

## Heat Pump Monitoring – Passiv to OEM

If you want to take over the detailed monitoring of your heat pump after the BEIS/OVO heat pump trial then these are the steps to take if you wish to move to Open Energy Monitor. You can see details of my heat pump [here](#). This is the same data the trial would have access too, but didn't share

The design is based on [Level 3 Heat Pump Monitoring Bundle \(emonHP\) - Shop | OpenEnergyMonitor](#), and will cost you £346.19 for the new emon HP data logger and modem (or base-station).

### Kit Required:

Additional hardware wise you'll need the emonHP unit which includes modbus and MBUS readers, you'll want to select 'none' for the heat and electricity meter options: <https://shop.openenergymonitor.com/level-3-heat-pump-monitoring-bundle-emonhp/> and setup and account on <https://emoncms.org/>

### Work Required:

The following steps will require you to carry out some wiring tasks, potentially within the heat pump's electrical consumer unit, and the Sontex heat meter enclosure. If you are not comfortable with these activities it is recommended you consult with an electrician.

You'll need to disconnect the Passive Living box and connect the emonHP base-station in its place. You'll need to wire MBUS communication (two-wires) to the heat meter and Modbus communication (3-wires) to your electricity meter.

### Modbus connection to the electricity meter:

Remove the USB plug on the Passive hub, and insert into a USB port on the new emonHP base-station.

Confirm the MODBUS settings for the SDM630 meter. Do to this you will need to enter setup on the meter:

1. Press and hold the 'E' button
2. Enter password "1000" then press and hold the 'E' button (see [Fig1](#))
3. Let me know what the Address is, the default should be 1 (see [Fig2](#))
4. Scroll down and let me know what the baud rate is, the default should be 9.6k (see [Fig3](#))

The default used on the BEIS trail is address is set to 101, and the baud is 9.6k, even parity, 1 stop bit

### MBUS connection to the heat meter:

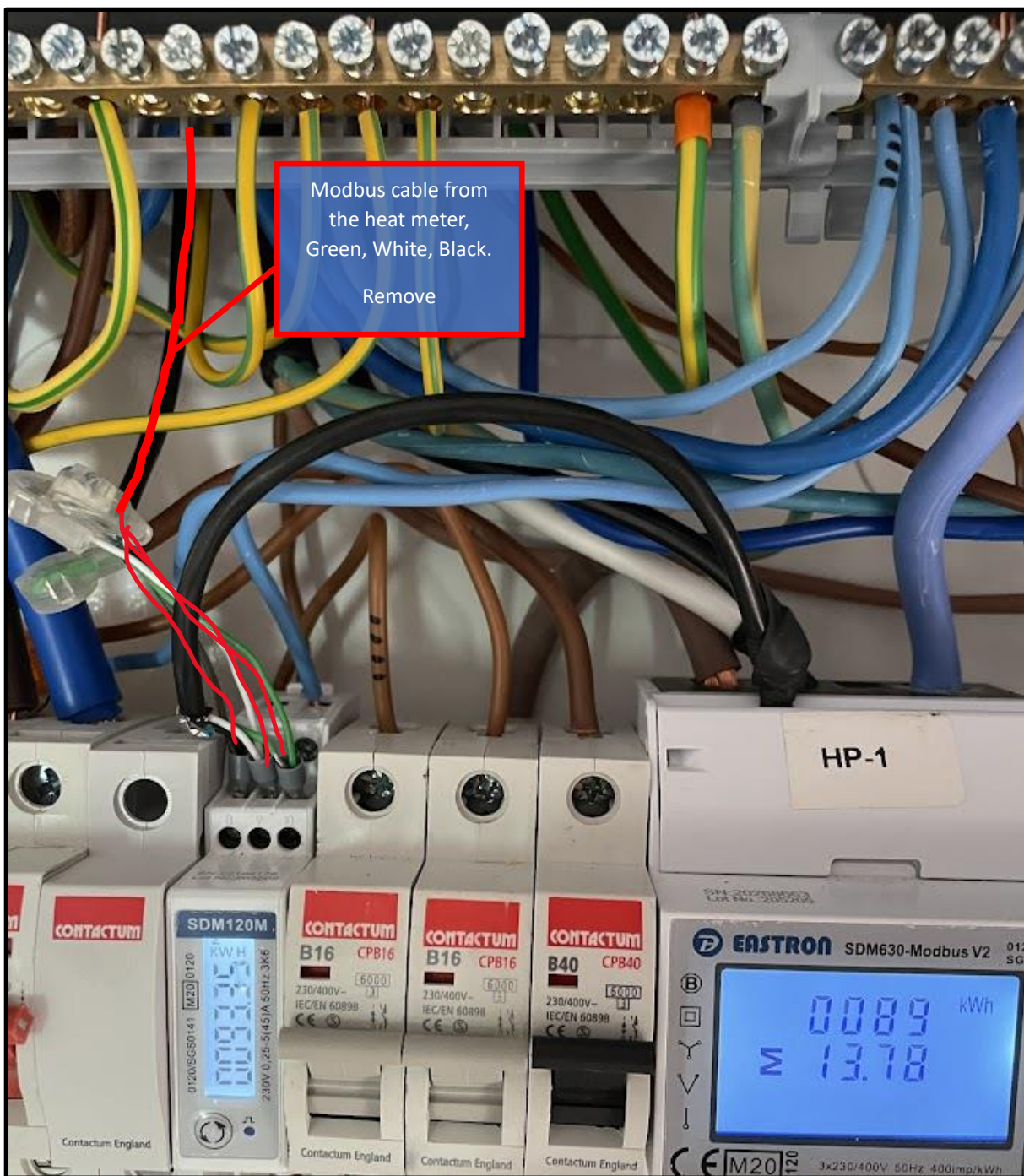
In the existing setup the heat meter is wired via modbus, to the immersion electricity meter (the small meter in the heat pump's consumer unit), this connection must be removed and switched over the supplied M-Bus module.

### Consumer Unit end of the cable

**WARNING:** Before removing the cover on the consumer unit switch off all power to the heat pump components using the main switch on the board (Typically the red lever). This will remove mains power from the other components within board, but if you are in any doubt contact a competent electrical person.

Once you are confident the panel is safe to remove, undo and remove the modbus connections from the thin black wire (Green, White and Black) and pull the cable out of the consumer unit.

Wire to remove inside consumer unit:



The wire used to send data from the heat meter on my system is the small black cable entering the base of the heat meter unit, check the cable type at both ends to ensure it is the same type, with different contractors working on the scheme it could vary.

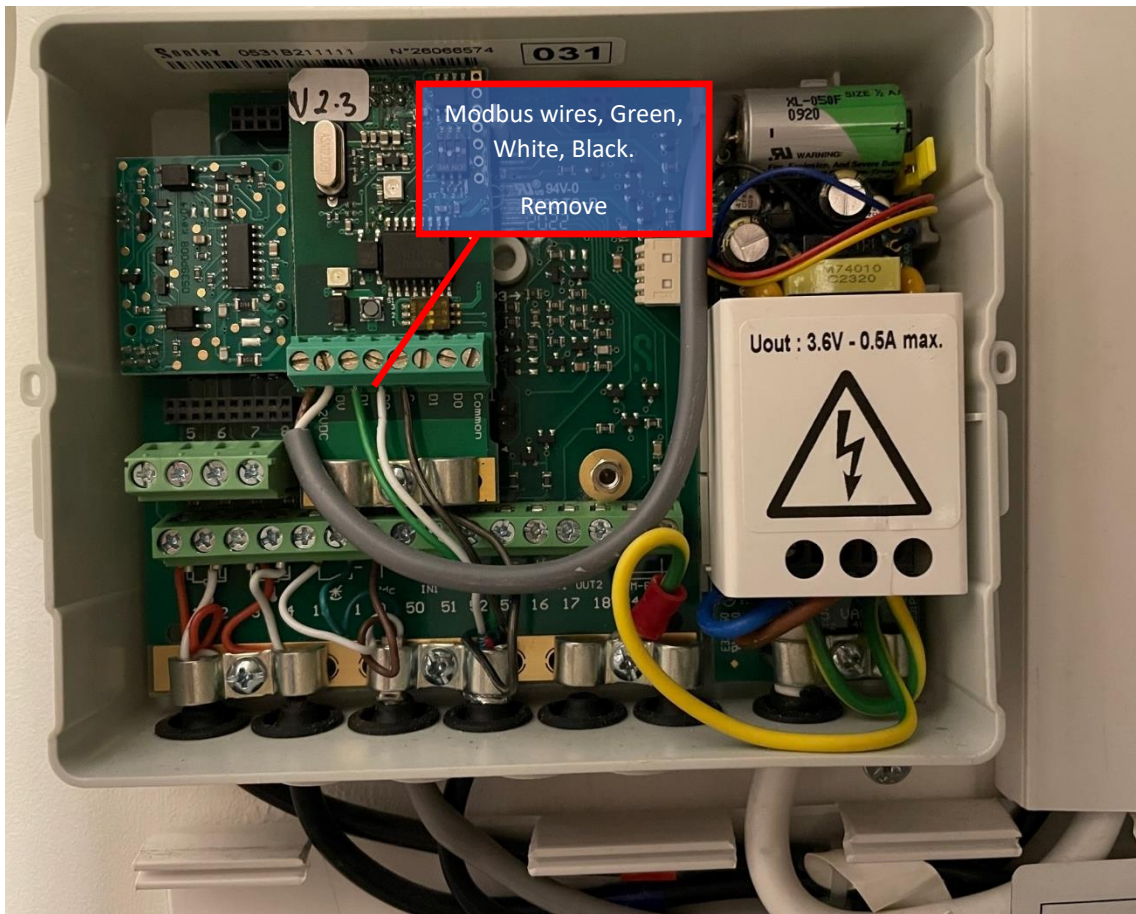
#### Heat Meter end of the cable

**WARNING:** Before removing the cover on the heat meter switch off all power to the heat pump components. There is mains power inside the meter.

Remove the lid on the heat meter by pressing the tags on the side of the lids and pulling the lid off.

You'll want to remove the modbus connections with the heat meter (see image below) and connect two wires into the MBUS connections on the bottom right, terminals 24 and 25. These then connect these to the emonHP MBUS reader at the other end of the cable. MBUS is polarity agnostic so it doesn't matter which way around the two wires are connected. I have used the white and green cores for these connections.

Heat Meter before:



Heat Meter after:



Once all the changes have been made, connect up:

1. Cable from heat meter to M-BUS module
2. M-BUS module to emonHP base-station
3. Modbus connection (clear USB module) from electricity meter to emonHP base-station
4. Ethernet cable to internet router (if this was previously connected via a TP-Link plug continue using this solution)
5. Connect power to the emonHP base-station
6. Contact Open Energy monitor to configure and activate the emonHP base-station

**Final connections:**

