



# BPE PVDivert Immersion Controller User Manual

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**BPE PVDivert Immersion Controller**

**Product Information:**

The BPE PVDivert is a device designed for use with power generation equipment in a photovoltaic system. It allows for the transmission of excess electricity generated by the system to the grid. This equipment includes a controller unit that detects the electric current flowing to the grid and signals the water heater to start heating the water. Any remaining energy is then stored in the water heater for later use.

**Features of PVDivert:**

- Requires a water heater with a thermostat to automatically shut off when the desired water temperature is reached.

**Product Usage Instructions****Installation of PVDivert:**

**Warning:** Ensure installation is done according to local and national safety standards.

1. Install the PVDivert controller unit on the wall, ensuring it is parallel to the wall at an appropriate height for easy observation and reading of the LCD display.
2. Choose a well-ventilated environment with low humidity for installation to allow for proper heat dissipation.
3. Ensure sufficient surrounding area for ventilation around the equipment.
4. Install the equipment in close proximity to the water heater.
5. Connect the equipment to the miniature circuit breaker or fuse in the input higher level of the Solar Immersion Controller for protection.
6. Make sure the operated water heater is equipped with a thermostat to ensure temperature shut off.

**Sender Pairing:**

1. Press and hold the “Pairing” button on the PVDivert controller unit for 1 second. The display will show “Pairing Pairing...”.
2. Press and hold the “Pairing” button on the sender unit for 3 seconds.
3. The display will show either “Pairing Pairing success” or “Pairing Failed”.

## **Manual Operation:**

**Important:** When timing water heating is selected, PVDivert will output at maximum energy. If the power generation energy of the photovoltaic system is not enough to support the energy required by the Solar Immersion Controller, electricity can be obtained from the grid.

BPE PVDivert  
Installation & Operator's  
User Manual v3

## **General Precautionary Measures**

For the safety of you and your equipment, please read and understand the contents of this Manual before installation and use. Please put the Manual in the place where machine operator can easily find it for reference. Non-professional technician is not allowed to install and operate this machine.

**WARNING:** In order to avoid electric shock, please disconnect the machine and the input and output ends for at least 1 minutes, and then contact the wire part of the input and output ends of the machine.

The installation of the equipment must completely comply with the local safety standards & regulations and be a sufficient distance away from inflammable and combustible articles.

The package does not contain spare parts. To avoid an electric shock incident the equipment is provided without a shell. There are no available spare parts internally. Maintenance issues should only be carried out by qualified professionals. Please contact your local retailer for authorised maintenance centre details or local professional personnel.

Professional maintenance personnel must be aware of the input voltage source and each circuit must be disconnected respectively before maintenance.

Before installation and operation of this equipment, please ensure you have read and understood the Instruction Manual to familiarize yourself with the safety issues.

To adhere to the national law requirement, please ensure you obtain approval from the local management department before a qualified professional is appointed for connection and operation of the equipment.

The equipment is clearly labelled in yellow relating to the Safe Use of this equipment.

During installation please ensure you have read and understood the relevant labelling.

Please dispose of the equipment in a responsible manner, details of which can be obtained from your local government department.

This machine must NOT be disposed of as unclassified municipal refuse doing so may result in hazardous substance leakage endangering human health & safety.

## **Overview**

The equipment is for use with the power generation equipment of the photovoltaic system. Energy will be transmitted to the grid if the electricity power generated by the power generation equipment of the system cannot be fully consumed by the local load. This equipment detects the electric current flowing to the grid side indicating to the water heater to commence the heating of the water.

Residual energy flows into the grid and is stored in the water heater for energy storage.

## **Features of PVDivert:**

- Supports up to 3.6kW heater.
- Supports up to 2 water heaters.
- Uses the surplus solar energy generated at your roof to heat the water.
- Flexibly work with grid. Ensures instant hot water supply.
- Heats water by use of the timer or by the ·enhance· button.
- Abundant information display – historical energy saving figures and running status.
- Easy and fast to deploy by using existing facility with no wiring between PVDivert controller and Sender.

**Important:** The equipped water heater must be provided with a thermostat to use this equipment to enable the water heater to automatically shut off after the water temperature reaches the setting value.

## Installation of PVDivert

**Warning:** The installation must be implemented according to the local and national safety standards.  
Install the PVDivert Controller unit on the wall

Please pay attention to the following points for the installation of the Controller unit:

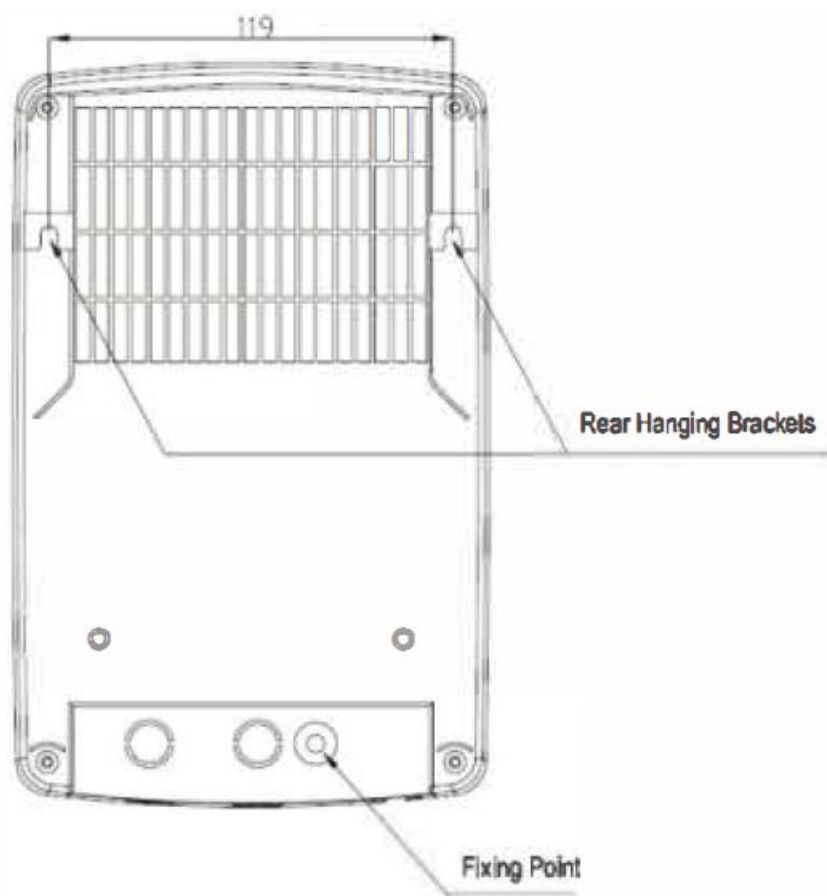
The equipment should be installed parallel to the wall at an appropriate height to ensure the LCD can be easily observed and read.

The equipment should be installed in a well-ventilated environment with low humidity.

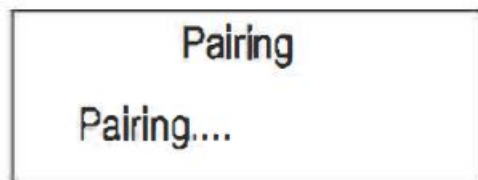
Heat dissipation can only occur if the equipment is installed with sufficient surrounding area for ventilation.

### Important:

- Installation should be in close proximity to the water heater, and connected with the miniature circuit breaker or the fuse in the input higher level of the Solar Immersion Controller for protection.
- The operated water heater must be equipped with a thermostat to ensure temperature shut off.

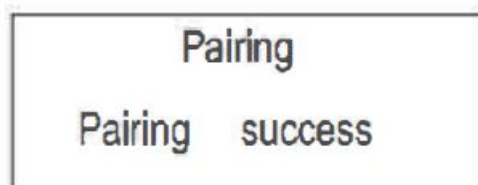


Press button Display and Down for 1 second Display shows

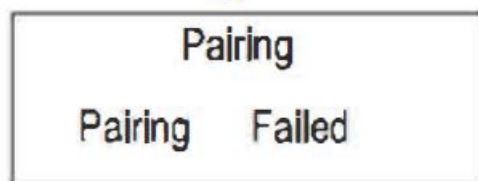


Press button on sender unit 3 secs

Display shows



or



## Manual Operation

The User may press "Enhance" to select different times for heating the water. PVDivert will ensure the opening of

the relay and it will not be controlled by the current information collected by the emitter. Each time “Enhance” is activated, the duration will be increased in 15 minute increments until the maximum of 120 minutes at which time the “Manual Enhance Turnoff” will directly shut off the timed water heating.

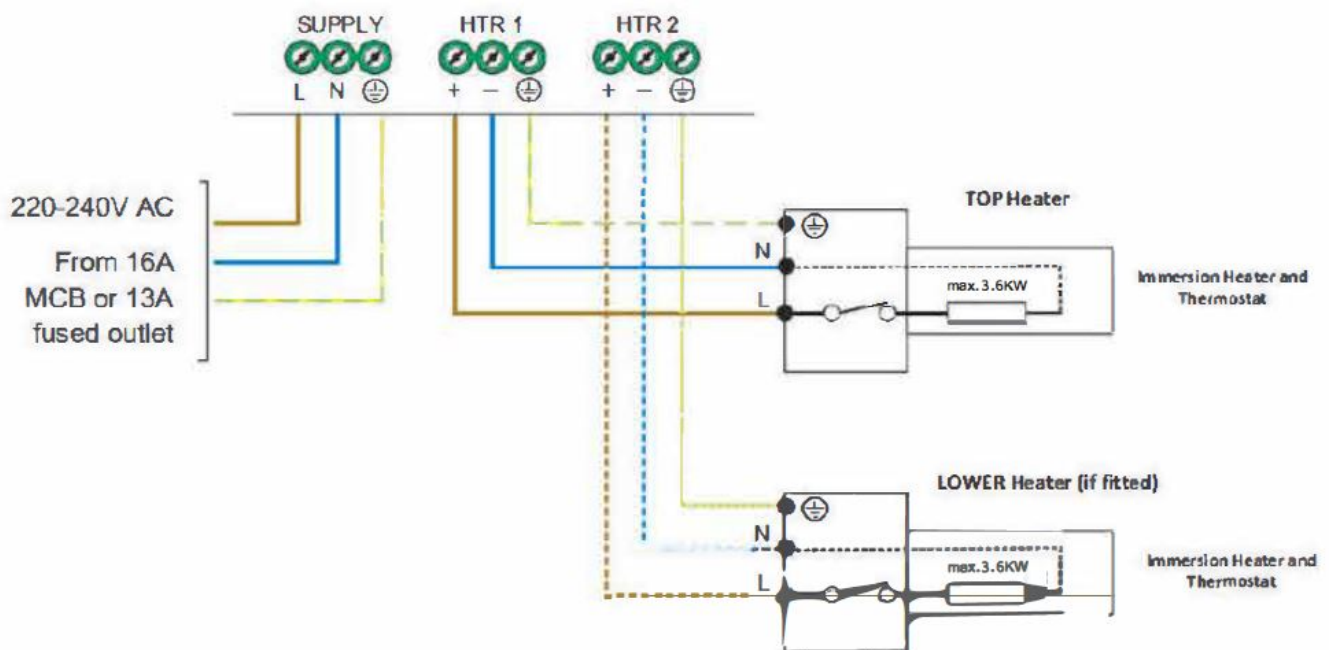
**Important:** When timing water heating is selected, PVDivert will output at maximum energy. At this time, it is possible to get electricity from the grid if the power generation energy of the photovoltaic system is not enough to support the energy required by Solar Immersion Controller.

## Warnings and Messages

### Solar Immersion Controller

Sender Battery Low	Batteries are low in the emitter unit. Please replace the batteries
Lost Signal to sender	Possible causes: 1.Batteries may have expired 2.Solar Immersion Controller is positioned too far away from emitter
Over Load	The unit must not exceed 3.6kW max.

### Wiring of two water heaters



When two water heaters are connected (please refer to the above diagram).

This product will provide solar energy to HTR1 as priority. Once HTR1 is satisfied, it will provide solar energy to the HTR2. The product can't heat HTR1 and HTR2 at the same time.

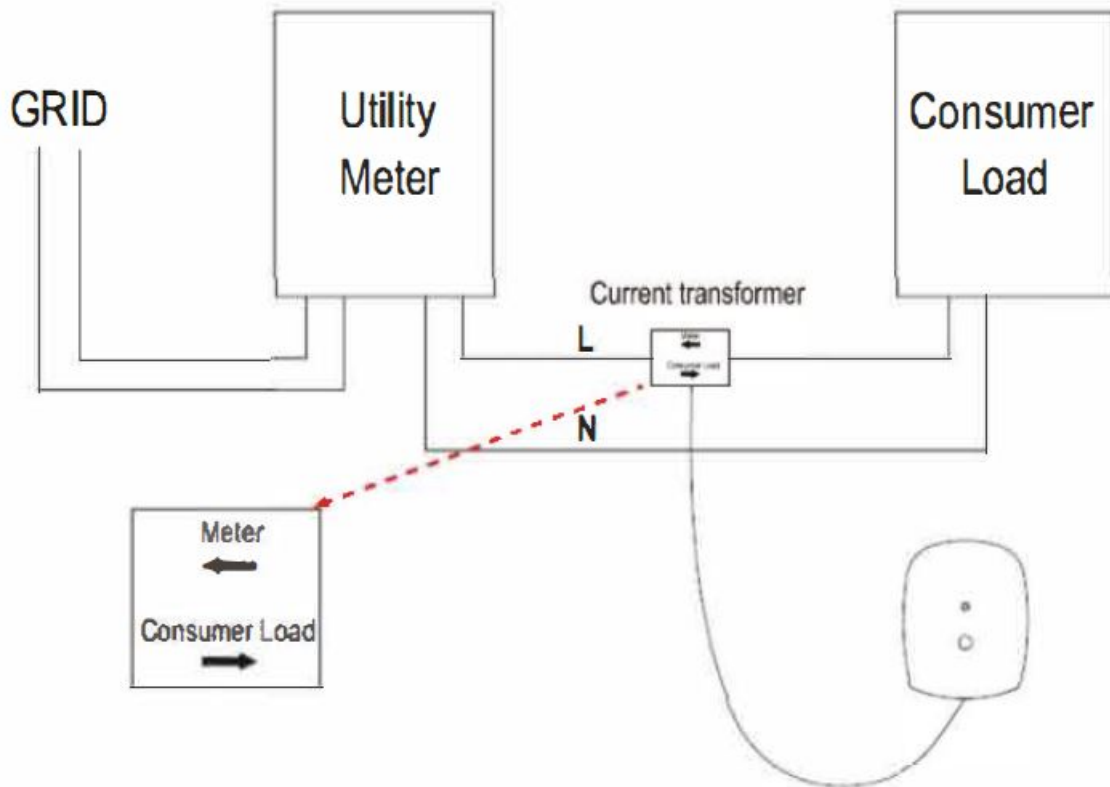
When heating HTR2, the solar immersion controller will monitor HTR1 every 20minutes. If the HTR1 water temperature is less than the required temperature, the controller will heat HTR1 as priority.

Any of the two water heaters should not be more than 3.6kW. Otherwise the solar Immersion Controller will be disconnected due to overload protection.

### Installation of Sender

The emitter should be installed with two AA batteries. ensure the correct directions of positive and negative electrodes are consistent with the marked ones. Replace the battery cover plate.

The emitter is equipped with a current transformer. which should be connected between the electricity meter and the load. The core penetration direction of the current transformer must be correct. please refer to the following diagram to ensure the correct operation of the system.



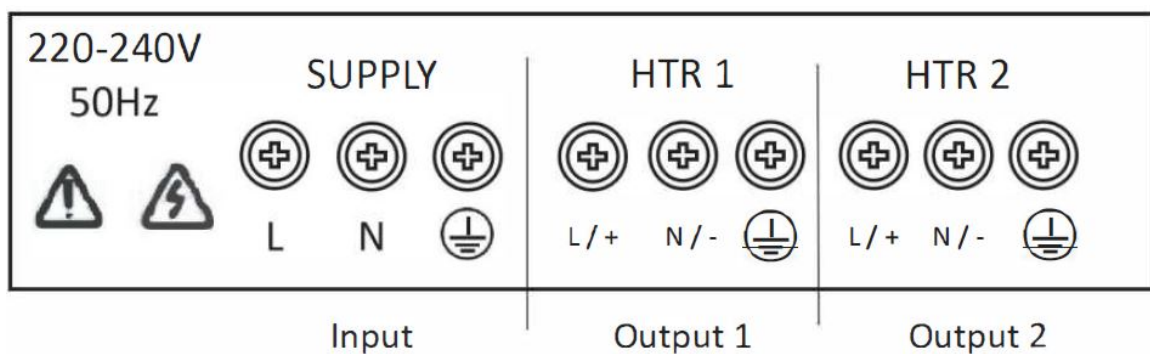
**Important:** The current transformer should be connected with the Line L, and the core penetration direction must be correct.



After connecting the Line, buckle up the current transformer, and plug the other end of the current transformer into the middle socket of the sender. Fasten the sender, and the installation of the sender is finished.

### Connection to the Controller

The following wiring operation must be carried out by qualified professionals.

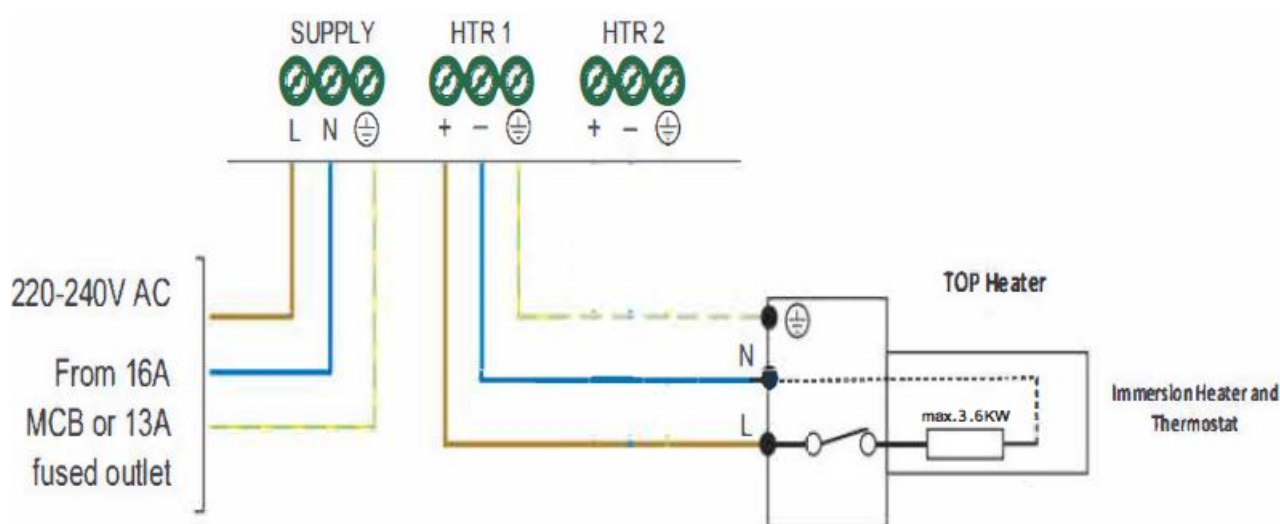
16A circuit breaker or 13A fuse should be connected at the higher level of the power input terminal.



Input	L	Live input Connection port
	N	Neutral input Connection port
		Ground input Connection port
output	L / +	Connect resistance load positive electrode.
	N / -	Connect resistance load negative electrode.
		Ground output Connection port
PS: This unit is only suitable for connect resistance load		

### Wiring Schematic Diagram

#### Wiring of single water heater



When only one water heater is connected. refer to the above diagram .

Sender Battery Low	Batteries are low in the sender unit. Please replace the batteries.
Lost Signal to sender	Possible causes: 1. Batteries may have expired 2. Solar Immersion Controller is positioned too far away from sender.
Over Load	The unit must not exceed 3.6kW max.

### Technical Specifications

#### Solar Immersion Controller



Content	Specifications
Operating Voltage	AC 220-240V
Maximum Permissible Loads	16A(Max 3.6KW)
Operating Radio Frequency	433MHz
Operating Ambient Temperature	-10 to 45 °C
Power Dissipation	I-3W
Dimensions	130 X 218 X 63.5
Weight	905g

## Sender

Content	Specifications
Operating Radio Frequency	433MHz
Battery Type	2*AA 1.5V
Battery Life Cycle	8-12 months
Operating Ambient Temperature	-25 to 50°C
Radio Range	Up to 30m indoors (Outdoors up to 250m)
Current transformer	50A/50mA 0.5
Dimensions	68 x 96 x 30 mm (excluding clamp)
Weight	70g

## User Operation



## DESCRIPTIONS OF BUTTONS

Display	Display the stored electricity quantity information
Down	Revise the timing switch information
Enhance	Manual operation button
LED (green)	Flashing green - heating from solar. Solid green - waiting for excess, enhance mode on
LED (red)	Sender not paired, low battery, sender too far away from the control unit
Display + Enhance	Press and hold for 5 Secs, the software will be reset. All data will be cleared.
Reset	Press for 1 Secs, The hardware will be reset.

## DISPLAY CONTENTS

Heating by solar xx kW	Shows the value of energy being saved to immersion heater
Water tank hot	When the temperature of the water tank of the water heater reaches the setting value, the thermostat within the water heater will be disconnected, and Solar Immersion Controller output will detect no load.
Water heating off	Solar Immersion Controller turns off the output when no residual energy flows into the grid.
Saved Today xx kW	Energy saved today
Saved Yesterday xx kW	Energy saved yesterday
Saved Last 7 days xx kW	Energy saved in the past 7 days
Saved Last 28 days xx kW	Energy saved in the past 28 days
Saved Amount xx kW	Total value of energy saved to the immersion heater since Solar Immersion Controller was installed
Time HH:MM	Current time in 24hr format

## Timing Operation & Clock Adjustment

Solar Immersion Controller can provide users with three manual time periods. Solar Immersion Controller will start the maximum energy. At this time, it is possible to get electricity from the grid if the power generation energy of the photovoltaic system is not enough to support the energy required by Solar Immersion Controller.

Appointment time operation can be set via the buttons of "Up" "Down". Refer to the following table for details.

Press "up" to enter the current settings page which displays the current time period. the display can be adjusted among several time periods. During the setting process, the first displayed is "Enhance time 1". the first number at the first appointment time will flash after pressing "Down". Press "Down" for selection and press "up" for confirmation, and then move to the next number. Continue in the same manner.

## Solar Immersion Controller

Display shows	Function
Enhance time 1	Set the timed enhance for period 1. Once programmed the Solar Immersion Controller will remember it. Set "00:00 to 00:00" to disable
Enhance time 2	Set the timed enhance for period 2. Once programmed the Solar Immersion Controller will remember it. Set "00:00 to 00:00" to disable
Enhance time 3	Set the timed enhance for period 3. Once programmed the Solar Immersion Controller will remember it. Set "00:00 to 00:00" to disable
Set time HH:MM	Set the clock time in hours and minutes

## Sender Pairing

Wireless communication is carried out between the Solar Immersion Controller and the emitter. Upon initial use, pairing should be carried out to the emitter and Solar Immersion Controller to ensure successful communication between the devices.

### The operation steps are as follows:

When pairing starts, simultaneously press the buttons of "Display" and "Down" of the Solar Immersion Controller for approx. 1 second, the LCD will display "pairing ...", and display "Pairing successful" when completed. If the pairing is unsuccessful, the LCD will display "Pairing Failed."

Try again". Please repeat the above operation if necessary. Please ensure the batteries of the emitter are correctly connected if you continue to receive a failed operation. If the Solar Immersion Controller or emitter is replaced, please ensure the pairing operation is completed at the initial use.

## Warranty

BPE provide a 5 year warranty period.

Warranty period starting: From point of sale  
Warranty Evidence: production of equipment serial number and local approved PVDivert dealer delivery invoice

**Range:** During the warranty period the occurrence of any damage will be assessed by the BPE locally approved dealer and BPE to define the scope and responsibilities of each party.

**Warranty Policy:** In order to provide better services to all users of PVDivert. All authorised distributors of our company are required to respond to end users' warranty claims.


During the warranty period replacements will be made by an authorised dealer of products and accessories.

BPE reserves the right to invalidate the Warranty under the following circumstances:

1. Permission has not been granted by BPE for Product design changes, modifications or replacement parts
2. Evidence of modification, changes, attempted repair, missing or tampered with serial numbers, missing PVDivert company seal.
3. Incorrect installation and commissioning.
4. Failure to comply with the appropriate safety regulations
5. Improper storage or damage incurred while in the possession of the end user.
6. Transportation damage including paint surface scratches caused by transit. If damage occurs when unloading, sufficient evidence should be reported to the insurance company as soon as possible.
7. Failure to comply with user manuals, installation guides, maintenance procedures.

8. Improper use or improper operation of equipment.
9. Lack of ventilation equipment associated with usage of this product.
10. Maintenance procedures performed to an unacceptable standard.
11. Force Majeure (ie lightning strikes. overvoltage, storms. fires).

## Documents / Resources

	<p><a href="#">BPE PVDivert Immersion Controller</a> [pdf] User Manual PVDivert Immersion Controller, PVDivert, Immersion Controller, Controller</p>
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