: Isolator Backplane Position 2
00  No isolator
01  Isolator MTL 4531

D: Isolator Backplane Position 3
00  No isolator
01  Isolator MTL 4531

E: Isolator Backplane Position 4
00  No isolator
01  Isolator MTL 4531

F: Isolator Backplane Position 5
00  No isolator
01  Isolator MTL 4531

G: Isolator Backplane Position 6
00  No isolator
01  Isolator MTL 4531

H: Isolator Backplane Position 7
00  No isolator
01  Isolator MTL 4531

I: Isolator Backplane Position 8
00  No isolator
01  Isolator MTL 4531

J: Weatherproof Housing

Spare components

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>288112</td>
<td>Isolator MTL 4575, K type TC</td>
</tr>
<tr>
<td>03639911</td>
<td>Weatherproof Housing</td>
</tr>
<tr>
<td>288766</td>
<td>Replacement Fuse</td>
</tr>
</tbody>
</table>

3500 MTL Galvanic Isolator (Temperature/PV)

143320-AA-BB-CC-DD-EE-FF-GG

A: Isolator Backplane Position 1
00  No isolator
01  Isolator MTL 4541, PV 4–20 mA input
03  Isolator MTL 4575, K type TC

B: Isolator Backplane Position 2
00  No isolator
01  Isolator MTL 4541, PV 4–20 mA input
03  Isolator MTL 4575, K type TC

C: Isolator Backplane Position 3
00  No isolator
01  Isolator MTL 4541, PV 4–20 mA input
03  Isolator MTL 4575, K type TC

D: Isolator Backplane Position 4
00  No isolator
01  Isolator MTL 4541, PV 4–20 mA input
03  Isolator MTL 4575, K type TC

E: Isolator Backplane Position 5
00  No isolator
01  Isolator MTL 4541, PV 4–20 mA input
03  Isolator MTL 4575, K type TC

F: Isolator Backplane Position 6
00  No isolator
01  Isolator MTL 4541, PV 4–20 mA input
03  Isolator MTL 4575, K type TC

G: Weatherproof Housing
00  No housing
### 3500 Galvanic Isolators

**Spare components**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>288114</td>
<td>Isolator MTL 4575, K type TC</td>
</tr>
<tr>
<td>288416</td>
<td>Isolator MTL 4541, PV type 4–20 mA</td>
</tr>
<tr>
<td>03639911</td>
<td>Weatherproof Housing</td>
</tr>
<tr>
<td>288766</td>
<td>Replacement Fuse</td>
</tr>
</tbody>
</table>

Modification to mounting plate is required for the 6P Temperature/PV Backplane

---

### Pepperl+Fuchs

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

**103M9109-AA-BB-CC-DD-EE-FF-GG-HH-1**

- **A:** Backplane Type
  - 0 1: 8 Position Backplane – Vibration
  - 0 2: 4 Position Backplane – Keyphasor
- **B:** Isolator Backplane Position 1
  - 0 0: No isolator
  - 0 1: P+F KFD2–VR4–Ex1.26 Isolator
- **C:** Isolator Backplane Position 2
  - 0 0: No isolator
  - 0 1: P+F KFD2–VR4–Ex1.26 Isolator
- **D:** Isolator Backplane Position 3
  - 0 0: No isolator
  - 0 1: P+F KFD2–VR4–Ex1.26 Isolator
- **E:** Isolator Backplane Position 4
  - 0 0: No isolator
  - 0 1: P+F KFD2–VR4–Ex1.26 Isolator
- **F:** Isolator Backplane Position 5
  - 0 0: No isolator
  - 0 1: P+F KFD2–VR4–Ex1.26 Isolator
- **G:** Isolator Backplane Position 6
  - 0 0: No isolator

---

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

**103M9110-AA-BB-CC-DD-EE-FF-GG**

- **A:** Isolator Backplane Position 1
  - 0 0: No isolator
  - 0 1: P+F KFD2–STC4–Ex1 PV 4–20
  - 0 2: P+F KFD2–UT2–Ex1 TEMPERATURE
- **B:** Isolator Backplane Position 2
  - 0 0: No isolator
  - 0 1: P+F KFD2–STC4–Ex1 PV 4–20
  - 0 2: P+F KFD2–UT2–Ex1 TEMPERATURE
- **C:** Isolator Backplane Position 3
  - 0 0: No isolator
  - 0 1: P+F KFD2–STC4–Ex1 PV 4–20
  - 0 2: P+F KFD2–UT2–Ex1 TEMPERATURE
- **D:** Isolator Backplane Position 4
  - 0 0: No isolator
  - 0 1: P+F KFD2–STC4–Ex1 PV 4–20
  - 0 2: P+F KFD2–UT2–Ex1 TEMPERATURE
- **E:** Isolator Backplane Position 5
  - 0 0: No isolator
  - 0 1: P+F KFD2–STC4–Ex1 PV 4–20
  - 0 2: P+F KFD2–UT2–Ex1 TEMPERATURE
- **F:** Isolator Backplane Position 6
  - 0 0: No isolator
**G: Thermocouple CJC Term Blocks**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0</td>
<td>None (RTDs)</td>
</tr>
<tr>
<td>0 1</td>
<td>TC CJC Term Blocks</td>
</tr>
</tbody>
</table>

### Spare components

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>102M4383</td>
<td>P+F KFD2-UT2-Ex1 TEMPERATURE</td>
</tr>
<tr>
<td>103M2798</td>
<td>P+F KFD2-STC4-Ex1 PV 4-20</td>
</tr>
<tr>
<td>103M7113</td>
<td>Replacement Fuse</td>
</tr>
<tr>
<td>103M9036</td>
<td>P+F Thermocouple CJC Term Block</td>
</tr>
</tbody>
</table>

### Configurators

**MTL**

**143324-AA**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Configurator Type</td>
<td></td>
</tr>
<tr>
<td>0 1</td>
<td>MTL PCS45/PCL45USB (software and cable)</td>
</tr>
</tbody>
</table>

**P+F**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>103M7100</td>
<td>P+F K-ADP-USB (Cable only)</td>
</tr>
</tbody>
</table>

Software can be downloaded free of charge from P+F: [http://www.pepperl-fuchs.com/](http://www.pepperl-fuchs.com/)
Cables

3500 Galvanic Isolator Interface Cable (Vibration)

141707-AAAA-BB

A: Cable Length (ft)
0 0 0 5  5 ft
0 0 0 7  7 ft
0 0 1 0  10 ft
0 0 1 5  15 ft
0 0 2 5  25 ft
0 0 5 0  50 ft
0 1 0 0  100 ft

B: Assembly
0 1  Not assembled
0 2  Assembled
0 3  Assembled – Flying lead (no connector to 3500 monitor)

3500 Galvanic Isolator Interface Cable (Keyphasor)

141708-AAAA-BB

A: Cable Length (ft)
0 0 0 5  5 ft
0 0 0 7  7 ft
0 0 1 0  10 ft
0 0 1 5  15 ft
0 0 2 5  25 ft
0 0 5 0  50 ft
0 1 0 0  100 ft

B: Assembly
0 1  Not assembled
0 2  Assembled
0 3  Assembled – Flying lead (no connector to 3500 monitor)

3500 Galvanic Isolator Interface Cable (Temperature/PV)

141709-AAAA-BB

A: Cable Length (ft)
0 0 0 5  5 ft
0 0 0 7  7 ft
0 0 1 0  10 ft
0 0 1 5  15 ft
0 0 2 5  25 ft
0 0 5 0  50 ft
0 1 0 0  100 ft

B: Assembly
0 1  Not assembled
0 2  Assembled
0 3  Assembled – Flying lead (no connector to 3500 monitor)

3500 Galvanic Isolator Interface Cable (Aeroderivative)

141710-AAAA-BB

A: Cable Length (ft)
0 0 0 5  5 ft
0 0 0 7  7 ft
0 0 1 0  10 ft
0 0 1 5  15 ft
0 0 2 5  25 ft
0 0 5 0  50 ft
0 1 0 0  100 ft

B: Assembly
0 1  Not assembled
0 2  Assembled
0 3  Assembled – Flying lead (no connector to 3500 monitor)

3500 Galvanic Isolator Interface Documentation

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>141706</td>
<td>3500 Galvanic Isolator Interface Manual</td>
</tr>
<tr>
<td>130432-01</td>
<td>3500 Field Wiring Package</td>
</tr>
</tbody>
</table>
### Table 1: 3500 Galvanic Isolator Interface – 3500 Monitor, Cable, Backplane and Transducer Type Combinations

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

(##) Refer to backplane figures that follow.

(###) The 3500 Keyphasor Module is a half-height module. The top and bottom modules are connected separately.

(####) 3500/50 Tachometer: Positions 2 & 4 or 6 & 8 not available.
Figure 1: Dimensions of the MTL Vibration Galvanic Isolator Module, 288112
**Figure 2: Dimensions of the MTL 8P Backplane, Vibration (288126)**

**Figure 3: Dimensions of the MTL 4P Backplane, Keyphasor (288127)**
Figure 4: Dimensions of the MTL Temperature Galvanic Isolator Module, 288114
Figure 5: Dimensions of the MTL Process Variable Galvanic Isolator Module, 288416
Figure 6: Dimensions of the MTL 6P Backplane, Temperature/PV (288128)
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)