Protecting People, Protecting Productivity

proNet - Industrial Ethernet Communications for amGard pro
Fortress Interlocks has 40 years’ experience manufacturing safety interlocks and over that time has developed products to keep pace with and shape the development of safety practices. One facet of this is the interlocks interface to an installations control system; we see the first step back in 1992 when Fortress introduced its wired at gate solution, amGard; technology has changed considerably since then. With advances in PLC technology, software and communication has become prolific throughout factories. Standards like EN61508 and its derivatives have now been developed to allow these advances to be carried into safety applications. In line with these developments, Fortress is able to communicate the state of its device in a range of ways, via hardwiring, field buses, (like AS-i Safety at Work) and is now proud to add its proNet, industrial Ethernet communications to its range. Using either the PROFINET protocol and its extension PROFIsafe or Ethernet/IP and its extension CIP safety the proNet module integrates easily into the amGardpro range. This integration provides a range of modular solenoid gate switches and standalone control pods that have all of the configurability of amGardpro with the added benefit of reduced installation cost, easier maintenance and greater availability of data, for improved diagnostics.

What is proNet?

amGard proNet is an addition to the amGardpro range that adds an Ethernet based networking capability to the entire range. It is designed as an add-on module that replaces, or can be used in addition to, an option pod so that any configurable unit can be converted to communicate over Ethernet. The two supported protocols are:

- ‘PROFINET’ with the ‘PROFIsafe’ functional safety extension.
- “Ethernet/IP” with the “CIP Safety” function safety extension

These protocols allow non-safety control signals (lamp outputs, switches, monitor signals) and safety signals (gate switch safety signals, E-stop signals) to be communicated over the same network, using the same connection. It is therefore now possible to create the following types of interlocks with industrial communication built in:

- Solenoid control guard switches with emergency release
- Solenoid control guard switches with “safety key” protection
- Solenoid control guard switches with machine control functionality
- Control stations with E-stop included

What are PROFINET and Ethernet/IP?

PROFINET and Ethernet/IP are the two leading industrial Ethernet communication protocols and are supported by many product vendors, resulting in over 10 million installed devices globally. Both protocols have safety extensions, PROFIsafe for PROFINET and CIP safety for Ethernet/IP, that provide cost effective and flexible functional safety for use in manufacturing and process automation.

What are the benefits of proNet?

The following features are built in to proNet units:

- One cable for control and safety communication
- One cable for power – reducing installation time and cost
- 100% diagnostic capability – increasing up time
- Quick connection connections via M12 or 7/8 plug and socket or AIDA standard connectors
- Addressing flexibility either by web interface or dip switches aiding installation and maintainability
- An integrated network switch – ‘daisy chain’ bus topologies with no additional hardware
- Up to two power connectors – ‘daisy chain’ power topologies with no additional hardware
- Optional external safety switch connection
**proNet Technical Specification**

- **Housing Materials**: Zinc Alloy to BS1004A
- **Paint Finishes**: Gloss Powder Coat on Passivated bodies
- **Ingress Protection**: IP67 (IP65 with buttons)
- **Ambient Temperature**: -5°C to +40°C (23°F to 140°F)
- **Supply Voltage**: 24V DC +/- 10%
- **Supply Current**: ≤750mA

**proNet Part Number Options**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N0xxxxN</td>
<td>PROFINET with PROFIsafe to suit stand alone interface.</td>
<td>PF06</td>
<td>AIDA connectors</td>
</tr>
<tr>
<td>N2xxxxN</td>
<td>PROFINET with PROFIsafe to suit proLock module.</td>
<td>PF07</td>
<td>3 QD set - 1 Male Power, 2 Data</td>
</tr>
<tr>
<td>N6xxxxN</td>
<td>PROFINET (supports MRP) with PROFIsafe to suit stand alone interface</td>
<td>PF09</td>
<td>4 QD set - 1 Male Power, 2 Data, 1 External safety switch</td>
</tr>
<tr>
<td>N8xxxxN</td>
<td>PROFINET (supports MRP) with PROFIsafe to suit proLOCK module</td>
<td>PF10</td>
<td>4 QD set – 1 Male Power, 1 Female Power, 2 Data</td>
</tr>
<tr>
<td>PF04</td>
<td>AIDA with B coded external safety switch</td>
<td>PF11</td>
<td>4 QD set – 1 Male Power, 1 Female power (7/8&quot; connectors), 2 Data</td>
</tr>
<tr>
<td>PF05</td>
<td>AIDA with A coded external safety switch</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*see amGardpro Pod datasheet for button options*

---

**Electrical connection**

**Pin Out**

<table>
<thead>
<tr>
<th>Male Power M12</th>
<th>Female Power M12</th>
<th>Male Power 7/8&quot;</th>
<th>Female Power 7/8&quot;</th>
<th>Data</th>
<th>External Safety Switch</th>
<th>AIDA Power</th>
<th>AIDA DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Male Power M12</th>
<th>Female Power M12</th>
<th>Male Power 7/8&quot;</th>
<th>Female Power 7/8&quot;</th>
<th>Data</th>
<th>External Safety Switch</th>
<th>AIDA Power</th>
<th>AIDA DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 +24V Supply*</td>
<td>2 0V**</td>
<td>3 0V**</td>
<td>4 +24V Supply*</td>
<td>5 Case (Earth)</td>
<td>1 TX+</td>
<td>1 S/C1</td>
<td>1 +24V Supply</td>
</tr>
<tr>
<td>1 0V**</td>
<td>2 0V**</td>
<td>3 0V**</td>
<td>4 0V**</td>
<td>5 Case (Earth)</td>
<td>1 TX-</td>
<td>1 S/C2</td>
<td>1 0V</td>
</tr>
<tr>
<td>1 0V**</td>
<td>2 0V**</td>
<td>3 0V**</td>
<td>4 0V**</td>
<td>5 Case (Earth)</td>
<td>1 -</td>
<td>1 S/C2</td>
<td>1 0V</td>
</tr>
<tr>
<td>1 0V**</td>
<td>2 0V**</td>
<td>3 0V**</td>
<td>4 0V**</td>
<td>5 Case (Earth)</td>
<td>1 TX+</td>
<td>1 S/C1</td>
<td>1 +24V Supply</td>
</tr>
<tr>
<td>1 0V**</td>
<td>2 0V**</td>
<td>3 0V**</td>
<td>4 0V**</td>
<td>5 Case (Earth)</td>
<td>1 TX-</td>
<td>1 S/C2</td>
<td>1 0V</td>
</tr>
</tbody>
</table>

*Internally connected**
**Internally connected**

---

**PF04**

**PF05**

**PF06**

**PF07**

**PF09**

**PF10**

**PF11**

---

[www.fortressinterlocks.com](http://www.fortressinterlocks.com)
Dimensional Drawing PF04, PF05, PF06

Dimensional Drawing PF07