

PEPPERL+FUCHS

Model 10E Enviro-Line Environmental Pressurization System Installation & Operation Manual



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Purpose

Pepperl+Fuchs' Enviro-Line pressurized system is designed to pressurize standard type 4 or 12 enclosures for the purpose to prevent the outside atmosphere from getting into the pressurized enclosure. This can be used to prevent corrosive gas or dust from getting into equipment mounted and operated within the pressurized enclosure. The Enviro-Line can also be used to prevent overheating, and moisture contamination. The Enviro-Line is NOT intended to be used for hazardous protection of enclosure. The Enviro-Line does NOT meet or designed to meet NFPA 496 or any other hazardous location protection method. For hazardous location protection, please go to www.bebcoeps.com for information on certified purge/pressurization systems used for hazardous location protection.

Description

The Enviro-Line, 10E-... pressurization system is designed to pressurize enclosure to prevent the ingress of gas or dust within the enclosure. The Enviro-Line is not intended for hazardous area protection so purging is not required. The enclosure is pressurized by using a low-pressure regulator to maintain the pressure within the enclosure. A differential pressure gauge indicates the pressure, an optional pressure switch can give an alarm output at low pressure, and an optional vent or redundant regulator for pressure relief /overpressure condition. One model number is a kit with all the necessary fittings, tubing, and hardware to mount the panel/vent to the enclosure. No additional fittings required for easy installation.

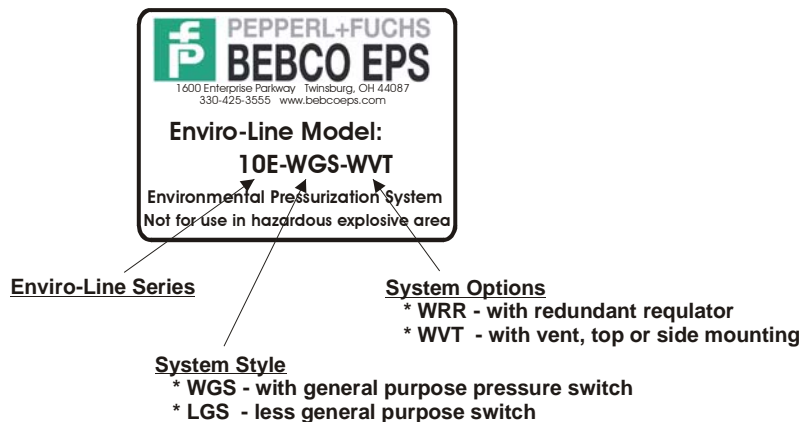
Important Notes

The Enviro-Line is intended for general-purpose locations to pressurize enclosure. The Enviro-Line is not intended for Hazardous location protection based on NFPA496 or any other standard for hazardous location protection. However, certain parameters for pressurized enclosures must be followed and NFPA 496 may be used for a basis for these requirements. Certain precautions must be followed to prevent build up of pressure. Relief vents or redundant pressure regulators must still be used to meet these criteria's. The Enviro-Line pressurized system is designed to meet these pressure-reducing requirements.





Identifying Your System



The mounting configuration is available in the 'UM', universal mount and the 'PM', panel mount configuration. All fittings, tubing and mounting hardware are included with each series system. Redundant regulator is not available with the 'PM' type panel.

Parts List

The following models include the following parts. Models with part numbers are available as spare parts and can be purchased individually. All components with the exception of the optional vent and the hardware, bulkhead fittings are mounted to the universal or panel mount series

10E-WGS-WRR-...

- (1) Stainless steel panel
- (1) Differential pressure gauge, 0-2" H₂O range, color coded for option operation
- (1) Panel mount regulator, range from 0-25psig,
- (1) General purpose pressure switch set to 0.5" H₂O
 Redundant regulator set to 5psi for limiting pressure
- (1) 0-30psi gauge for redundant pressure regulator
- * (1) Hardware




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10E-LGS-WRR-...

- (1) Stainless steel panel
- (1) Differential pressure gauge, 0-2" H2O range, color coded for option operation
- (2) option operation
- (1) Panel mount regulator, range from 0-25psig,
Redundant regulator set to 5psi for limiting pressure
- (1) 0-30psi gauge for redundant pressure regulator
- * (1) Hardware

10E-WGS-WVT-...

- (1) Stainless steel panel
- (1) Differential pressure gauge, 0-2" H2O range, color coded for option operation
- (1) Panel mount regulator, range from 0-25psig,
- (1) General purpose pressure switch set to 0.5" H2O
- (1) EPV-3-GP-00/90 pressure relief vent for top or side mount
- * (1) Hardware

10E-LGS-WVT-...

- (1) Stainless steel panel
- (1) Differential pressure gauge, 0-2" H2O range, color coded for option operation
- (1) Panel mount regulator, range from 0-25psig,
- (1) EPV-3-GP-00/90 pressure relief vent for top or side mount
- * (1) Hardware

* Hardware: Stainless steel bolts, lockwashers, nuts for mounting panel to enclosure 'PM' panel mount, SMK-4

'UM' universal mount, SMK-1

- (1) Bulkhead fitting for 3/8" supply tubing, GBC-6
- (1) Nylon or Polyethylene Tubing, 3/8" diameter by 4 feet long
- (1) Bulkhead fitting for 1/4" reference tubing, GBC-4
- (1) Nylon or Polyethylene Tubing, 1/4" diameter by 4 feet long





System Specification

System Dimensions:	See Dimensions
Shipping Weight (Lbs):	
10E-WGS-WRR-___	approx: 10 lb's
10E-LGS-WRR-___	approx: 7 lb's
10E-WGS-WVT-___	approx: 14 lb's
10E-LGS-WVT-___	approx: 11 lb's
Operating Temperature:	-20 ° F to +120 °F
Supply Pressure Range:	* 5 – 120 PSI max.
Supply requirement:	Clean air or inert gas
Pressurization pressure:	> 0.5" H2O
Pressurization flow rate:	Depends on enclosure sealing
System supply fitting:	GBC-6, 3/8" bulkhead fitting
System supply tubing:	3/8" nylon or Polyethylene tubing
Reference fitting:	GBC-4, 1/4" bulkhead fitting
Reference tubing:	1/4" nylon or Polyethylene tubing
WGS:	
Switch contacts:	15A @ 120-480VAC, 60Hz resistive
1/8 HP @125VAC	
EPV-3-SA-00/90:	1 1/4" Hub size

- * With 'WRR' redundant regulator option, 5 psi max.
 With 'WVT' vent option, 120 psi max.

Material Specification

Regulators Body:	Zinc w/enamel finish, brass
Regulators Handle:	Polycarbonate
Enclosure Pressure Gauge:	ABS Plastic
Tube fittings, GBC-:	Nickel plated brass
Tubing:	Nylon or Polyethylene
Fastener Hardware:	Stainless steel
Mounting plate:	316L, 14 Ga. Stainless steel
WGS:	Zinc plated steel
EPV 3-SA-00/90 vent:	Aluminum





Installation Tools

1 ¼" conduit knockout punch only "WVT" models

Drill hole size for GBC-4, ¼" bulkhead fitting – Diam. 0.400" to 0.440"

Drill hole size for GBC-6, 3/8" bulkhead fitting – Diam. 0.800" to 0.875"

Drill hole size for SMK-1, 1/4" Bolt size

Enclosure Design Requirements

All windows must be shatterproof and sized as small as possible.

The enclosure must withstand an internal pressure of 10 inches of water without sustaining permanent deformation.

All light weight objects in the enclosure must be firmly secured.

The enclosure should be constructed from materials such as metal or non-static polycarbonate to meet or exceed Type 4 or 12 performance requirements, but does not require third party certification.

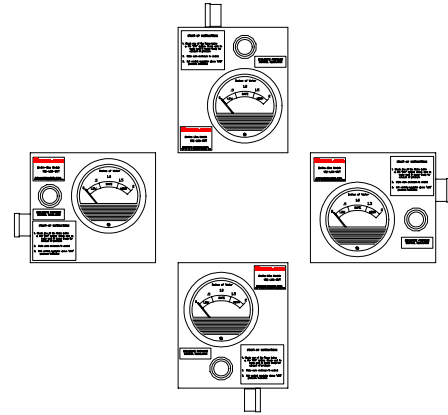
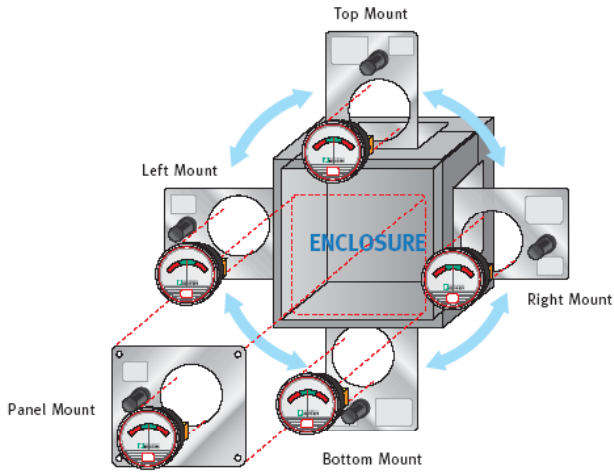
If the enclosure is nonmetallic and contains equipment, which utilizes or switches power grids greater than 2500 VA, it must be constructed from substantially noncombustible materials.

Dimensions and Installation Overview

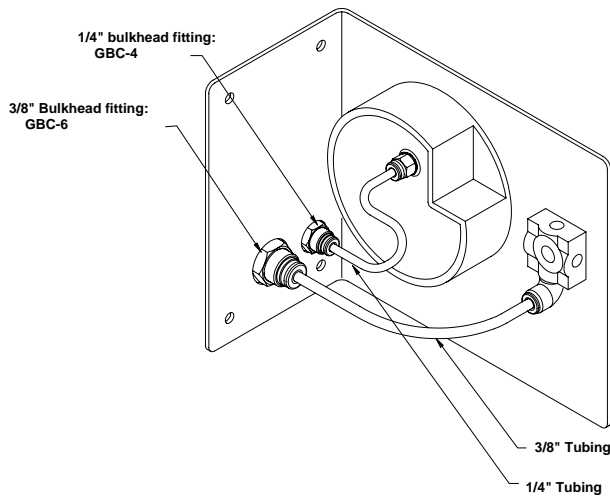
The 10E-...UM is designed to be universally mounted onto the enclosure. This can be mounted to the right, left, top, or bottom of the enclosure

For right hand, bottom, top, or panel mount, position the gauge, regulator, and when applicable the differential pressure switch according to the mounting as shown below:





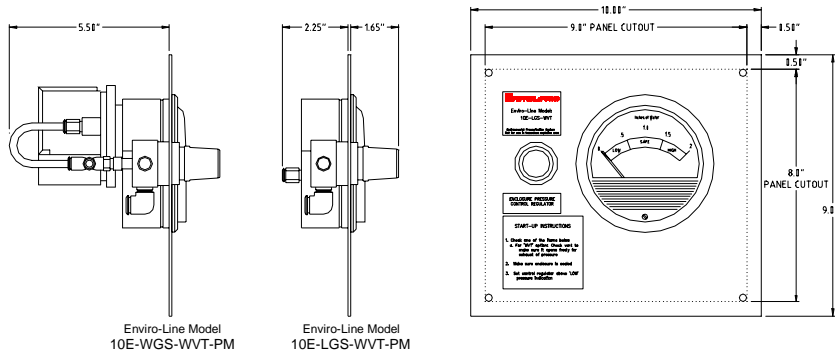
Tubing and bulkhead fitting placement



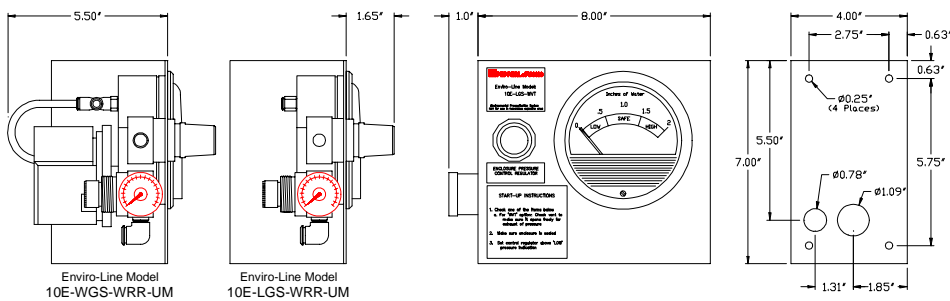
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Dimensions:

Panel Mount (PM) with Vent (WVT)
without General Purpose Switch (LGS)
with General Purpose Switch (WGS)

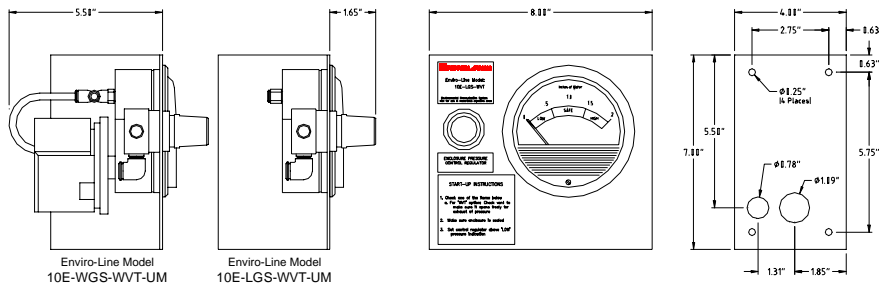


Universal Mount (UM) with Redundant Regulator (WRR)
without General Purpose Switch (LGS)
with General Purpose Switch (WGS)

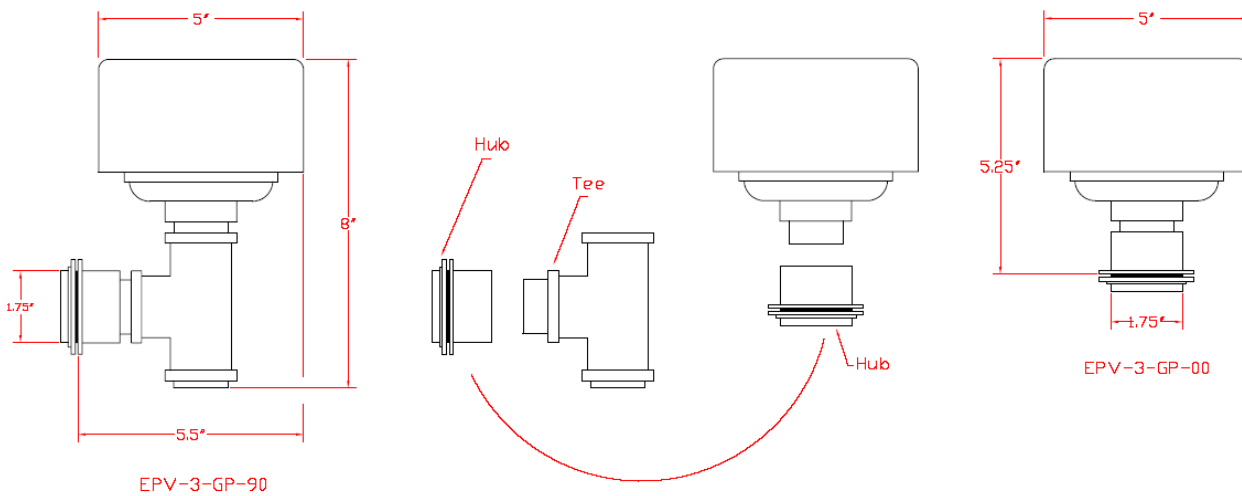




Universal Mount (UM) with Vent (WVT)
without General Purpose Switch (LGS)
with General Purpose Switch (WGS)



EPV-3-GP-90 and retrofit to EPV-3-GP-00





Installation Instructions – Universal Mount, UM

The 10E series is shipped with the components on the panel for a left hand mounting configuration. For other configurations, right, top, bottom mounting, the regulator(s) and gauge assemblies can be loosened and rotated to fit direction of mounting as illustrated in the Mounting Overview in this chapter.

Verify dimensions of the system's mounting holes and connection fittings in reference to the applicable drawings in the dimension

Upon confirmation of dimensions and orientation of components, transfer mounting holes pattern from the drawing to the intended surface

Check for any internal obstructions, which could hinder mounting of panel to enclosure. The two large holes on the same side as the mounting holes can be used for mounting the bulkhead fittings. The larger hole is for the 3/8" and smaller for the 1/4" fittings. Other locations can be used if desired. Note that plastic tubing will be used so care should be taken to make sure the plastic tubing has enough bend radius as to not crimp when attached.

After holes are drilled, install the panel using the (4) stainless steel bolts, nuts, lockwashers. Bulkhead fittings can be installed at this time

Installation of the vent for the 'WVT' version allows to install this on top of the enclosure or on the side. For top mount, remove the 1 1/4" Tee and hub, and reinstall the hub to the bottom of the vent. The connection is now for a top mount vent.

Note: vent should always be mounted upright because the pressure relief is gravity sensitive.

Cut tubing to length to fit connection from panel to bulkhead fittings. Make sure there is enough bend radius so not to crimp the tubing when installed.

Connection to the for redundant or standard regulator is a 1/4"NPTF connection. For larger enclosure, a larger size supply line will be required to meet the demands of pressurization. This will depend on the amount of leakage from the enclosure. The minimum size should be 3/8" tube or 1/4" pipe.





Installation Instructions – Universal Mount, PM

The 10E Panel Mount (PM) is designed and connected so that the equipment on the panel can be inside the pressurized enclosure and access to the panel from the outside. The connections to the gauge and pressure switch when used are connected for this operation. Bulkhead fitting for the reference and supply lines are provide.

Verify dimensions of the panel mount cutout.

Upon confirmation of dimensions, transfer mounting holes pattern from the drawing to the intended surface

Check for any internal obstructions, which could hinder mounting of panel to enclosure. Also look for best location for supply and reference bulkhead fittings. Note that plastic tubing will be used so mount bulkhead fittings away from the panel so that the plastic tubing has enough bend radius as to not crimp when attached. After holes are drilled, install the panel using the (4) stainless steel bolts, nuts, lockwashers. Bulkhead fittings can be installed at this time. During installation, a sealing compound or gasket can be added to the cutout of the enclosure for additional sealing. This is not required for the pressurization system because the leakage from this installation is minimum to the system leakage.

Installation of the vent for the 'WVT' version allows to install this on top of the enclosure or on the side. For top mount, remove the 1 ¼" Tee and hub, and reinstall the hub to the bottom of the vent. The connection is now for a top mount vent.

Note: vent should always be mounted upright because the pressure relief is gravity sensitive.

Cut tubing to length to fit connection from panel to bulkhead fittings. Make sure there is enough bend radius so not to crimp the tubing when installed.

Access to the redundant or standard regulator is done through the 3/8" bulkhead supply fitting.





Operating Instructions

Every system is supplied with an operation instruction label. This label should be located on the 10E-... series panel.

When the 'WVT' option is used, the vent should be checked to make sure it opens freely. The vent does not start venting until the pressure in the enclosure is above 0.7" H2O. The vent is used for cooling or regulator failure. The 'WRR' redundant regulator allows the pressure to be set below 5 psig. A vent is not required in this configuration.

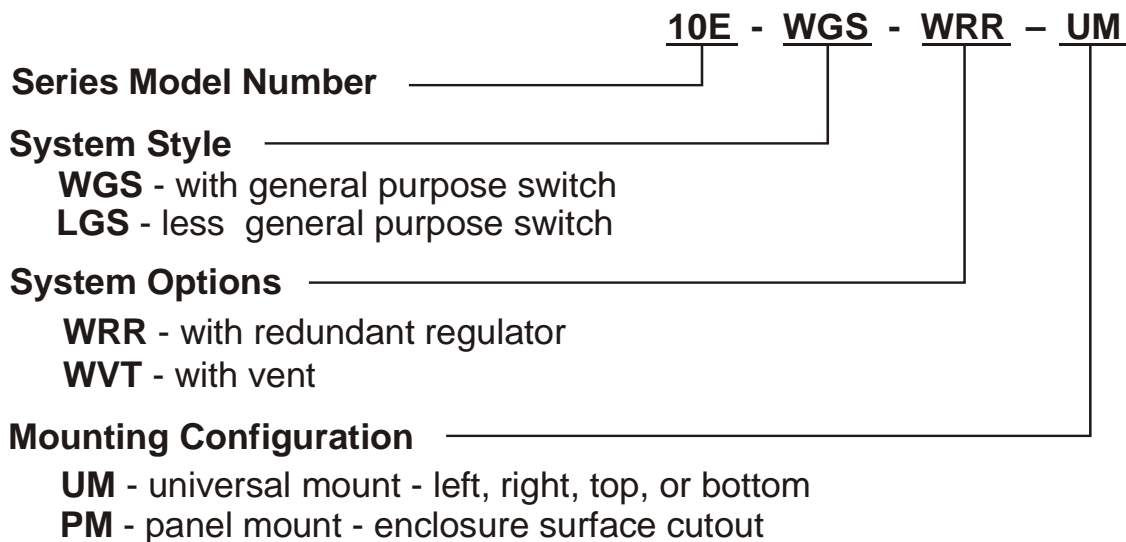
The enclosure should be cleaned out of all dust particles and sealed. The enclosure can then be pressurized.

The regulator is adjusted so that the pressure is above low. Below this range, dust could get into the enclosure. Higher pressure can be achieved for cooling purpose. The range on the gauge is just a guideline.

START-UP INSTRUCTIONS

1. Check one of the items below
 - a. For 'WVT' option: Check vent to make sure it opens freely for exhaust of pressure
 - b. For 'WRR': Set the tamperproof regulator for no higher than 5 psig
2. Make sure enclosure is sealed
3. Set control regulator above 'LOW' pressure indication

Model Number Designation





Trouble Shooting

<p>Enclosure pressure control regulator will not hold a safe pressure.</p>	<p>Leakage around gasketing, covers, seams, piping and tubing connections, conduit connections and electrical seals of the enclosure.</p>	<p>Tighten enclosure latches: Where tightening is feasible, and gasketing materials are not practical, holes or gaps can be closed with gasketing sealant applied.</p>
<p>Enclosure pressure indicator reading is difficult to stabilize.</p>	<p>Insufficient enclosure leakage or opening of the venturi tube is crimped to small.</p>	<p>Remove the orifice, cut off the crimped end. Crimp end as necessary. This will allow easier adjustment of enclosure pressure.</p>
<p>Enclosure pressure indicator drifts up or down from the safe pressure setting.</p>	<p>Application involves a small, tightly sealed enclosure and/or a fluctuating protective gas supply.</p>	<p>Pre-regulate the protective gas supply upstream of the enclosure protection system to 5 psi. For dramatic fluctuations in the protective gas supply, it may be necessary to utilize a self-relieving low flow precision regulator to pre-regulate the protective gas supply.</p>
<p>Enclosure pressure alarm 'WGS' does not appear to be working.</p>	<p>Pressure switch out of calibration</p>	<p>Calibrate by slowly adjusting counterclockwise to decrease the setpoint, and clockwise to raise the setpoint.</p>
<p>Problems persist.</p>	<p>Problems persist.</p>	<p>Contact Pepper+Fuchs applications/customer service department at 330-486-0002</p>

This section covers the most common problems documented with this system. Any problems not covered in this section should be addressed directly to our factory. Please address all service needs to Pepperl+Fuchs, Inc. – Customer Service Department – 330-486-0002





Warranty Terms and Conditions

PEPPERL+FUCHS STANDARD 24-MONTH WARRANTY

1. **Limited Warranty.** Pepperl + Fuchs, Inc. ("P+F") warrants Purge Units and components for Purge Units manufactured by P+F ("Product" or "Products") to be free from defects in material and workmanship under Normal Use for a period of twenty-four (24) months from the date of shipment of such Products from P+F's warehouse or place of manufacture (or from P+F's authorized representative or distributor). Only the original purchaser of such Products (the "Customer") shall be entitled to the benefit of the foregoing Limited Warranty. No representative, agent or salesman of P+F is authorized to give or provide any warranty or make any representation contrary to or in addition to the foregoing Limited Warranty.
2. **Inspection and Claims.** Customer must inspect and test all Products upon receipt. All claims under the Limited Warranty provided herein must be made within thirty (30) days of the discovery of the defect. Customer must obtain shipping instructions from P+F prior to returning any Product, which Product must be returned at Customer's expense in accordance with P+F's instructions.
3. **Limitations and Exclusions.** "Normal Use" shall mean use and operation within rated capacities, at the correct voltage, and with any required maintenance as provided in the applicable P+F Operating Manuals. The Limited Warranty provided herein does not apply to (i) any Products which have been altered or modified in any way or disassembled by the Customer or anyone else, (ii) any Products which have been subject to misuse, negligence or accident, or improperly installed, changed, substituted or replaced, (iii) any part or component not manufactured by P+F, or (iv) any part or component that is subject to wear or consumption. For parts or components not manufactured by P+F, the Customer or any other user or owner shall have only the warranty provided by the manufacturer of such part or component. The Limited Warranty set forth herein is also subject to the following:
 - (1) The Limited Warranty is limited to electronic and mechanical performance only, as expressly detailed in the product specifications, and does not apply to cosmetic appearance;
 - (2) The Limited Warranty shall not apply to any cables attached to, or integrated with, any Products.
 - (3) The Limited Warranty shall not apply to any Products which are stored, or utilized, in harsh environmental or electrical conditions outside P+F's written specifications.

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4. **Limitation of Remedies.** In the event of P+F's liability, whether on this Limited Warranty or based on contract, tort (including, but not limited to, negligence and strict liability) or otherwise, Customer's sole and exclusive remedy will be limited to, at P+F's option, the repair or replacement (if/o/b P+F's place of manufacture) by P+F of any non-conforming items for which claim is made by Customer in accordance with paragraph 2, or the repayment of the portion of the purchase price paid by Customer attributable to the non-conforming item.
5. **Responsibility of Customer: Safety and Protection Precautions.** P+F takes great care to design and build reliable and dependable Products; however, some Products can fail eventually. Customer must take precautions to design its equipment to prevent property damage and personal injury in the unlikely event of a failure. AS A MATTER OF POLICY, P+F DOES NOT RECOMMEND THE INSTALLATION OF PRODUCTS AS THE SOLE DEVICE FOR THE PROTECTION OF PERSONNEL OR PROPERTY AND, THEREFORE, THE CUSTOMER SHOULD BUILD IN REDUNDANCY OR DUAL CONTROL USING APPROVED SAFETY DEVICES FOR THESE APPLICATIONS.
6. **Conflicts.** In the event there is any conflict between the provisions of this Limited Warranty and any provisions contained in any orders, offers, acceptances or other writings or statements provided or made by Customer to P+F, the provisions of this Limited Warranty shall prevail, and the contract between P+F and the Customer shall be deemed formed only upon the provisions set forth in this Limited Warranty, and any additional or conflicting provision inserted by Customer shall be of no force or effect.