

ECO Data Store

Installation and User Guide



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IMPORTANT INFORMATION

- **All electrical work should be carried out by a competent person and wiring must be in accordance with the national electrical installation regulations.**
- **Ensure that installation work is carried out correctly using information contained in this manual.**
- **Make all connections securely so that any outside forces acting on the cables are not applied to the terminals.**
- **Never modify or repair any supplied equipment.**
Any attempt to do so will invalidate the warranty.
- **To dispose of this product, please consult your dealer.**

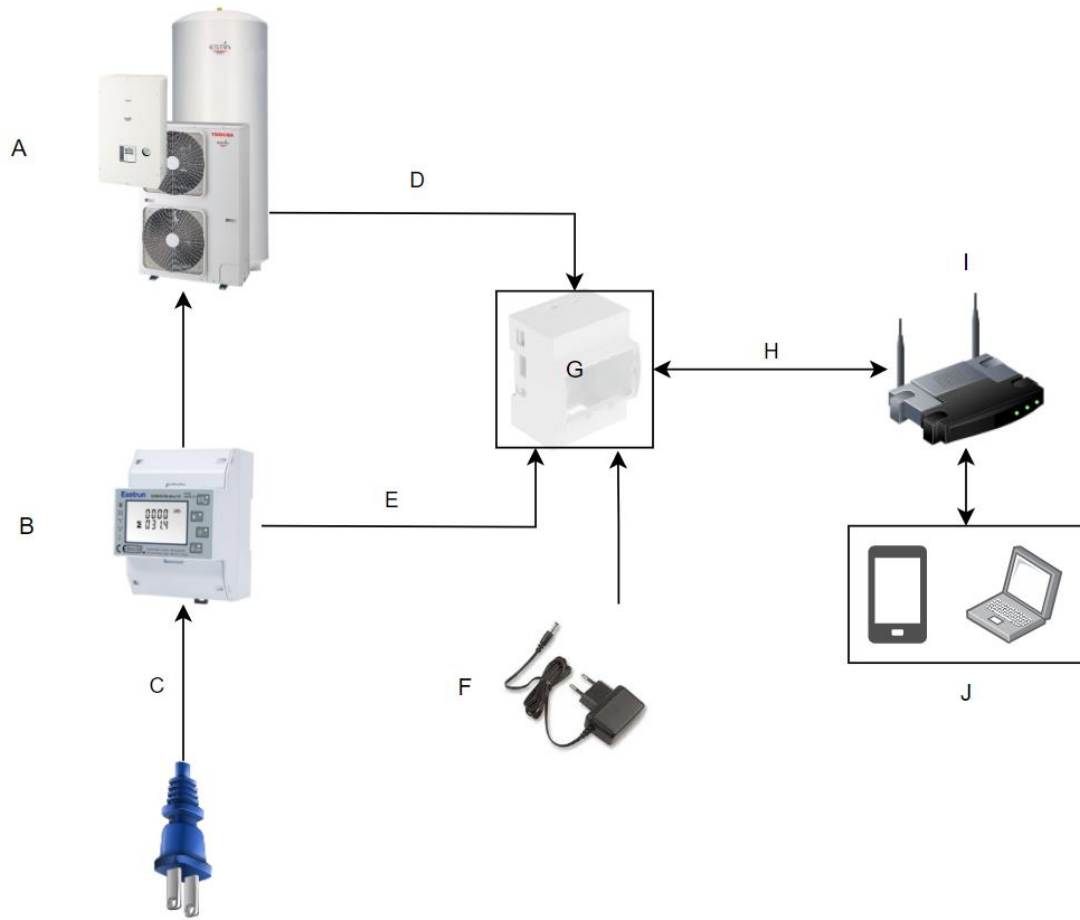
Box Contents

- ECO Data Store unit (called 'logger' from now on)
- CR2032 battery (to be fitted in the logger before installation)
- 24V DC power supply
- Single/Three Phase Electric Energy Meter (EEM)

Technical Specification

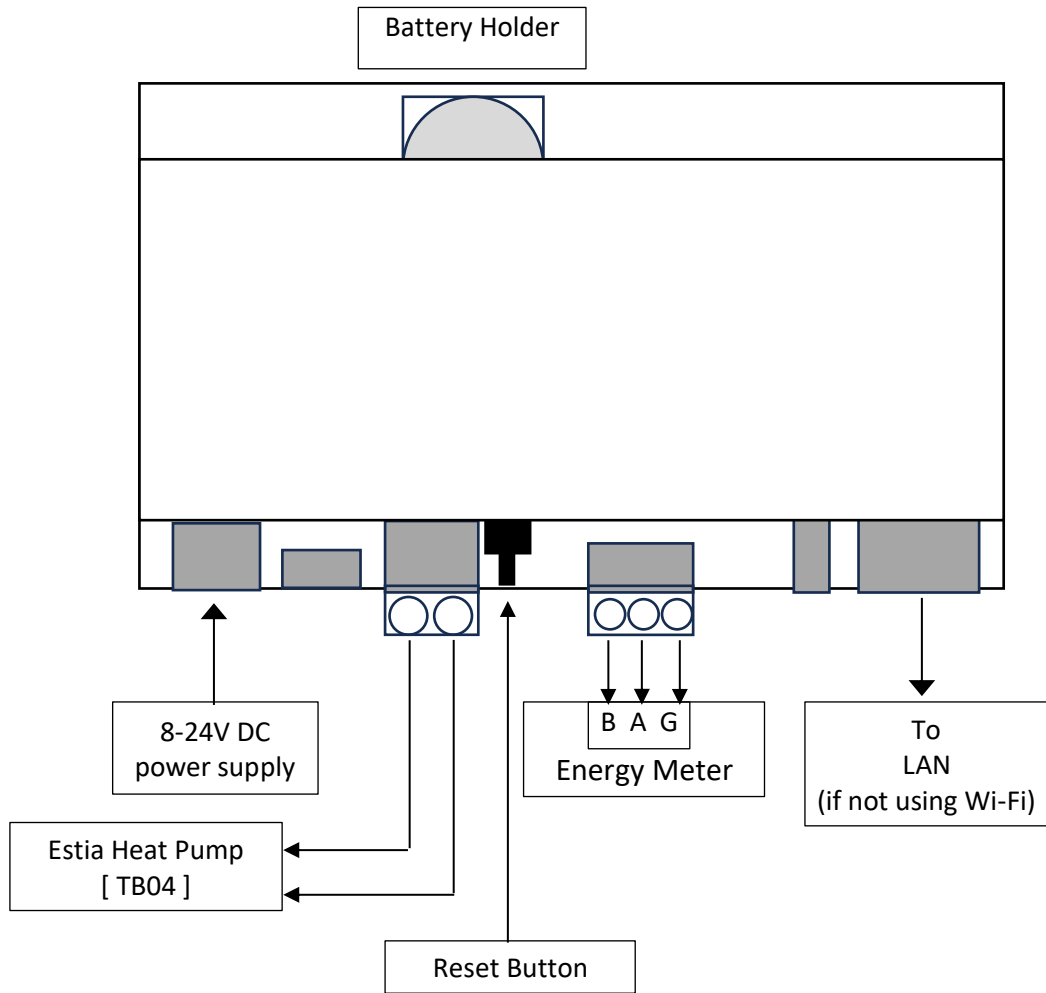
Enclosure		PC-ABS, din-rail or surface mount
Dimensions	Width	107mm
	Depth	95mm (125mm inc. all connectors)
	Height	62mm
Serial Comms	Estia I/F	Toshiba A/B comms protocol
	Energy Meter I/F	RS485
Ethernet		10/100/1000Base-T
Wi-Fi		2.4GHz,5.0Ghz IEEE 802.11 b/g/n/ac
Power supply		8-24v DC 15w
Power required	Boot up	10w
	Normal running	2w
Energy Meter		Eastron SDM630 Modbus v2

Wiring Overview

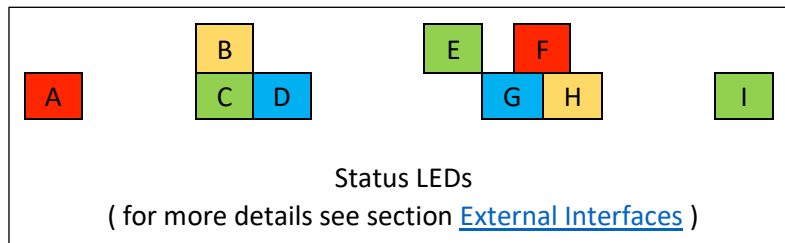


A	Estia Heat Pump
B	Electric Energy Meter
C	Single/Three Phase Supply
D	AB Terminals
E	RS485 Modbus Terminals
F	8V – 24V Regulated DC supply (barrel jack)
G	Data Logger
H	Wi-Fi/Wired Ethernet
I	Local network Access Point
J	User Interface

Data Logger Wiring



Quick Start Guide



- 1) Install the supplied CR2032 battery into the logger.
To open the cover (top-left), insert a small, bladed screwdriver into the slot and gently twist.



- 2) Connect the power cable supplying the Estia boiler to the input terminals on the energy meter and connect the output terminals from the energy meter to the Estia power terminals. The incoming supply to the boiler should now pass through the meter.
(Refer to the Estia manual and EEM manual for details)

- 3) Wire the logger into the system as shown above, **but do not connect the power supply.**

Important Notes:

- a) if Wi-Fi is being used, do not mount the logger in a metal enclosure.
- b) for best performance, mount the logger in a well-ventilated area, to allow heat to dissipate.
- c) the logger requires internet access to be able to set the correct date and time.

- 4) Configure the energy meter (refer to the EEM manual for details)

- a) select the correct phase configuration,
- b) configure the modbus interface parameters to be
address 001, 9600 baud, 8 data bits, no parity, 1 stop bit

- 5) Connect power to the logger and wait approximately 40 seconds, until LED "G" starts to flash slowly (see above).

- 6) Connect the logger to a local network using one of the methods below:

Wired ethernet connection (quickest initial setup route)

Provided there is a DHCP server on the local network (a standard broadband router should have this), the logger will be automatically assigned an IP address. If this is not the case, then use the Wi-Fi method below.

The loggers' web portal is available at address <http://datenspeicher.local>

Wi-Fi (via the loggers' built in wi-fi network – 'hotspot mode')

To enable 'hotspot mode', remove the bottom-left cover and press and hold the 'reset' button for at least 5 seconds, until LED "F" flashes twice a second (see above).

Connect to the hotspot network using a computer or mobile device.

The hotspot SSID looks like 'Datenspeicher-XXXXXX' (where XXXXXX represents a mixture of letters and numbers).

The hotspot security key is 'abcde12345'.

The loggers' web portal is available at address <http://192.168.125.1>

'Hotspot Mode' is designed for initial setup and as a temporary recovery mode, should the local Wi-Fi parameters change or the login password forgotten.

This mode should not be enabled permanently, therefore the loggers' Wi-Fi will need to be configured so it can connect to the local network (see below).

7) Open a web browser of your choice and enter the appropriate address (see above).

8) The loggers' web portal should be displayed with a login page. The default password is 'admin'.
Note: if connecting via 'hotspot mode', the login page is bypassed.

9) The web portal main page should now be displayed.

Note:

Until some valid data has been stored by the logger, the historical data panels may show invalid views. Please allow 10-20 minutes for the historical data panels to show the correct data.

10) It is always good practice, once the logger is started for the first time, to check for any firmware updates.

Web Portal

The logger has an internal web server and databases which can be accessed via its 'device name' with '.local' appended, the default is <http://datenspeicher.local>, (or <http://192.168.125.1> if connecting using 'hotspot mode'). Note that for Android devices, it must be running at least Android 12 or above for the device name resolution to work, otherwise, use the IP address. A modern web browser is recommended. The default login password is "admin". Changing this is highly recommended. The password is not needed in Hotspot mode.

Features:

- Real-time view (updated every 10 seconds for EEM and heat pump respectively)
- Historical comparisons (up to 10 years)
- Data download (in CSV format)
- Online software update
- Metrics: Power, Energy, Heat Efficiency, Cost, Outdoor Temperature

Dashboard Page



This page is split into 2 sections.

The top section displays the current operating data, updated every 10 seconds.

Data displayed:

Total power, power used for each boiler mode (heating, cooling & hot water), outside temperature, calculated thermal power output and heat efficiency.

The bottom section displays historical energy usage and heat efficiency data for the selected time period, updated approximately every 10 minutes. The time period is selectable via a menu accessed by pressing the \ddots or \dots symbol. Please allow a few seconds for the panels to update after selecting a time period.

Compare Page

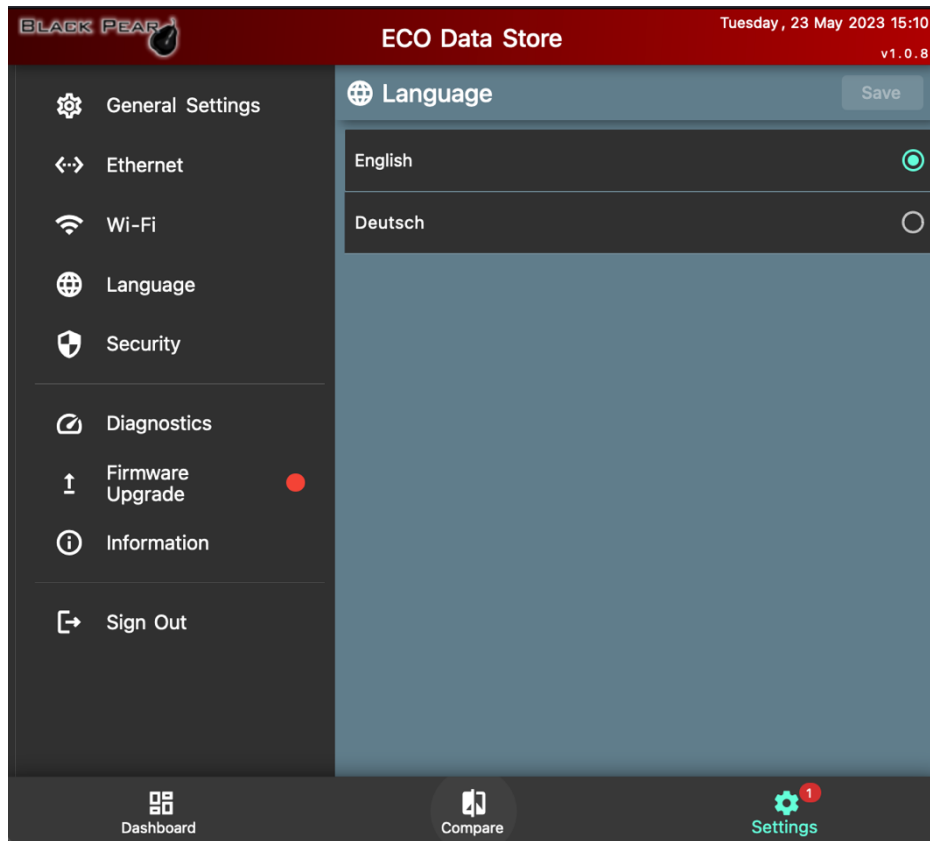


This page allows 2 sets of data to be compared over the same time period. It defaults to showing data for yesterday and today. Daily, weekly, monthly and yearly displays can be selected.

Selecting a date (anywhere within the required time period), or changing the time period will cause the panels to update. Please allow a few seconds for this to happen.

Pressing the 'Download Data' button will download all hourly data between the 2 dates selected. If the dates are the same then all hourly data for that date will be downloaded. The data will be saved in CSV format and be named with the device name and selected date or date range.

Settings Page



This page contains all the configuration options for the logger, together with diagnostics information and system upgrade options.

Menu Option	Items available
General Settings	Device Name Energy cost per kWh (stored locally within the web browser)
Ethernet	Settings for wired network connection
Wi-Fi	Settings for wireless network connection
Language	Language setting (stored locally within the web browser)
Security	Change login password
Diagnostics	Displays various system data
Firmware Upgrade	Online method (if internet access is available) Offline method
Information	Version information
Sign Out	Sign out of web portal

Network Connections

The properties of each connection are as follows:

<p>Wi-Fi: Hotspot Mode Static address only: http://192.168.125.1</p>	<ul style="list-style-type: none"> • The SSID and addresses are fixed and cannot be changed. • Meant to be use during initial installation or as a recovery endpoint (e.g. lost password, incorrect IP addresses, etc.) • Should be active only temporarily. Making it permanently active will expose the logger and make it vulnerable to attacks as there is no authentication/authorisation check.
<p>Wi-Fi: Station Mode DHCP/Static address http://datenspeicher.local</p>	<ul style="list-style-type: none"> • The SSID/password/addresses are configurable via the Hotspot. • Once configured, the Hotspot will be deactivated, and the Station will become active. • The app will require user authentication.
<p>Wired: Ethernet DHCP/Static address http://datenspeicher.local</p>	<ul style="list-style-type: none"> • The password/addresses are configurable via the Hotspot. • Once configured, the Hotspot will be deactivated. • The app will require user authentication.

Other network settings can be accessed via the web portal.

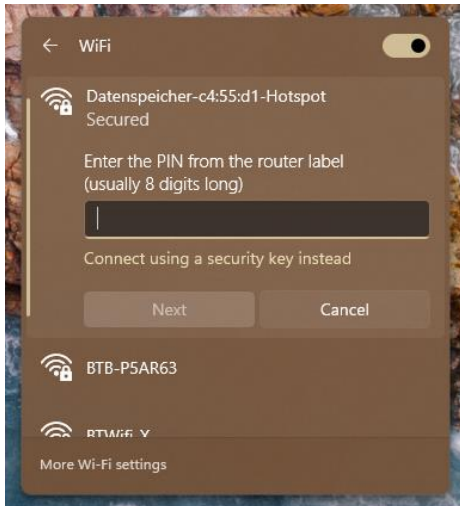
Notes:

- Wi-Fi can only operate in either hotspot or station mode, not at the same time.
- Once properly connected to a local network, the logger can be accessed via its device name appended with '.local' (default: <http://datenspeicher.local>).

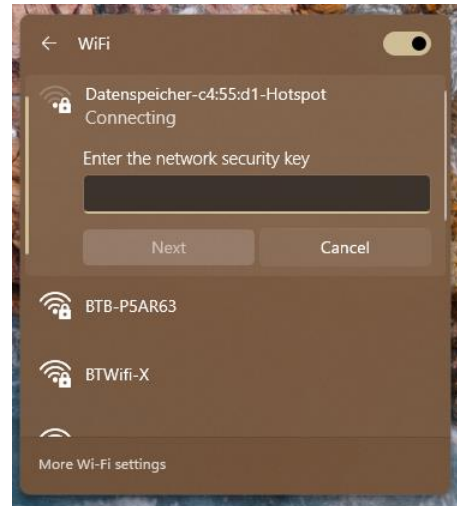
Wi-Fi Hotspot Mode

To enter hotspot mode, press button “D” for five seconds until LED “F” flashes twice a second (refer to Section [External Interfaces](#)). Repeat this step to disable the Hotspot.

Once connected, the logger can be accessed via 192.168.125.1. On Windows-based machine, make sure not to use “PIN”, use “network security key” instead. The default key is “abcde12345”.



Do not use “PIN”



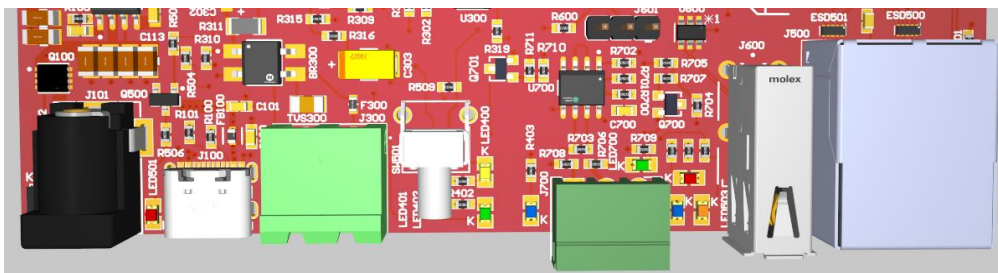
Use “network security key”

Note: The login password for the web portal will be reset to “admin” each time the Hotspot is activated. The hotspot is only intended to be used during the initial installation process or as a recovery method. Do not use it as the main connection to the logger as all authentication checks are bypassed.

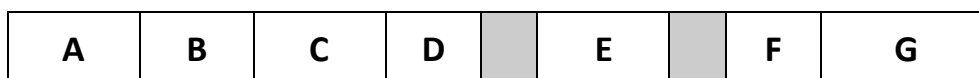
When hotspot mode is active, the loggers’ internal firewall will be disabled.

External Interfaces

The logger has six terminals, nine LEDs, and a single button at the edge of the unit:



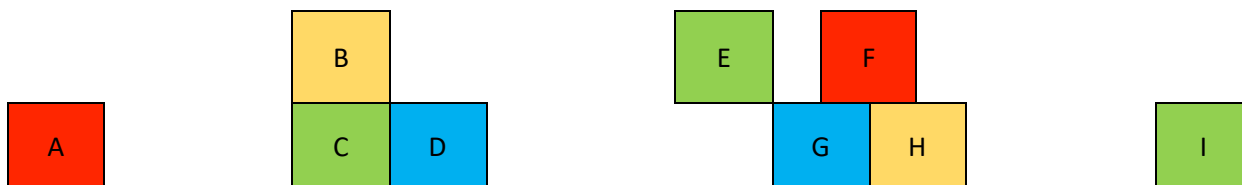
Terminals and Button



A	Power input 8-24v DC Barrel Jack	E	RS485 Modbus-Terminals, for the electrical energy meter, polarity [- + G]
B	USB-C 5V Input (do not use)	F	USB-A (reserved for future use)
C	A/B Terminals, for heat pump communication	G	RJ45 ethernet
D	'Reset' button		

LEDs

There are nine LEDs near the bottom edge of the logger:



CPU Module LEDs:

A	CPU power ready, stays on when power is supplied
F	Wi-Fi connection status <ul style="list-style-type: none"> • Steady on: Wi-Fi is connected to an access point • Steady off: Wi-Fi is inactive • Fast flash (250ms): Wi-Fi is in Hotspot mode • Slow flash (1000ms): Wi-Fi is connecting or failed to connect to an access point (check SSID, password, etc.)
G	<ul style="list-style-type: none"> • Slow flash (1s): Web server heartbeat • Fast flash(50ms): upgrade is ongoing • Steady off or on: web server failed
H	Linux kernel heartbeat (for diagnostic purposes)
I	Linux kernel eMMC activity (for diagnostic purposes)

Modbus electric energy meter LED:

E	Blinks on Modbus reply
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Heat pump communication bridge LEDs (internal data transfer indicators):

Normal operating mode

B	Database storage activity (refreshes every 10 seconds), indicates data is stored in database
C	Heat pump communication activity (AB-terminals)
D	Heartbeat (Initialisation completed)

Bootloader mode

B and C	Toggle alternately every 500ms
D	Toggles every 500ms

Supercapacitor controller mode

D	Fast flash: discharging supercapacitor, i.e. power loss detected, shutdown is in progress Slow flash: charging supercapacitor Steady on: supercapacitor ready
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Upgrading in progress

All B, C, and D	Fast flash: transitioning to bootloader mode
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Internal Firewall

The logger will block incoming network traffic (wired or wireless) on all ports except 80 and 443.

Please Note: Enabling 'hotspot mode' will temporarily disable the firewall.

Password Reset

The web portal is password protected. The only way to reset it by activating the [Hotspot](#).

Graceful Shutdown

The logger has an internal supercapacitor to allow for a more graceful shutdown. This is to protect it from data storage corruption during an abrupt power loss. When the logger is in shutdown-state, the supercapacitor controller will wake it up again once power is restored. Unplug the logger unit from power supply for at least ninety seconds to recover from a failed wake up state (e.g. software upgrade failure).

Unencrypted Communications

Make sure the local network router firewall is configured appropriately, so that there are no unnecessary incoming TCP/UDP ports open to unsolicited traffic from the internet.

It is possible to connect to the logger via HTTPS if desired (<https://<devicename>.local>). Go to <http://<devicename>.local/security.html> to manage TLS/SSL/HTTPS certificates.

Replace <devicename> with the actual name configured in the logger.

The use of these certificates is beyond the scope of this manual.

Troubleshooting

Problem	Potential Cause	Solution
Dashboard panel(s) showing gaps or dashes '---'	No data to display	Check wiring on electric energy meter and heat pump communication lines.
Logger unresponsive	Failed upgrade process	Full power cycle, i.e. unplug power, wait four minutes or until all LEDs are off, then reconnect power.
Cannot access logger	Disconnected from network	Check ethernet cable or Wi-Fi SSID and password.

Microtrol Ltd
16 Elgar Business Centre
Moseley Road
Hallow
Worcester
WR2 6NJ
UK

Website: www.microtrol.co.uk

Email: sales@microtrol.co.uk