

**M0021501**

## **Description:**

Installing a Budderfly adapter transforms your building's existing wiring into the "Budderfly Open Network" and allows the adapter to monitor energy consumption and communicate the data to a facility controller.

Budderfly adaptors will use the existing power line for communication and thus require no re-wiring.

Using our Budderfly software, you can visualize consumption data and manage each individual adapter.

The Budderfly Power Meter is a component of the Budderfly system and designed to work with all other Budderfly devices. Once installed, the Budderfly Power Meter also acts as repeaters to extend the range of the network and increase efficiency.

### **⚠ Warning**

**RISK OF FIRE**

**RISK OF ELECTRICAL SHOCK**

**RISK OF BURNS**

To avoid the risk of Fire, Electrical Shock, Burns or other hazards we recommend the following:

- Use Budderfly Power Meter indoor only.
- Never connect the Budderfly Power Meter to medical and/or life support equipment.
- Do Not use the Budderfly Power Meter where excessive moisture is present or near Water related Applications
- Never use the Budderfly Power Meter with loads that exceed the maximum rating specified.

## Features:

- Measures up to 16A load on the connected branch circuit.
- Low power consumption.
- 1% accuracy over full measurement range.
- Measurement Category II
- LED indicators to show the current consumption of the connected branch.

### Power consumption:

Budderfly Power Meter will measure the current, the voltage and the power consumed by the connected branch circuit. The data can be accessed at any time through the Budderfly software. The user can generate reports, monitor the consumption or check expenses.

### LED Indicators:

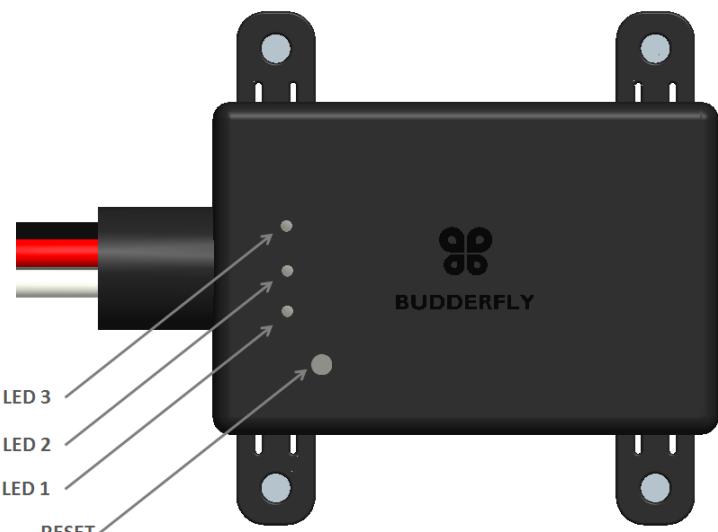
The Budderfly Power Meters are equipped with a three LED's that indicate current consumption of the connected branch. The table below explains the LED indications:

LED Color	State
1 Green LED lit	Measured current is less than 10A
2 Green LED's lit	Measured current is between 10A and 15A
3 Green LED's lit	Measured current is higher than 15A

### Reset:

If the device stops responding, it can be restarted by pushing the Reset Button. A non-metallic pin should be used to push the reset button.

None of the stored parameters are affected.



### WARNING –ELECTRICAL SHOCK HAZARD

- Use only the plastic (non-metallic) pin to press the reset button.
- Never use a metallic pin to press the reset button.

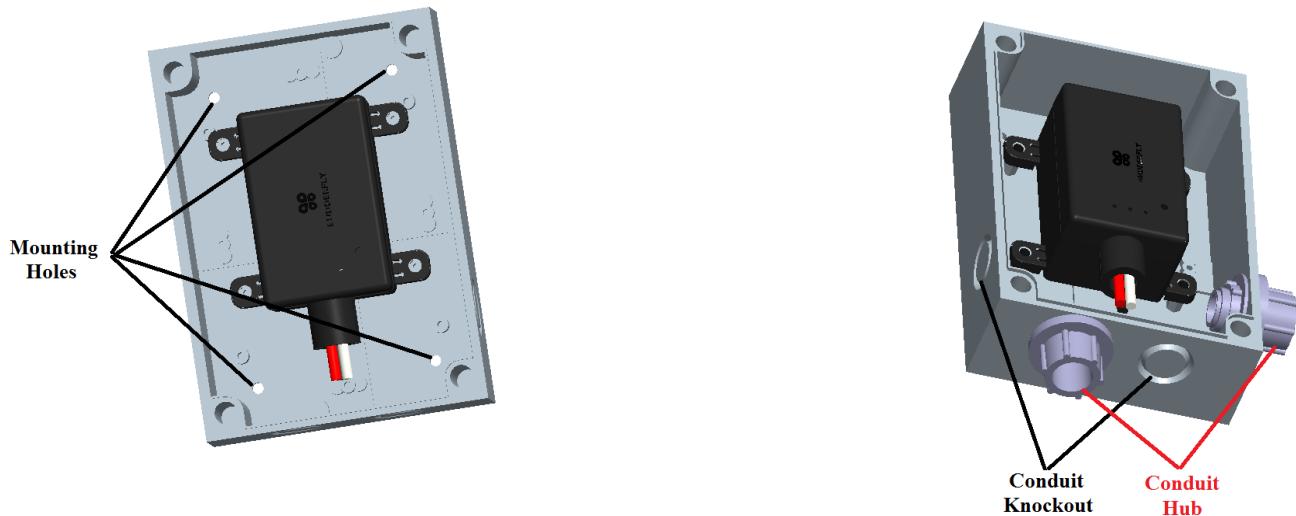
### Monitoring No Neutral switches:

- Budderfly power meter must be connected to any branch including Budderfly no neutral switches
- The power meter monitors the branch and reports all changes in power to the facility controller to calculate the energy consumption of every no neutral switch.

## Installation:

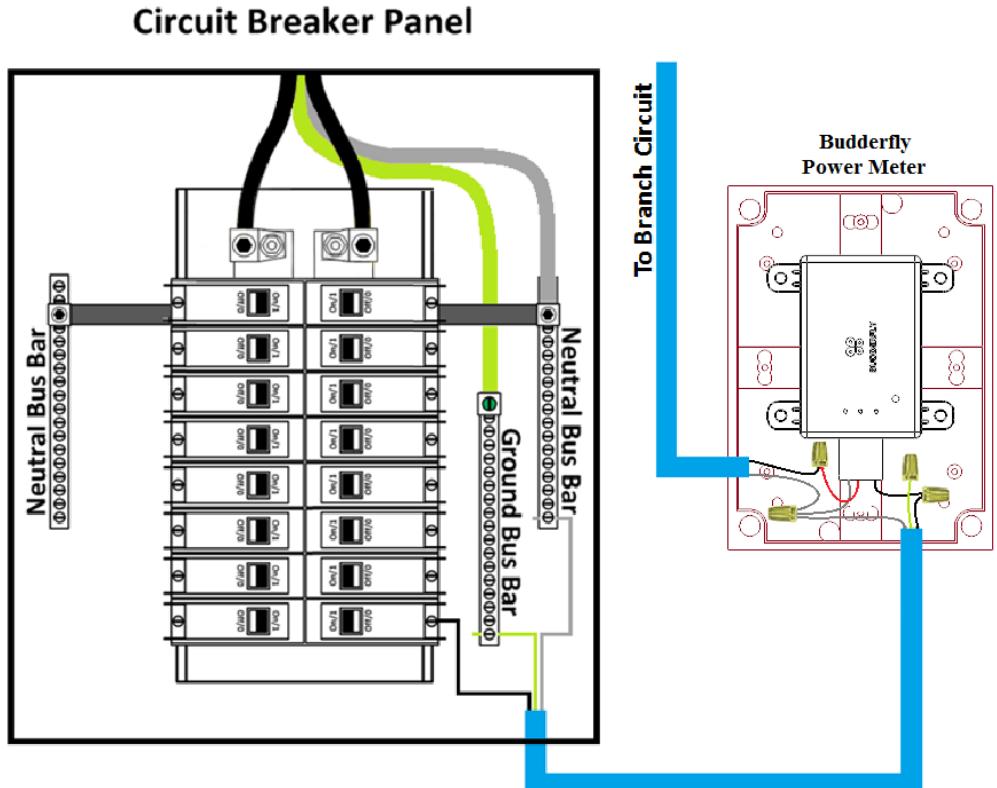
- 1- **Budderfly Power meter cannot be located inside the panel board.**
- 2- Budderfly Power meter require a switch or circuit breaker as part of the building installation.
- 3- An equipment switch or circuit breaker employed as disconnecting device shall meet the relevant requirements of IEC 60947-1 and IEC 60947-3 and be suitable for the application
- 4- A switch or circuit breaker shall not interrupt any protective earth conductor.
- 5- It is recommended that the Power Meter be mounted near the disconnecting device.
- 6- If a suitable mounting location near the load center cannot be found, additional in line fuses or circuit breaker may be required in accordance with NEC regulations.
- 7- The switch or circuit breaker must be marked as the disconnecting device for the respective Budderfly Power Meter, additionally I and O labels to be used to identify connecting and disconnecting positions.
- 8- Locate the Circuit Breaker of the branch circuit to be monitored, apply the identification and ON/OFF (I/O) Labels and set it to the “OFF” position, and identify the wire that is leaving this breaker.

- 9- Turn OFF the Power Supply to the electrical panel by locating the “Service Disconnect” or “Main” circuit breaker in the electrical panel and set it to the “OFF” position.
- 10- Test the panel for power, by using a tester or meter set to the highest AC voltage range, and check for the presence of power by touching one probe to the Hot terminals of the branch circuit breakers.
- 11- Select #8 or #10 pan head screws suitable for the surface where the power meter will be mounted
- 12- Fasten the enclosure to the selected surface via the 4 mounting holes (refer to figure below).
- 13- Budderfly Power Meter has 4 pre-defined  $\frac{1}{2}$  inch conduit knockouts.  
Open the knockout were needed and fix the conduit using a suitable conduit hub.
- 14- Verify that the enclosure is not loose and that all connections are secure.
- 15- Make sure the conduit fittings are aligned properly and tightened securely.



- 16- Connect the Budderfly Power Meter in series with the Circuit Breaker of the branch circuit according to the below steps:

- a. Connect the LINE wire (black) of the Power Meter to the LINE wire that is leaving the circuit breaker.
- b. Connect the LOAD wire (red) of the Power Meter to the LINE wire that is feeding the branch circuit.
- c. Connect the NEUTRAL (white) of the Power Meter to the NEUTRAL wire of the electrical panel.
- d. Ensure that all the wire connectors are firmly attached and that there is no exposed copper inside the box.



- 17- Install the cover of the power meter box
- 18- Restore the power to the electrical panel by setting the circuit breaker mentioned above and the “Main” circuit breaker to “ON”, and check for correct operation of the branch circuit (lights, outlets, etc.).

## **Communication:**

The Budderfly Power Meter uses the power line and radio frequency to communicate with the "Facility Controller".

This Meter can reply to the following commands:

- Join/Disjoin group "X": The Budderfly Power Meter will Join/Disjoin the group "X". Each Meter can be member of several groups at the same time.
- Direct RTC synchronization: The Budderfly Power Meter can receive a command to synchronize its "Real Time Clock"
- Get Actual Measurement: When the Budderfly Power Meter receives a "Get Measurement" command, it will send back to the facility controller a string of data that contains:
  - The Current in Ampere "A".
  - The Power in Watt "W".
  - Timestamp.
- Get Stored Measurement: The Budderfly Power Meter will send back to the Facility Controller the stored electrical measurements.
- Direct Reset Commands: The Budderfly Power Meter can receive 3 types of reset commands:
  - Hard Reset: This command will restart the device without affecting any stored parameter.
  - Data Reset: This command will erase all the measurement and RTC data stored in the non-volatile memory.
  - Group Reset: This command will remove the device from all joined groups.
- Group Reset Commands: The above reset commands can be directed to a group of devices instead of just one device.

## **Warranty:**

Budderfly LLC warrants to the original consumer purchaser and not for the benefit of anyone else that this product at the time of its sale by Budderfly is free of defects in material and workmanship under normal and proper use for a period of three (3) years from date of delivery to you. Budderfly's only obligation is to correct such defects by repair or replacement, at its option, if within such three year period the product is returned prepaid via Budderfly's Returned Materials Authorization (RMA) process to **Budderfly LLC, Att: Quality Assurance Department, 4 Corporate Drive, Suite 387, Shelton, CT 06484**. In no case is product to be returned without first obtaining an RMA.

This warranty excludes and there is disclaimed liability for labor for removal of this product or reinstallation. This warranty is void if this product is installed improperly or in an improper environment, overloaded, misused, opened, abused, or altered in any manner, or is not used under normal operating conditions or not in accordance with any labels or instructions. **There are no other or implied warranties of any kind, including merchantability and fitness for a particular purpose**, but if any implied warranty is required by the applicable jurisdiction, the duration of any such implied warranty is required by the applicable jurisdiction, the duration of any such implied warranty, including merchantability and fitness for a particular purpose, is limited to three years. **Budderfly is not liable for incidental, indirect, special, or consequential damages, including without limitation, damage to, or loss of use of, any equipment, lost sales or profits or delay or failure to perform this warranty obligation. Budderfly's liability on any claim for damages arising out of in connection with the manufacture, sales, installation delivery, or use of the product shall never exceed the purchase price of the product.** The remedies provided herein are the exclusive remedies under this warranty, whether based on contract, tort or otherwise.

### **Specifications:**

**Input** 100-277VAC, 60Hz, 80mA (CAT II)

**Load** 100 - 277 VAC, 60Hz, max. 16 A

### **Measurement Category II**

**100 – 277 VAC Line to Neutral Single Phase**

**Operating Temperature** 0°C to +40°C

**FOR INDOOR USE ONLY**

### **Maximum Environmental Ratings**

**Relative humidity:** 80% up to 31 °C, decreasing linearly to 50% relative humidity at 40 °C

**Altitude:** 2000m

**Operating Temperature:** 0°C to +40°C

**Pollution Degree 3**

Certification: UL certification is in progress, FCC certification is in progress

Specifications subject to change without notice due to continuing product improvement.

 **WARNING**

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

**FCC Compliance Statement**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference and
- 2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

FCC ID: QCVM0021501

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