IMPORTANT

Whilst NetThings takes all reasonably practical steps to design and manufacture its products to comply with the requirements of the Health and Safety at Work Act 1974, all products must be properly used and purchasers are reminded that their obligations under the Act are to ensure that the installation and operation of such products at a place of work should be safe and without risk to them.

Do not place the product where it may be affected by dust, moisture, adverse temperature, radio interference or be subject to physical damage.

Do not insert any objects into the Energy Manager or Display.

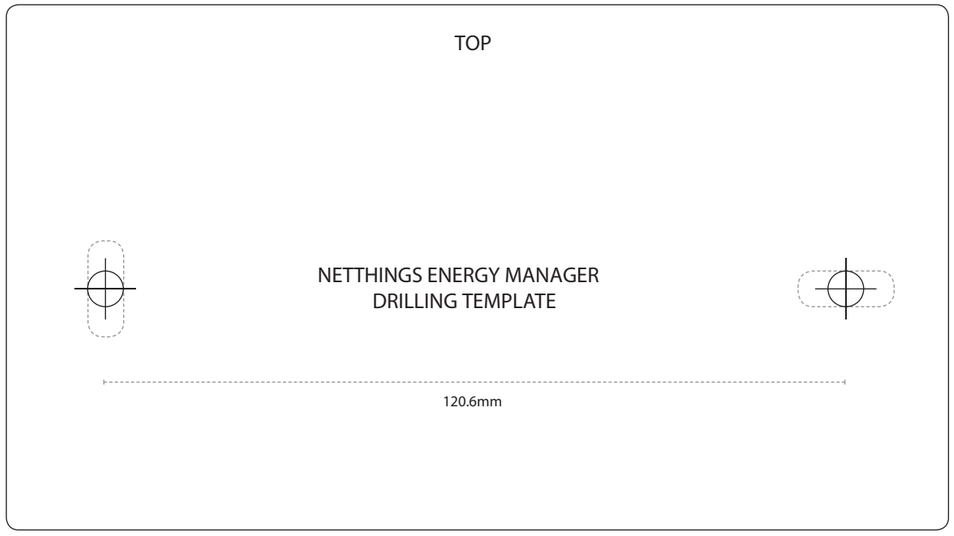
This information is for reference only. Accuracy may vary depending on the type of connection and wiring system used.

CARE AND MAINTENANCE:

The NetThings Energy Manager or Display require no regular maintenance. Do not spray with water or any cleaning products.

PRODU CT SPECIFI CATION

Name of manufacturer	NetThings Limited
Unique reference number (model number)	NT01:00:00
Purpose of product (Energy Manager)	Monitoring building energy consumption
Dimensions	165mm x 95mm x 52mm
Operating temperature range	0°C to 40°C
Enclosure protection	IP 20
Level of protection from electric shock	Double insulation
Case material	V0 rated fire retardant
Nature and rating of voltage supply	220-240V AC
Rated current	3A
Max power in watts	5W
Power Supply Frequency Hz	50-60 Hz
WiFi IEE 802.11 Frequency Band	IEEE 802.11 BG 2.4 GH z



DECLARATION OF CONFORMITY

This product conforms to:
EN 60730 - ETSI EN 301 489-1 V1.4.1 (2002-08)
IEC 61643, 61326, 61010, 60529

NetThings Limited, 14 New Mart Road, Edinburgh EH14 1R

NetThings policy is one of continuous improvement and development.
The right to change specification and appearance without prior notice is reserved.
Document Number 200SM035w

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ENERGY MANAGER SPECIFICATIONS & INSTALLATION GUIDE

165mm x 95mm x 52mm

DESCRIPTION OF THE SYSTEM

Energy Manager for the home is a sophisticated but low-cost integrated energy, heat and water monitoring package that saves money by reducing consumption. It is easy to install in new homes or by retrofitting into existing properties.

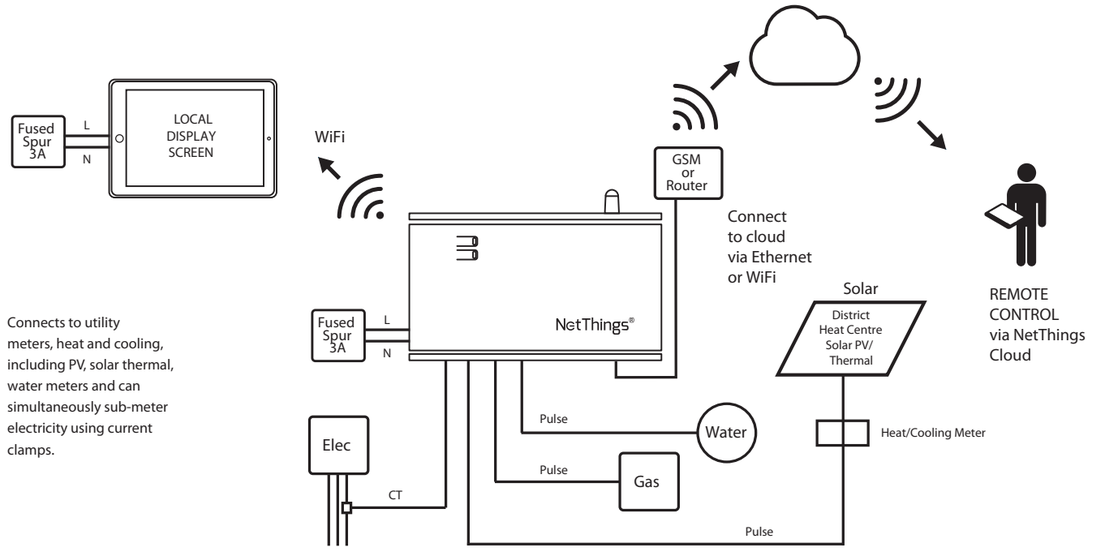
The heart of the system is the NetThings Energy Monitor, which is installed close to the home consumer unit with a mains power supply. The monitor is wired to up to three sensors for in-coming mains electricity, gas and water supplies or to monitor the electrical output from solar PV systems, or the heat output from solar thermal systems or district heating schemes. CT (current transducer) clips are used for the electricity supplies, pulse connectors for the gas, water meters and heat meters, which are all wired in directly to NetThings.

Ongoing energy consumption and costs are stored continually in the NetThings meter on a microSD card. Built-in WiFi and an ethernet port allows Energy Manager to communicate with a local display in the home without requiring an existing internet connection. However, by using an existing on-site router or by connecting a low-cost wireless data modem then information can be shared over the internet via the NetThings cloud service. This allows data to be viewed on any mobile phone or any other remote device.

The optional NetThings supplied 5" display screen can be easily installed in a convenient place in the home, or you can use any existing displays provided they can receive WiFi or have an ethernet port within reach of the NetThings monitor. The display will mount to a double patress box or screw fixings on a wall - hole sizes shown on the drilling template.

The NetThings monitor and 5" local display screen qualify for 2 credits under the Code for Sustainable Homes.

THE CODE FOR SUSTAINABLE HOMES™



Connects to utility meters, heat and cooling, including PV, solar thermal, water meters and can simultaneously sub-meter electricity using current clamps.

IMPORTANT ALL WIRING SHOULD BE CARRIED OUT BY A COMPETENT INSTALLER OR ELECTRICIAN QUALIFIED TO WORK WITH MAINS ELECTRICITY AND BE IN ACCORDANCE WITH IEE & BUILDING REGULATIONS AND IN SOME CASES, NOTIFIABLE TO BUILDING CONTROL.

Do not carry out this installation if under the influence of alcohol or drugs

CHECKLIST BEFORE INSTALLATION

- ☑ Ensure that all components are undamaged before installation.
- ☑ You will need the following equipment before you begin the installation.
- ☑ 2 no. flush mounted un-switched fused spur connection units with moulded surface mounted boxes. One for the Monitor, one for the Local Display. Fused to 3 amps.
- ☑ Sufficient 2-core 1mm diameter cable to connect the NetThings Monitor and the Local Display to their fused spur boxes.
- ☑ Cable and junction boxes to connect the NetThings Monitor to any solar thermal or district heating heat meters and valves.
- ☑ NetThings Monitor consisting of: backplate and front cover, secured with fixing screws.
- ☑ 5" Local Display Screen with power supply and fixing bracket.
- ☑ Drilling template for Monitor backplate and also optional display screen (see last page of this guide for meter drilling template).
- ☑ CT16 TS16L sensor with cable Pulse blocks and cables RJ11 modular connector (telephone type)

OPTIONAL

GSM - consisting of: transmitter unit, transformer, power supply with 3-pin plug and screw-in arial.

Serial cable to connect NetThings Monitor to an existing internet router or GSM/GPRS transmitter.

SELECTING LOCATIONS TO INSTALL THE EQUIPMENT

The NetThings Monitor (and any optional GSM/GPRS) should be mounted as close as possible to the incoming electricity supply and within easy reach of the utilities to be connected: electricity meter, gas meter, water meter, heat (or cooling) meter and solar PV / thermal generation meters. A total of 6 connections can be made in any combination of up to 3 CT or 3 Pulse connectors.

Ensure there is a distance of at least 1 metre between the NetThings Meter and the gas meter.

The Local Display should be mounted in the kitchen or hall where it can be easily read, ideally at a height of between 1200mm and 1400mm. The Screen should be mounted no more than 12m from the NetThings Meter. Do not place the screen in a location that is exposed to direct sunlight or where it may be affected by moisture.

INSTALLING THE NETTHINGS CONTROLLER

1 Install a fused spur adjacent to the location you have selected for mounting the Monitor Fuse the spur to 3 amps. If the cable between the spur and the Monitor is to be hidden behind the wall then break out the plastic inserts in the base of the PPU. If the cable is to be mounted flush on the wall then leave the inserts in place. The backplate cutout has cable tie mounting points to safely secure incoming cables.

2 Drill 2 fixing holes using the Monitor drilling template. Alternatively, a pattress box can be mounted in or on the wall and the Monitor fixed directly to it.

3 Fix and level the Monitor backplate through the slotted screw holes, flush mounted on the wall, or box.

4 Connect the fused spur to the Monitor using twin core live and neutral 1.0 mm cable. Solid or flex can be used - no earth required.

5 Insert the live cable into the first L-block push connector, and insert the neutral cable into first N-block push connector.

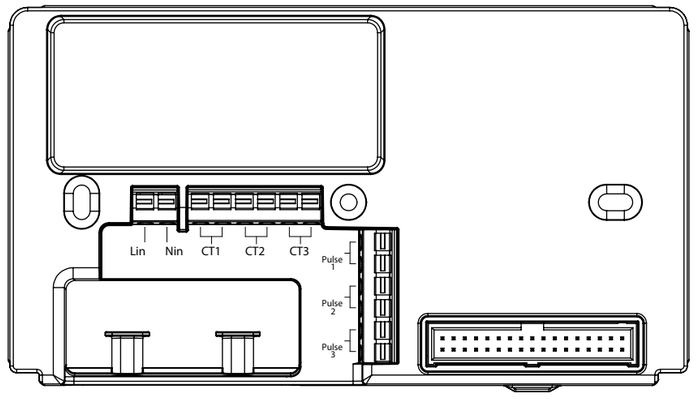
6 Connect the first required CT sensor cable by inserting into CT push connectors 1 and 2 (CT 1) and repeat for up to two further CT cables, as required, using CT 2 and CT 3.

7 Connect the first required pulse sensor cable into push connectors 1 and 2 (PULSE 1) and repeat for up to two further pulse cables, as required, using PULSE 2 and PULSE 3.

8 Place front cover on the Monitor and secure with the 2 fixing screws. Be careful to place the top of the cover on first and then push in the bottom section so that the cover clicks into place.

9 Screw the aerial into the top of the Monitor.

10 Insert the microSD card into the slot underneath the Monitor.



NetThings backplate. This connects to the double pattress box via screws and the front cover, as shown at the top right of page 1 simply clips over the top and is fixed by twin locking screws.

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P & J WALES METERS LTD
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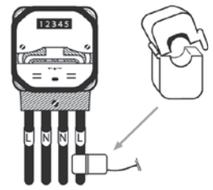
CONNECTING THE SENSORS TO THE UTILITY METERS

ELECTRICITY INSTALL



A. If the electricity meter has a pulsed outputyou can connect to one of the PULSE connectors. Permission must be sought from the Meter Operator (MOP).

If you are having difficulty gaining access to the main incoming supply meter then a pulse-enabled sub meter can be installed.

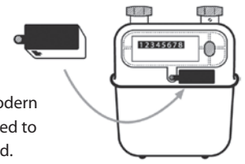
B. If the electricity meter does not have a pulsed output then identify the Live tail leaving the meter. Using the supplied TS16L cable connect the CT clip at any point along the tail between the incoming meter and the distribution board.

If smaller clamps are needed for individual circuits or larger ones for 3-phase supplies then these can be ordered separately.

Do not touch any metallic connections during the installation of the mini CT sensors.

Do not force or bend the cables at any point during installation or use any packing between the clamp and the cable.

GAS INSTALL

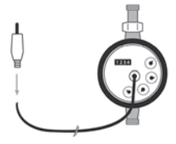


New homes - gas meters should be specified with pulse block fitted. If the existing meter does not have suitable modern pulse connection then the meter may need to be replaced before the install can proceed.

Permission to connect to the gas meter should be obtained from the Meter Asset Manager (MAM). The MAM may wish to see an isolation barrier installed, in which case the gas sensor cable will need to be connected to pulse terminals within the isolation barrier.

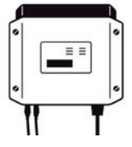
Run the sensor cable from the NetThings Monitor and insert the pulse block into the meter.

WATER INSTALL



New homes - water meters should be specified with pulsed output and attached cable for connection into the NetThings Monitor.

HEAT INSTALL



New homes - heat meters should be specified with pulsed output and attached cable for connection into the NetThings Monitor. mBus meters will be available soon.

The connection of a heat meter, such as a Sontex shown here, can be used for District Heating/Cooling, Solar thermal or Air & ground source heat pumps. The two heat probes and flow meter are wired into the heat meter which allows it to monitor the system.

The pulsed output is connected to the NetThings Monitor terminals shown on the backplate image to the left, which allows the display to show the usage of the heating system. The heat meter needs a separate 13A power supply to operate, so this will need to be allowed for at installation stage. Wired mBus heat meters take their power from the mBus cable.

INSTALLING THE LOCAL DISPLAY SCREEN

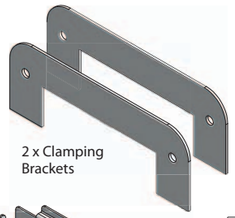
1 Install a fixed spur adjacent to the location chosen for the Local Display Screen.

2 Flush mount the local display fixing bracket on the wall using the drilling template at a height of between 1200mm and 1400mm.

3 Insert the Display into the bracket and secure with the tamper-proof fixing screws.

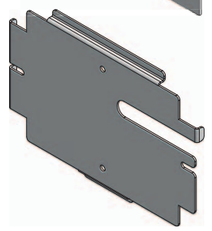
4 Connect the display power cable to the fused spur by cutting off the moulded 3-pin plug and baring the cable end. No earth required.

5 Plug the 2-pin end of the display cable into the side of the screen.

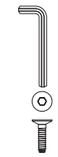


2 x Clamping Brackets

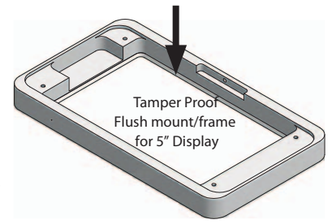
Wall Mountable 5" Display for Energy Manager



Wall Mounting Bracket



Tamper proof lock screw



172mm x 98mm x 14mm

CONNECTION AND SETUP

1 Apply power to the NetThings Monitor

2 Apply power to the Local Display Screen

3 When the screen is activated, select Setup Screen and then NetThings

4 Enter the serial number printed on the Monitor packaging (MAC address).

5 The NetThings Monitor will now automatically connect to your Local Display Screen and the Home page will appear.

6 The NetThings Monitor will automatically detect which CT and Pulse connections have been made.

7 If access to a remote device is to be used then press Initiate Connection to open the link to the NetThings Cloud.

8 If an error message appears then please contact the NetThings Technical Team.

THE INSTALLATION IS NOW COMPLETE

Before handing over the installation to the user, always ensure that the system responds correctly to all controls. Explain how to operate the controls and hand over the user operating instructions to the user.