

PermaNet+ Spider Basic User Manual for DataGate™/ Almos or PermaNet+ for PC installation

Version 1.0





Warning: This manual contains important safety and operating information. Please read, understand and follow the instructions in the manual.

TABLE OF CONTENTS	
WEEE AND THE BATTERY DIRECTIVE	2
INTRODUCTION	3
UNPACKING	3
INSTALLING THE SOFTWARE	4
INSTALLATION AND SITE HARDWARE DIAGNOSTICS TOOL (IDT)	5
READING THE LOGGER	6
CONFIGURING THE LOGGER AquaLogs & Sound Recording Data Communications Confirmation – GPRS Test Troubleshooting a GPRS test failure. Aerial installation considerations Installing your PermaNet+ Spider at site Taking a reading from the logger and hardware tests Final site commissioning checks Installation checklist	8 11 12 13 14 16 17 19 20
USING HWM DATAGATE™ Setting up DataGate™ Alarm Recipients Setting up channel settings	21 25 27
USING HWMONLINE™ Viewing your data Viewing information about your logger fleet	28 28 30
USING ALMOS Logging in Map View List View Missing Data: Level & Spread Missing Data: Last Received Signal level	31 32 34 36 36 37
USING PERMANET+ FOR PC Configuration for DataGate Creating your first DMA Additional settings Map view Sound recordings and Aqualogging Leak Localisation and Correlation Tool Technical Specifications	39 40 41 42 43 45 46

WEEE and the Battery Directive

Waste Electrical and Electronic Equipment.

HWM-Water Ltd is a registered producer of Electrical and Electronic Equipment in the United Kingdom (registration number WEE/AE0049TZ). Our products fall under category 9 (Monitoring and Control Instruments) of The Waste Electrical and Electronic Equipment (WEEE) Regulations. We take all environmental issues seriously and fully comply with the requirements for collection, recycling and reporting of waste products.

HWM-Water Ltd is responsible for WEEE from customers in the United Kingdom provided that:

The equipment was produced by HWM-Water Ltd (Palmer Environmental / Radcom Technologies / Radiotech / ASL Holdings Ltd) and supplied on or after 13th August 2005 The equipment was supplied before 13th August 2005 that has been directly replaced HWM-Water Ltd products manufactured since 13th August 2005.

HWM-Water products supplied after 13th August 2005 can be identified by the following symbol:



Under HWM-Water Ltd's Terms and Conditions of Sale, customers are responsible for the cost of returning WEEE to HWM-Water Ltd and we are responsible for the costs of recycling and reporting on that waste.

Instructions for returning WEEE:

Ensure that the WEEE meets one of the two conditions above.

The waste will need to be returned in accordance with the regulations for transporting data loggers with lithium batteries.

a. Pack loggers in strong, rigid outer packaging to protect them from damage.

b. Attach a Lithium Warning Label to the package.

c. The package must be accompanied by a document (e.g. consignment note) that indicates:

i. The package contains lithium metal cells;

ii. The package must be handled with care and that a flammability hazard exists if the package is damaged;

iii. Special procedures should be followed in the event the package is

damaged, to include inspection and repacking if necessary; and

iiii. A telephone number for additional information.

d. Refer to the ADR regulations on shipping dangerous goods by road.

Return the WEEE to HWM-Water Ltd using a licensed waste carrier.

In accordance with the regulations, customers outside the United Kingdom are responsible for WEEE.

The Battery Directive

As a distributor of batteries HWM-Water Ltd will accept old batteries back from customers for disposal, free of charge, in accordance with the Battery Directive.

PLEASE NOTE: All lithium batteries MUST be packaged and returned in accordance with the relevant regulations for transporting lithium batteries.

A licensed waste carrier must be used for transporting all waste. For more information on WEEE compliance or the Battery Directive please e-mail <u>CService@hwm-water.com</u> or phone +44 (0)1633 489 479

Introduction

Thank you for choosing an HWM data logger(s), we trust it will provide you with many years of service.

The individual configuration of your logger(s) may differ slightly from the detailed descriptions that follow, but any additional setup information that you need, should be available from our website.

Unpacking

As you unpack your new logger, please confirm that you have the following parts required to install the equipment. If there are any omissions, please contact our sales team to rectify or supply the missing parts.

- PermaNet+ data logger
- Leak Noise Sensor
- Software Installation Tool (IDT) from <u>www.hwm-water.com</u> or CD-ROM
- External GPRS Antenna
- USB Cable (optional)
- Connection cables (optional)
- External battery and appropriate cable (optional)
- Hanging bracket for logger, external battery and logger (optional)

Please dispose of your waste packaging responsibly.

Before proceeding to site for physical installation, please take the time to configure your logger in an office environment. Most settings can be configured before visiting site and this will save time at the point of install.

You will need to have:-

an

- A valid HWM-water.com account with username & password.
- A valid HWM DataGate[™] account with username & password. See DataGate[™] setup later in this manual.
- A valid Almos account with username & password.
- A PC with Windows 7/8 installed (IDT also supports Windows XP & Vista) 32bit and 64bit systems are supported.
 - Minimum Requirements are:-
 - 1GHz processor
 - 512Mb RAM
 - 2GB Disk Space
- A USB cable for connection to the logger.
- A description and reference number for the installation site.
- The SIM card installed into the logger and a good GPRS signal on site for the chosen network (Roaming SIMs are also available). This is already done for you if you ordered a data package with the logger. See the appendix if you have purchased a data pack & SIM separately.

Installing the software

- Insert the CD-ROM supplied into your CD drive. (If your PC does not have a CD drive, then either copy the files from the CD-ROM onto a memory stick, or download and run the installation file from the HWM website at <u>www.hwm-water.com</u>)
- 2. Ensure you have system administration rights for your computer; ask your IT department if you are unsure.
- 3. If it did not run automatically, locate and run the "Installer" program and click <<PermaNetPlus>> when you see the screen below



- 4. Follow the on screen installation instructions to complete the install of the PermaNet+ software.
- 5. When the installer menu re-appears, click the <<IDT>> button and follow the on screen instructions to install the Installation and Diagnostic Tool which is required for configuring loggers. If you do not need to configure loggers, then this step can be skipped.

Should the automatic installation fail, please check with your system administrator that you have sufficient rights to install software or try installing the drivers manually.

You may be required to update Microsoft .Net; the install file is included with the IDT setup files for your convenience.

Installation and site hardware Diagnostics Tool (IDT)

Once you have installed the IDT, connect the PermaNet+ Spider to the communications cable (A), the battery to the communications cable (B) and then the USB communications cable to your PC – Note there will be a short delay before the PC recognises the connection of the logger. This is normal, if your PC has sound enabled you will hear the "ping pong" sound as the logger connects.



The first time you connect your PermaNet+ Spider to a new USB port, Windows will configure the driver, wait until this process is completed before proceeding.

The following pages detail how to configure the logger; once these steps are completed you will need to connect the battery directly to the logger. To do this, remove the communications cable and connect the battery pack directly to the logger as shown below.



If you make the disconnection / reconnection within 30 seconds, then normally the real time clock in the logger will be preserved. However, if the time is lost, the logger will automatically make a data call and reset its clock via a time server.





5. Once all the settings have been loaded you will see this message, Click <<OK>> to start configuring your logger.





- 2. Now you can enter the configuration you require for each section
 - i. **Logger** enter the site ID that you wish for the logger, e.g. Postal/ZIP code up to 7 alpha-numeric characters and the telephone number associated with the SIM card. If you ordered a SIM with the logger, this will have been programmed already for you, otherwise enter the number from your service provider in international format (e.g. +44...)
 - ii. **Logging Parameters** Accept the default start date or enter your own. Default start date is in the past so the logger will begin recording immediately. You can delay this start date by selecting one from the calendar. Enter the time you wish to make a leak determination by reading the Leak Noise Sensor.
 - iii. APN If you have ordered a data pack from HWM you can leave this setting alone (as below) as your logger will have been preconfigured by HWM.

If you have ordered your

data service & SIM card,

APN
 O Use GPRS test to choose APN settings
 O Use the following settings.

then you will need to separately configure your service. HWM recommends that you allow the GPRS test utility to search for these settings automatically, however if you wish to enter them manually, click the button beside "Use the following settings"

ADM

You can now enter your data service provider's details into the appropriate	 O Use GPRS O Use the foll 	test to choose APN settings lowing settings.
boxes.	Presets	
	Address	mobile.e2.co.uk
Alternatively select your	User	mobileweb
network from the drop	Password	password
down list of presets		

iv. Time(s) Data sent – Here you specify the Call Out requirement for the logger. There are 2 modes available, SMS and UDP. SMS is a one way unacknowledged data transfer service using the common text messaging service. UDP is a true 2 way confirmed data transfer process via the internet over a GPRS connection. Both have advantages, however HWM recommends UDP wherever possible as this offers the most secure method of data transfer.

Switch on the Call out by selecting "1" in the Address selector, then choose UDP or SMS from the Type selector. Now choose your Call out mode, this can be either "Freq" for a call made at a regular frequency throughout the day (e.g. every 6hrs) or "Time" to specify up to 8 individual times during the day.
For the PermaNet+ system it is recommended to set 2 "Time" based calls at the earliest 1.5hours & 2hours after the Leak Noise Read time to allow for the data processing time.
You can also choose the days of the week that you wish the logger to send its data, this way you can save battery on days you don't need data.
 V. Call Addresses – These will usually have been entered at the factory and should not be adjusted, however if you have your own data server, then you can enter either the telephone number for your receiving modem, or the UDP address & port no for where the logger is to send its data.
 The fall back times specified here instruct the logger what to do in the event of the primary Call Out requirement not being met. This can be for 2 reasons:- a. If a connected external battery goes flat, the logger will default from the normal call out requirement to a 2 times per day routine. The times of these calls are specified by both Fall back 1 & 2. b. If a GPRS data call cannot be completed due to non-availability of a GPRS service, then the logger will try to send an SMS message at the Fall back 1 time.
3. Final steps – By default the logger is set to UTC (Coordinated Universal Time, equivalent to GMT), UTC Time however you can choose either an offset from this time, or for the logger to use your PC time.
4. When you are happy with all the settings click the < <setup logger="">> button to program the logger.</setup>
5. If you wish to copy all these settings to another logger, simply connect the next logger and click the < <copy logger="">> button. Copy Logger</copy>

AquaLogs & Sound Recording

The PermaNet+ system allows you to capture Histograms of leak noise and

Sound recordings. The set up of these is similar. Tick the appropriate box to show the logging details

panel:-

V	Enable AquaLogs Enable Sound Recording
	Enable Sound Recording

Choose the start time for the logging mode, the duration of how long the measurement log should be. If you wish to make more than 1 log per day, specify the gap between log events and the number of logs per day.

Finally choose how many days you wish recordings to be taken.

If you wish to send Aqualog or Sound recording settings only, then click the "Send" button, otherwise

click the "Setup Logger" button to send all the settings to the logger.

The Histograms and Sound recordings are then forwarded by the logger to DataGate and can be later downloaded to your PC using the PermaNet+software (see page 39).

File Tools Options >		1.0
Setue Data Collector Hardy		
	g on CDM15	
Enable Sound Record	allelin mana manana ana	(4)
The second s	ding when leak first detected	£.
5end alem when leak	fint detected	
Leak Threahold		
© Plats # N	letal 🗇 High mase	
Accusion		
	ping time	
64/10/2014	22:00:00	1.18
Duration of each sample	Tine between camples	
Sciendes	Tennas +	
Samples per day	Take readings for	
and the second s		
10 +	Zdan +	
Send Ana	allag Settings	1.0
		1.128
Clay Logger R	ead Logger	
E Board Goups d	IPRS Text	

Data Communications Confirmation – GPRS Test

It is important to confirm that your logger is communicating with the data server before you leave site (or to be confident, your office), so you should undertake a GPRS test before you leave the logger in the field.

1. Connect the antenna to the FME socket on the logger.

Note: If this is the final aerial connection, ensure that the connector is tightened with spanner or pliers to prevent water ingress to the antenna plug as this will reduce performance. Additional protection with self-amalgamating tape is recommended. Do not over tighten.

- 2. Run the IDT and read your logger as in steps 1 to 3 above.
- 3. Now click the <<GPRS Test>> function button.
- 4. The GPRS Test program will now automatically execute a communications check with the data server, DataGate[™] and deposit a test message that can be checked later on.

Status :	
Type :	Information
IMSI :	GPRS connection test completed successfully
Operator :	
CSQ :	
APN:	ОК
IP Addr. :	

The test will take a few minutes and will confirm that the communication is successful.

Troubleshooting a GPRS test failure.

There are a number of reasons why a GPRS test may fail,



the following points should be checked before calling HWM support for assistance:-

Possible Problem	Solution
Network Busy due to	Retry the test after a few
excessive traffic. Commonly	minutes.
occurs around schools.	
GPRS signal not available at	The logger will call into the data
your location. Not all Cell	warehouse once per day using
masts carry GPRS traffic	an SMS message; relocate the
	logger if more frequent
	communications is required.
Network signal not strong	Relocate the antenna if possible
enough. You need a CSQ	or try alternative antenna
(reported by the GPRS test)	configurations. Ensure antennas
of at least 8 for reliable	are vertically orientated where
communications.	possible. See aerial placement
	notes section.
APN settings incorrect.	The GPRS tester knows about a
	large number of cellular networks
	and will try as many settings as
	possible and correct any error
	automatically.
	If there is still a failure, then you
	need to check with your network
	operator that you have the
	correct settings for your SIM.

If you continue to experience problems with communication, you may need to check the network coverage in your location.

To perform a signal (CSQ) check, refer to page 17.

Aerial installation considerations

The PermaNet+ Spider is usually supplied with a magnetic antenna to be attached to the underside of the chamber lid, but if an alternative antenna is purchased, then the following should be considered.

Signal strength within the cellular network can vary dramatically even within the same cell; proximity to the transceiver, type of antenna, position and angular orientation of the antenna, all have a significant effect on the ability of a device to reliably communicate with the cellular network. To ensure reliable GSM/GPRS data communications it is essential that the most suitable antenna is selected and it is mounted in the most appropriate location. Installing a device without considering the type of antenna and its installation constraints can lead to disrupted and unreliable data communications and accelerated battery consumption. The following gives practical advice on how to minimise potential problems.

General Considerations

- Always perform multiple signal strength tests moving the antenna to different positions (please see below for description of signal strength test results).
- When performing Signal Strength Tests ensure that the chamber lid/cabinet door is in as close to normally closed position as possible to ensure an accurate result.
- Deploy the antenna as close to the surface as practically possible, especially when installing in a large chamber.
- If the device is installed in an underground chamber consider, where possible, locating the antenna in a secure position outside the chamber.
- Ensure that the antenna connector is in good condition and correctly tightened (finger-tight is not sufficient for the type of connectors used). Adequate tightening of the connector reduces the risk of water ingress and thereby signal attenuation as a result of changes in impedance.
- Never attempt to modify the dielectric seal of the antenna connector, it is designed to keep moisture away from conducting parts which lead to corrosion and attenuation.
- Consider using secondary environmental protection for the antenna connector such as self-amalgamating tape.
- If a logger is installed in a chamber that is likely to flood (e.g. an Atlantic Plastics chamber), position the logger upside-down in the chamber to avoid unnecessarily submerging the antenna connector.
- Use the shortest possible antenna lead.
- Where long transmission leads are required, consider using a low-loss alternative to corrugated copper cables, e.g. Times Microwave white braided coaxial cable.
- The signal emitted from any antenna submerged under water will be significantly attenuated; place the antenna in a location where it will not become submerged.
- Always ensure that the latest firmware is installed in the device.

Cellular Network Signal Strength (as measured by CSQ Test)

- 0-7 Insufficient, the device may be able to register with network but will not be able to send or receive data reliably.
- 7-14 Marginal, depending upon the ambient conditions data transmission may be possible, important to select the correct antenna and install it in the most suitable location.
- 14-21 Adequate, Data transmission should be reliable.
- 21+ Ideal, Strong signal strength data transmission will be reliable.

Installing your PermaNet+ Spider at site

Having performed all the steps in the previous sections, you should now be confident that your logger is configured for your purposes and is communicating correctly in a controlled environment. The next step is to physically install you logger on site.

Every site installation is unique with various types of connections, positioning or environmental conditions possible, the following recommendations will assist in a reliable installation.

- Warnings
 - The Leak Noise Sensor unit uses a high strength magnet and should not be carried by anyone with a heart pacemaker.
 - Keep the magnet away from any magnetically sensitive devices, PC, watches, etc.
 - The Leak Noise Sensor can be seen from the bottom of the unit. Users must not attempt to unscrew this sensor as this may break internal components resulting in irreparable internal damage, sensor replacement is then the only option.
- Keep the equipment neatly arranged in chambers so that cables are not crushed.
- Do not allow logger or battery to rest on the connectors as crush damage to cables can result.
- Use wall mounting brackets were possible to keep the logger in clear space.
- Position loggers away from sources of electrical interference such and motors or pumps.
- Carefully Locate the Leak Noise Sensor onto the pipe or tap to avoid shocking the sensor. Always grasp the main body of the sensor when placing or retrieving it from the pipe fitting. Do not pull the sensor by its cable as this can cause damage.
- Always ensure that the contact point is free from dirt so that the magnet makes a good contact.
- Average operating temperature of the Leak Noise Sensor should be below 50°C, therefore if fitting to a hot water pipe, ensure a suitable insulation is used.



When you are ready to stop the test just click the <<Stop>> button.

Note: If you see '-----', for Leak Noise sensor dB, beyond the first few seconds, then check your connection to the Leak Noise Sensor.

- 4. A "Power Window" allows you to keep the logger's modern turned on for a period of 10 minutes. This allows you to close the chamber lid and send a text message to it to confirm that communications is still OK. See final site checks on page 19.
- 5. Pressing <<Force Call>> forces the logger to send its data in immediately. Useful for when you wish to shift a logger to a new site.
- 6. The <<Modem>> button allows some more advanced diagnostics to be performed on the modem.

Provides the current signal strength

Provides the IMSI & IMEI numbers for the modem

Enter a mobile phone number here & click <<Send SMS>> to instruct the logger to send you an SMS test message.

- 7. If vou click the <<Data -Collection>> tab you will now see a set of tools for downloading data for from your logger later uploading to the data server. It can also be of assistance for diagnosing problems.
 - a. From the Download size selection, choose how much data you wish to retrieve, from everything the logger has stored to any unsent data since the last time the logger called in.
 - b. Click <<Download>> and choose "Archive" when prompted and the data will commence downloading. If you wish to stop the process, click <<Abort>> and the download will cease.
 - c. A small chart will now be displayed showing the data downloaded. By using your mouse to draw boxes in the graph area you can zoom into areas of interest. Click the small circles at the end of the drag bars to zoom out. By hovering your mouse over the points on the graph, you will see the exact value recorded.

d. If your logger is in a location where GPRS communication is not possible, you can now upload the data when you are next connected to the internet. Simply click <<Post files>> and all the data you have downloaded to your PC will be uploaded in one go. If you are downloading more than one logger in a route, all data is stored and transmitted together. If you decide that you do not wish to post the data you have downloaded, click the <<Empty postbox>> button to remove the downloaded data from your PC.

Note: Choose the other data types depending on what recordings you wish to retrieve / view.

Call total: 12433 Calls	99 Registered 98 Registered 97 Registered 96 Registered	+CSQ: 23 +CSQ: 23 +CSQ: 22 +CSQ: 22 +CSQ: 22
Modem info	95 Registered 94 Registered 93 Registered 92 Registered 91 Registered	+CSQ: 22 +CSQ: 22 +CSQ: 22 +CSQ: 22 +CSQ: 22 +CSQ: 21
Test Telephone no		
07540123746		
Send SMS		

Setup Data Collection Hardware Diag

Download size

Download

All 🔫

Post files



Abort

Adjust time to last boundary

Empty postbox



Final site commissioning checks

Having made all the configuration checks, checked all the wiring is good, verified the instantaneous values are what you need and confirmed communications with a GPRS test, there is one last check that you can make with your mobile phone to confirm everything is working as it should.

- 1. In the Hardware tests tab, click the <<Power Window>> button to power up the logger for 10 minutes.
- 2. Close the chamber or cabinet such that everything is in its final positions.
- Now using a standard mobile phone, send a text message to the SMS number of the logger (see page 8 for the number) including the international dialling code if needed. The text message should read TTTT#
- After a few seconds/minutes (depending on the network operator) the logger will send a message back to you with details of its current status.
 Example response from a logger:

TTTT138-002 V01.70CSQ:1010.9VyouridRT hh:mm ss dd-mm-yy ...

Message	Description
ТТТТ	Original command text without #
138-002	Logger type number
V01.00	Firmware version in Logger.
CSQ: nn	Signal strength nn (nn = 6 to 30)
10.9V	Operating voltage
yourid	Your Logger ID
RT hh:mm ss dd-mm-yy	Real Time Clock setting
ST hh:mm ss dd-mm-yy	First Time the logger was started
LR hh:mm ss dd-mm-yy	Last Time the logger was re-started
Ch1 (A) 0000.0	Channel 1 – Leak status
Ch2 (A) 0002.2	Channel 2 – Noise value
Ch3 (A) 0002.2	Channel 3 – Spread value
Ch4 (A) 0014.2	Channel 4 – Temperature (optional)

5. To decipher the message returned, please refer to the table below:

- If the CSQ: value in the message is OK then the installation is complete. The logger will automatically go back to sleep after 10 minutes.
- 7. There can be delays in the SMS network, so the response to your message may not be immediate. If you have had no response in 10 minutes, re-open the chamber and using the modem diagnostic send yourself a test SMS. If this gets through then improve the location of the antenna and try again.

Note: Some Roaming SIM cards do not accept incoming text messages. Check with your service provider if you are unsure.

ad

Installation checklist

Before you leave site, review the following items to be sure that the installation is going to be a good one.

- □ Have you placed the Leak Noise Sensor unit correctly?
- □ Have you run an instantaneous value to confirm data quality?
- □ Have you run a GPRS test to confirm communications quality?
- □ Have you confirmed the GPRS message was received by DataGate[™]?
- □ Have you confirmed an SMS message with the chamber lid closed?
- □ Have you recorded all your site information, serial nos, photos, etc?
- □ Have you closed all open chambers and recorded any damage?
- □ Have you left all wiring tidy and safe not tied to ladders?
- □ Have you removed all your installation tools?
- □ Have you recorded the GPS location of the logger?

You have now completed your site installation and confirmed that the logger is operating and transmitting its data to DataGate[™] (or your local data server). The next sections deal with how to use DataGate[™], Almos[™] and the PermaNet+ PC software.

Using HWM DataGate™

DataGate[™] is the HWM secure data warehouse and is the data storage system behind the Almos[™] viewing platform (see later in this guide). DataGate[™] stores the data messages from the logger and the information required for displaying all the logger details on Almos[™].

When you ordered your logger(s) with your HWM account manager, you will have been supplied with a Username and Password to the HWM systems. You can use DataGate[™] to view your logger information and add additional information such as a meaningful site name, GPS location details, useful notes about the site, etc.

The following section explains how to log in to the system, enter basic logger details and explain what the information provided means. DataGate[™] and Almos[™] are supported by most internet browsers, but for the purposes of this guide, Internet Explorer is assumed.

- 1. Locate your Username and Password and using your internet browser navigate to http://datagate.mobifi.com
- 2. Enter your username and password and click <<Login>>



Note that passwords are case sensitive.

3. Once logged in, you will be presented with the main Summary screen. Here you can see a quick view of your logger fleet, showing the number of loggers in your fleet, the number of loggers that are not calling into DataGate[™] (quiet), the number of loggers that are low or out of GPRS credits and the number of loggers whose contract is about to expire.

HWM	DataGate				Connent user: YourUsements Access level: User Lagnut: hegaut
oggers	Welcome to HWM Datas	jate			
Summary All Loggers Quiet loggers	Number of loggers	Quiet loggers	Low on credits	Out of credits	Expire in the next 7 days
counts	1	0	0	0	0
Hy Account Hy Account	1	U	U	0	0
Change my password	1 100.0%	1 0.0%	1 0.0%	1 0.0%	1 0.0%
			Logger quicksearch	1	
			Logger search		

4. To see the full list of your loggers, click <<All Loggers>> from the left hand pane or if you know some detail about your logger, e.g. phone number or site info, enter it into the Logger quicksearch box and click <<Logger search>>.

5. You will now see a list of all the loggers you have requested.

# Wogger Hilling									但-二余。	Pape Seeve Task	- 8-
HWM	DataGate								Screet une Roma final Signal		
Loggers Loggers Servers al Loggers Optic loggers Recounts	All loggers						14	Be wath			
Ry Account My Account Change the passage	I loggers Ski of custos: Nanogari	and in cases	i instant fo	r n Beat							
		-		-	Odgeme online	THE OWNER	-	- Henry Pr	List message received	Enginy date:	
	entropy estimates	SOALING Rytheory 1 at 1	±	-	±	8	18	41) -	0.3e-301 52:0:05	10-349-3018 12-39-30	

In this view from Left to Right the list shows:-

- i. The logger serial number
- ii. The logger's GSM telephone number
- iii. The site ID for the logger
- iv. The number of SMS message credits remaining
- v. The number of GPRS credits remaining
- vi. The number of outgoing message credits remaining
- vii. The number of SMS messages received from the logger
- viii. The number of GPRS messages received from the logger
- ix. The number of messages waiting for additional credits to be loaded
- x. The date and time that the last message was received from the logger
- xi. The expiry date for the contract
- 6. Click either the logger serial number or the site ID for the logger you wish to examine/configure.

HWM	DataGate				Current usen YourUsername Access level: User Logout: logout
Loggers	View logger				
Laggers Summery All Loggers Quiet loggers	Serial number Cletegete number Mobile number	1581 44123456789	Latitude Longitude Height AOD		Edit logger
Accounts	GSM data number Site name	44123456789 SOA12345 MyNetwork 1 of 1	Start date 03-3an find date 03-3an		Edit logger channels
My Account My Account Change my password	Network Type	22-Oct-2010 08:50:21 Other LX GPRS Your Account	Bettery condition 0.0v Signal strength 6 Version 1.11 Type FW-102	2-00eU	
	Credits Channels	Accounts Alarm respon	sees Incoming data Incoming tea	d Outgoing messages	
	Incoming GPRS mes	sages	Incoming SMS messages	Outgoing messages	
	Deduct credit Credit Credits user	1050 118	Deduct credita true Credita 20 Credita used 0	Deduct credita Credita Credita used	20
	Number receives Weiting for credit Last message		Number received 0 Waiting for credits 0 Last message	Number sen Weting for credits Last message sen	0

This screen displays the full details about the logger you have chosen, the example above corresponds to the logger that you configured in previous sections so you can now see all the data concerning your logger.

Most information regarding the logger will have been entered for you already by HWM, but the following steps will show you how to confirm reception of the GPRS test conducted earlier and how to adjust the Site details, such as Site ID and GPS position.

7. To verify the reception of messages, Click the <<Incoming text>> tab



(CCC)

this will display a list of the last 100 messages received by the logger:-



In this view the GPRS test message that the logger sent in step 4 on page 12 can be seen (highlighted) confirming that the logger can successfully communicate with the data centre.

- 8. To edit the site information about the logger, click the <<Edit logger>> button.
- 9. You can now enter/edit the information about your logger:-

Logger type Lx gres	Network ruame Other
Barial number AB123C5	Consider quiet after a dave 3
Mobile number 44123456709	Latitude
Owner Your Account	Longitude
Site name 90412345 Hytemorik 1 of 1	Height (Above Ordnance Datum)
Site id	
Site notes	

Fields that you can safely adjust are as follows:-

- i. Mobile number Where HWM fit the SIM card, this number is entered by the factory. If you have installed your own SIM card, enter the number here. This number must <u>exactly</u> match the one entered in step 2.i on page 9, but without the leading '+'.
- ii. Site Name This is a long character string (up to 70 chars) for details of the logger location, e.g. 13 MyStreet, YourTown.
- iii. Site ID This is a shorter id, usually but not limited to the Zone/Location code of the logger, e.g. AB123CD.
- iv. Site notes This is a free entry field where you can put any relevant information you like, such as "Outside no 17" or "regularly overgrown", etc.
- v. Consider quiet after x days This allows you to define how long to wait before being alerted that the logger has stopped sending in data. When a logger is quiet for longer than the entered value, the entry in the "All Loggers" list will show in pink. The logger will also appear in the "Quiet Loggers" list.
- vi. Latitude and Longitude This is the precise location for the logger and is required for Almos[™] and PermaNet+ PC software to display the logger's location on a map. A GPS receiver such as a Sat Nav will provide these figures.
- vii. Height (Above Ordnance Datum) can be useful for computer network modelling.

- 10. Once you are satisfied you have all the information entered how you wish it, click <<Update Logger>> to store the data. Update logger
- 11. Some information in the "View Logger" screen is only available once the logger has begun to call in. The Battery condition displays the voltage of the logger battery (or that of the external battery pack if connected) and the Signal Strength (also called CSQ) is the current GSM network signal strength. These two values are updated each time the logger makes a successful data call:-



So you now should have a complete set of information regarding your logger and by watching the "Incoming data" you can see its data transfer history.

Setting up DataGate[™] Alarm Recipients

You can configure DataGate[™] to relay alarm signals from your logger to email addresses and/or send SMS messages to mobile phones. To add a new recipient for alarm messages, follow the steps below:

1. Click <<My Account>>



2. Next select the <<Users belonging>> tab

Hy account - HWM DataGate				
× Findi manual	Previous	Next Options •	4	
HWM	DataGate			
Loggers	My account			
Loggers Summary All Loggers Quiet loggers	Datagate number Account name Username API access	Your Account YourUsername		
Accounts	HTTPS access only	false	\ \	
My Account My Account Change my password	Date created	User 0 English (British) (Uniti 30-Nov-2012 08:33 29-Oct-2013 14:17	ed Kingdom)	
	Loggers belonging	Associated loggers	Users belonging	Accounts belonging
	Users belonging to th	his account		
	Create a new user account	r in this		
	Name	Edit	Delete	Add a
	Nothing found to display	e.		

and click <<Create a new user in this account>>

3. Enter the new user name in the appropriate boxes

Add two little	- HAM DataGas - Man	A Distance Express manual by Dates Webs Dates		
9 - I	e y neta li tada gato metalika	an approximation and the post of the	1.1.1	1 100 1 1 100 1 1 1 1 1 1 1 1 1 1 1 1 1
Faceton	TO DO UNIN AT HON	MChiles Thetas 👔 HWM Crites Leval 👔 Hille 🔮	Choud @ DataGate @ Hitld Ord	ne mai Ladi mai Ladi Web Lat 👔
and terms up	en - HWM DistaGate			
II. Fred ours	well	Presious Next I Optio	en #	
	Loggers	DataGate Add new user		
	Loggers Summary All Loggers Quiet loggers	Name W	[uned	
	Accounts			Create user
	Hy Account-			



4. Now click <<add>> in the "Add alarm" column

ggere belietging-	Associated log	igen Uwers be	donging Accounts bek	enging				
ers belonging to t	his account							
ceate a new use account	r in this							
Rame	Eda:	(Deleter	Add slares			Alares action	2	
	wdt :	delete	add	Type	Address	Enabled	Edit	Delate
itter Geer	and the second second	100000		THE OWNER WATER	saret to shaping.	12	1414	1.0

5. Choose the "Type" of alarm from the dropdown - SMS or EMAIL

DataGate	
Add new alarm	then enter the SMS phone number or the e-mail address in the "Address" box.
Create alarm action	

and click the <<Create alarm action>> button.

Name	Edit	Delete	Add alarm			larm actions		
without Manuer	and t	delete	-	Typie	Address	Enabled	Edit ()	Delete
enter Maer		HORIE .	edd	SHS	447540323456	true	edit	deleta

6. You can add additional alarms for each user by repeating step 4 & 5 and additional users by repeating steps 2 - 5.

Setting up channel settings

The PermaNet+ requires its channel information to be routed to Almos, which requires matching channels to be configured on DataGate[™]. This step is usually handled for you by HWM, however should you wish to create a new DataGate[™] entry the details are as below:-

1. Select your logger (see page 22) and click the <<Channels>> tab

Number Flow pulse factor Heter read value Heter read date Analog low Analog high Name Offset Heasurement.	Neter read date: Analog Ina Analog high Name Offset Reasurement Elefete	Channels									
No. of the local data was a second of the local data was a sec		Hunders	Flow pulse factors	Heter read value	Heler read date	Analog Ine	Analog high	Name	onset	Ressources	Detet
dving found to display.		thing fax	nd to display.								

2. Click <<Add new channel>> once for each channel you wish to add (you will need 3 for Almos[™]), then click <<Edit logger channels>>

Channels									
Number	The pales faiter	Heter read value	Heter read date	Analog Sow	Amalog high	A.m.	Offset	Newsment	Delete
1	1.0		1		/			Last	18
2	1.8							Nation	18
3	1.0				./			Spread	18

3. Enter the details for the channel you wish to configure

Channel 1		
Number	1	
Name		From the drop down,
Offset		choose your channel type.
Channel type	Leak	
Calibration Multiplier	1.0 <	Set the Calibration
Meter read value		Multiplier to 1.0 for the
Meter read date	1 • 11• 2013• 0 • 0 •	Leak, Noise & Spead
Analogue low value		Channels.
Analogue high value		

Click <<Update logger channels>> to store the new names.

Note the above step will usually have been done for you.

Any further information regarding DataGate[™] can be obtained from HWM support or your account manager.

Using HWMonline[™]

HWMonline[™] is a web viewing and management package for viewing the data for your fleet of loggers.

HWMonline[™] uses the data stored in the DataGate[™] data warehouse to display charts for the data recorded by the loggers and other useful information like the location of the loggers.

If you have HWMonline[™] as part of your package, you will use the same username and password that was provided to you by your HWM account manager.

Viewing your data

1. Open a new web browser window and navigate to www.hwmonline.com



You will be asked to enter your Username and Password details.

2. Once logged in successfully, you will see the main window below



(Click the spyglass to execute the search)

 Chose the logger you wish to view and the appropriate period & units and click <<SUBMIT>>

HWMonline will then retrieve your data from DataGate[™] and display it on the page.

Note: If your logger has not been able to communicate with

DataGate[™] then the message "No Data Has Been Received For This Location." will appear. Investigate the cause of the communication issue of contact HWM support for assistance.



View			ation chout way			"flaat	
view	ing into	rma	ation about you	ur ic	ogge	r fleet	
H\\/M	online ca	in a	lso be used as a	floo	t man	ademe	ent tool
1 1 0 0 1 0 1		in a		nee	. man	ugenne	
						_	
1.	From th	e H	lome screen click	the	" <u>Flee</u>	<u>et Sum</u>	<u>mary</u> " link.
C		nm	ary coroon bolow	onr	ooro.		
۷.			ary screen below	app		-	B
	19 HMM Enline Com	umer Lage					B-B-
	-	-	0				
taile rogardir	ng your loggers	1000	2947.				
	ig your loggers	153	Fo				Logged in an Dentir Log out
	Fleet Summary.						
	e Tape	Sector	Address	Battery	Stort Time	Channels	Bani Kalibi
	1 Multilegt X		HWM.STE.DEMO	7.1V		1011002.10	-10
	7			10		29928280.11 49927360.11	
	-					8P(0(3.5) 8P(0)(3.1)	
	2 Multing SME		Dems.2	200		1010-210(1)	170x32112 07:06 (815M8);
	3 HOL30LF/1100	-	Retta J	64V	25Hat2015	SEE GAD(T)	943ard2013 15:42 (2/FTP)
	2.29				15.38	2Fv0(0.1) 3F2-332(1)	
	# Marriage X		Dema 4	115.852	13We2812	1F1.854(1)	\$4,4ar2011 16 98 (65/15m/LOP)
	3.14			22	00.36	2910.02.12	
	3.14 View Alasma Gra	ating		11	00.36	Saute 0	
	3.14	_	a process	32	Q81.34	and t	
	3.14 View Alasma Gra	Report.	21 Parameter Separt	8	00.56		Defaults
	114 View Manna Gra Generate Fleet F IF Charmel Setting IF Meter Roadings	Report.	2 Pasander Reput 2 Pesander Reput	10	06.36	Die	Contraction JEEMAT
	3.14 View Alama Gra Generate Fleet F 37 Chavel Setting 27 Meter Readings 37 Call in Settings	Report.	12 Pressure Flatines 12 Overpressures	11	06.36	Die	
	3.14 Khew Alama Gra Generate Fleet F SF Charver Setting 27 Meter Handings 27 Meter Handings 28 Call in Settings 29 Justial Times	Report.	12 Pressue Plathies 12 Overpressave 12 Nargative Pressave	22		Electron State	JEIMIT
	3.14 Hear Alama, Gra Generate Fleet F If Charvel Setters If Charvel Setters If Call is Setters If Call is Report	Report.	 Pressure Flatbred Ovetpressures Negative Pressures Stan Change in Flate 	22	Opti	ons for cre	
	3.14 Uter: Alama, Gra Generate Fleet F If Charvel Setting If Charvel Setting If Call Is Setting If Instal Times If Call Is Reput 2 Days	Report.	12 Pressue Plathies 12 Overpressave 12 Nargative Pressave	32		ons for cre	JEIMIT
	3.14 Hear Alama, Gra Generate Fleet F If Charvel Setters If Charvel Setters If Call is Setters If Call is Report	Report.	Phenome Platines Processer Platines Phenomeno Platines Platines Platines Platines Platine Platin	22	Opti	ons for cre	JEIMIT
	3.14 Uter: Alama, Gra Generate Fleet F If Charvel Setting If Charvel Setting If Call Is Setting If Instal Times If Call Is Reput 2 Days	Report.	Phenome Platines Processer Platines Phenomeno Platines Platines Platines Platines Platine Platin	22	Opti	ons for cre	JEIMIT

3. From this screen you can either choose a logger to view or you can create a bespoke report containing details of your whole fleet of loggers.

Tick the appropriate boxes in the "Generate Fleet Report" area and then click the <<SUBMIT>> button. Depending on how big your fleet is, this may take a few minutes to create. You can then choose to save the report file or open it immediately in MS Excel.

Experiment with the settings until you find a format that you like, then tick the <<Save Defaults>> box so HWMonline[™] will remember the style for the next time.

A note about security settings

HWMonline is hosted as an https:// site. If you do not see the maps on your browser, check your internet security options and add HWMonline as a trusted site:-

0 9 J/	0		
And and the American	Carrow and	E IN A PLA	and a second
A the star patent similar the pri-		HWM	HEMONINE
Table		and the second second	
To make to address one top			(Barriel)
These loads had been stored		Courter of	
(Description)	Percent of Long	Tank I	
in the second	March 10, 101 and 100 March 100 (more graph or other		
	Charter being with the Direct Mr. of states	(Ad-ant)	

Select "Tools", "Internet options" and "Security".

Click "Trusted sites", then the

<<Sites>> button

Click <<Add>> to add HWMonline as a trusted site, then <<Close>> & <<OK>>.

You may need to restart your browser.

Using Almos

The Almos website is used to view the logged noise data from installed HWM PermaNet+ product.

The website contains features for viewing the logger fleet either in map or list form, producing reports and also setting baseline noise levels. A prior basic knowledge of the operating principles of the PermaNet+ product is assumed.

Logging in

- <section-header><complex-block>

 Auror

 Hure

 Lever more

 Locustic Leak Monitoring Online System

 Date Parmade

 Advert AtMos

 Conserver

 Advert AtMos
- a. At the Almos web site (<u>http://almos.hwmonline.com/index.asp</u>) Enter your Almos Login: xxxxxxx and click Log In.

b. Enter Username and Password

	Acoustic I	ALMOS LEAK Leak Monitoring Online System
Home	Welcom	ne
Learn more about ALMOS	Usemame:	
bout Permalog and Permanet	Password:	
Try our demo		Login
Company profile		Forgot your Username or Password? Enter your amail address ballow
Contact of	Email:	CIENT TUD MINUTE POLICES DECEM
Go të Leifkoch.dk		Seod
101115		
AQUIS		

Map View

The user can view logger position and status in map mode with zoom function. This is based on Google Maps with the same zoom and navigation controls. Click <<Help>> for an explanation of the symbols



Indications: ● No leak (Blue) ● No leak (Red) ▲ No data (Yellow) Note: You may need to switch on IE compatibility mode to see the indicators

> a. Information about a particular logger can be viewed by clicking on a logger location. The logger status can be set, the history viewed and details about the location changed.

ALMOS	LEAK	DMA: C Logger-status last upo	DL 2012 Sate 10-07-2012 07	:00			
Show map	List view	Change DMA	DMAs	Users	Help	•	Log out>+
Control and Andrews	Mu Status Status Status Status		Warn P	dia Contex Ch Deprimetor	Branchine Wenter elementer Westers Souther		Cliedonion
Terrer Tattay	Br Eat Caregothy Earrbohouor Adecahol Faortain	Maren Normal Mere Normal Investigation ongoin Out of order Stop blinking Cultored Doming Register Saming Doming Register	dillara an	Tortstaas Roval		And Care	Canterbury

b. To view further data about the logger and set the baseline noise level, click on <<Edit>>. The following screen will be shown.

ALINO	SLEA	AN	Logger-status last	update: 15-07-2012 1	9:00			
Show map		List view	Change DMA	OMAs	Users	Help	•	Log out+
Add/edit lo	gger					www.almoste	iak.com ->)MAs +> 2000 -> 200
Logger no:	2012031318							
Logger type:	Permalog							
Logger mode:	Normal	•						
Address:	BRAMLEY R	DAO						
/alve No:								
Repeater location:								
Repeater serialno:								
DMA:	OL 2012 *							
last note:	LX GPRS							
internal status:								
Longitude:	0.217602998	M.	Zero Level summer:	0				
Latitude:	51,516178131		Zero Level winter:	0				
Image Url:								

c. The baseline levels for summer and winter can be entered here.

-0,217602998(Zero Level summer: 10
51,516178131	Zero Level winter: 10
System 14-06-2012 15:52	
Save Cancel	

NB. The status of the device is set thus.

The spread value is subtracted from the leak value.

The summer or winter baseline value is subtracted from this value.

If the resulting value is greater than zero but less than 15, the status is 'possible leak'.

If the resulting value is greater than 15, the status is 'leak'.

Therefore if the normal level is 20 and the normal spread is 5, the summer value should be set to 15. The logger can be made sensitive by using higher values of summer and winter offset, for instance if occasional higher values are seen.

List View

d. The user can view data in a table (list) view. The table can be set to display all, only those in leak, only those with missing data or only leak or missing data. The search function can be used to find a single logger of interest.

ALMOS LEAK		Logger	DMA: OL 2012 Logger status last update: 20-07-2012 06:44								
Show n	nap	List view	Change	DMA		DMA		Users	Help	•	og out>+
List view	N								Eniot (ally www.aimouleak.	ium -> List viev
Search text:		Filter: All		×	Searc	*	Show all				
Logger no	Address		Status	Battery	Level	Spread	Signal	Last receiver	1	Last note	
2012030997	PARK LANE		÷.	18	5	5	21	20-07-2012	06:30	MultilogLXS 3.19	IAI2'®
2012030998	PORTMAN S	Q		10	8	23	14	20-07-2012	06:30	MultilogLXS 3.19	13120
2012030999	DUNRAVEN	ST		1	24	8	14	20-07-2012	06:30	Leak invest 09/0 .	. INIXO
2012031000	PARK LANE			12	21	15	8	20-07-2012	06:30	MultilogLXS 3.19	10.050
2012031002	Redcliffe Rd		Leak	- 22	25	6	11	20-07-2012	06:30	Leak invest Ongo	IBIK6
2012031003	Seymour Wa	əlk		18	16	5	8	20-07-2012	06:30	Leak Repaired 09	
2012031004	Seymour W	alic	-	-	23	4	5	20-07-2012	06:30	Location Issued	E/66
2012031005	Fulham Rd			1.2	25	10	20	27-06-2012	06:30	LX GPRS	的现金
2012031006	Fulham Rd			14	4	15	5	20-07-2012	06:30	LX GPRS	1218/0
2012031007	55945 6 of 1	20 Vodafone		0.5	8	11	5	06-07-2012	06:30	LX GPRS	BRO
2012031008	Fulham Rd			1	19	25	21	20-07-2012	06:30	LX GPRS	RIG
2012031009	Fulham Rd			05	4	13	4	20-07-2012	06:30	LX GPRS	1212/0
2012031010	Holloway Ro	ad 1		1.4	24	20	4	20-07-2012	06:30	LX GPRS	12 IN O
2012031011	Holloway Ro	E be	Leak	1.12	39	6	17	20-07-2012	06:30	Burst Main locat	1916.6

e. History tab enables the user to view the level and spread of each logger over the period it has been communicating.

ALN	105	LEAK		Ĺ	ogger-	DMA status last			2 2012 07:00)			Tharmes
Show m	тар	List view		a	hange	DMA.		DM	As	Users	Help	٠	Log out >-
List viev	v										Rnint, S	www.almostea	ALCOM List view
Search text:		Filte	IIA]			*	Searc	ih [Show all				
Logger no	Address			5	tatus	Battery	Level	Sprea	nd Signal	Last received	ĝ.	Last note	4
2012030997	PARK LA	NE			-	-	5	5	0	10-07-2012	06:30	MultilogLXS 3.19	9 (198)
2012030998	PORTMA	N SO			÷		. 7	22	0	10-07-2012	06:30	MultilogLXS 3.19	9 Bristor
2012030999	DUNRA	Loggerno: 201	20309	97		133	26	11	0	10-07-2012	06:30	MultilogLXS 3.19	
2012031000	PARK L	Date	Level	Spread	t Le	eak	19	16	0	10-07-2012	06:30	MultilogLXS 3.19	9 BQ-8
2012031002	Reddiffe	10-07-2012	5	5		8 I I	29	12	0	10-07-2012	06:30	LX GPRS	6-63
2012031003	Seymou	09-07-2012	5	4		8	15	4	0	10-07-2012	06:30	LX GPRS	6-68
2012031004	Seymou	08-07-2012	6	5		2	24	4	0	07-07-2012	06:30	LX GPRS	6-61
2012031005	Fulham	06-07-2012	5	5		<u>.</u>	25	10	0	27-06-2012	06:30	LX GPRS	828
2012031006	Fulham	05-07-2012	6	7		÷.	4	13	0	10-07-2012	06:30	LX GPRS	690
2012031007	Fulham	04-07-2012	20	9		2	8	11	0	06-07-2012	06:30	LX GPRS	89.8
2012031008		03-07-2012	17	14			15	23	. s.	10-07-2012		100000000	82.0
2012031009		02-07-2012	18	12		÷.	4	9	0	10-07-2012		1.3.2.3.2.2.2.3	628
2012031010		01-07-2012	23	12		÷.	21	19	- Si-	10-07-2012			(D-0
	1.50	30-06-2012 29-06-2012	25 19	10 15		-	41	20		10-07-2012	99977	A CONTRACTOR OF STREET	164

f. Edit tab enables the user to edit logger details from the list view.

ALMOS LEAK		(<mark>.</mark>	Logger-	DMA: status last							
Show m	ap List	new	Change	DMA		DMAs		Users	Help	e : Log	out⊳
List view	v								Eriot 1	SY www.aktosleak.com	-> List view
Search text:		Filter: Al		×	Searc	h (5	how all]			\backslash
Logger no	Address		Status	Battery	Level	Spread	Signal	Last received	i	Last note	
2012030997	PARK LANE		-	-	5	5	21	20-07-2012	06:30	MultilogLXS 3.19	1018.0 V
2012030998	PORTMAN SQ		2	-	8	23	14	20-07-2012	06:30	MultilogLXS 3.19	62.820
2012030999	DUNRAVEN ST		20		24	8	14	20-07-2012	06:30	Leak invest 09/0	的现金
2012031000	PARK LANE		2		21	15	8	20-07-2012	06:30	MultilogLXS 3.19	82.52*0
2012031002	Reddliffe Rd		Leak	2.02	25	6	11	20-07-2012	06:30	Leak Invest Ongo	69.55.0
2012031003	Seymour Walk		2	-	16	5	8	20-07-2012	06:30	Leak Repaired 09	69326
2012031004	Seymour Walk		÷3		23	4	5	20-07-2012	06:30	Location Issued	12-12*0
2012031005	Fulham Rd			0.50	25	10	20	27-06-2012	06:30	LX GPRS	83.820
2012031006	Fulham Rd		-	-	4	15	5	20-07-2012	06:30	LX GPRS	10-12-0
2012031007	55945 6 of 20 Voda	fone		0.50	8	11	5	06-07-2012	06:30	LX GPRS	60.82°0
2012031008	Fulham Rd				19	25	21	20-07-2012	06:30	LX GPRS	BB®
2012031009	Fulham Rd		20		4	13	4	20-07-2012	06:30	LX GPRS	10.120
2012031010	Holloway Road 1		2	-	24	20	4	20-07-2012	06:30	LX GPRS	68.9
2012031011	Holloway Road 3		Leak	1253	39	6	17	20-07-2012	06:30	Burst Main locat	6982 B
Missing Data: Level & Spread

Select Level, this will organise the data in numerical order. Zero data equals fault with Leak Noise Sensor not communicating with datalogger. Report to HWM to investigate.

ALN	IOS LEAK	Logger	DMA: status last				÷			
Show n	ap List view	Change	DMA		DMAs		Users	Help		.og out⊶
List view	v							Print 6	SX www.almostnak.	oom -> List vier
Search text:	Filter:	AI		Searc	a 5	Now all]			
Logger no	Address	Status	Battery	Level	Spread	Signal	Last received	É.	Last note	
2012031017	Canonbury Road	24	-	0	6	17	20-07-2012	06:30	Location Issued	isee
2012031059	55945 20 of 70 Vodafone			0	21	9	20-07-2012	05:30	MultilogLXS V3.19	(DEG
2012031084	FREEMASONS RD 2	14	-	0	20	21	20-07-2012	06:30	LX GPRS	10.070
2012031101	MERE CLOSE	1.7		0	6	16	20-07-2012	06:30	LX GPRS	10.19 0
2012031119	NEW KINGS RD	\$÷	-	0	0	7	20-07-2012	06:30	MultilogLXS V3.19	e ibisə
2012031128	WAVERLY RD	25	20	0	14	7	20-07-2012	06:30	MultilogLXS V3.19	F IRBO
2012031133	PRIORY LANE	-	-	D	0	6	10-05-2012	06:30	LX GPRS	10.870
2012031135	55945 26 of 100 Vodafone	67	20	0	α	13	24-05-2012	06:30	LX GPRS	152155
2012031136	55945 27 of 100 Vodafone	6 E		0	0	14	23-05-2012	06:30	LX GPRS	ID BY
2012031138	55945 29 of 100 Vodafone	1		0	0	12	24-05-2012	06:30	LX GPRS	1348
2012031139	55945 30 of 100 Vodafone		2	0	0	13	24-05-2012	06:30	LX GPRS	影響
2012031143	CHIGWELL RD		2	0	0	5	20-07-2012	06:30	LX GPRS	ID IS 0
2012031156	CROMWELL RD			0	0	13	20-07-2012	06;30	LX GPRS	IO IX 0
2012031157	PADDINGTON STREET	Leak		0	0	30	20-07-2012	06:30	Leak invest Ongo	1. IQ89

Missing Data: Last Received

Selecting last received will organise the date of last call in date and time of the logger.

ALN	IOS LEAK	Logger-	DMA: status last						
Show n	list view	Change	DMA		DMA	1	Users Holp	Log	out-+
List view	v					\backslash	Enot 1	SX mww.almosfeak.cor	u -> Liet varw
Search text:	Filter: All		~	Sear	ch S	Show all	λ		
Logger no	Address	Status	Battery	Level	Spread	Signal	Lastreceived	Last note	
2012033114	UPPER THAMES ST	-	- 6	0	0	13	£3	MultilogLXS 3.19	BRO
2012031133	PRIORY LANE		-	0	0	6	10-05-2012 06:30		inine -
2012031136	55945 27 of 100 Vodafone		1 P	0	0	14	23-05-2012 06:30	LX GPRS	ID OF
2012031135	55945 26 of 100 Vodafone	-		0	0	13	24-05-2012 06:30	LX GPRS	16tV
2012031138	55945 29 of 100 Vodafone	2	1	0	0	12	24-05-2012 06:30	LX GPRS	BIE
2012031139	55945 30 of 100 Vodafone			0	0	13	24-05-2012 06:30	LX GPRS	IIA IY
2012031711	55945 7 of 100 Vodafone	<u></u>	2	0	0	з	25-05-2012 06:30	MultilogLXS V3.19F	inexe
2012031259	BRYANSTON ST	-		0	0	5	30-05-2012 18:45	LX GPRS	iBig.e
2012031736	55945 32 of 100 Vodafone	2		0	0	5	31-05-2012 06:30	MultilogLXS V3.19F	GRG
2012031710	55945 6 of 100 Vodafone	-	-	8	16	4	02-06-2012 06:30	MultilogLXS V3.19F	13820
2012031186	MASONS AVENUE	-	2	0	0	11	07-06-2012 06:30	LX GPRS	ID670
2012031130	WELLINGTON PLACE			6	11	0	20-06-2012 06:30	MultilogLXS V3.19F	684
2012031161	ROBERT ADAM ST	Leak	1	42	4	6	26-06-2012 06:30	Leak invest Ongo	iGig/6
2012021005	Fulham Rd	1000	- 2	25	10	20	27-06-2012 06:30	LX GPRS	BE20

AAIN	NOS LEAN	(DMA	OL	2012	2				
e ALI	NOO LEN	-	Logger	status las	t update.	20-07-20	12 05:4	4			
Show	nap List	view	Change	DMA		DMA	цî,	Users	Help	1.	Log out~
List vie	w								Print 6	an dines	Linty -> List view
Search text:		Filter: All		×	Sear		Show all	1			
Logger no	Address		Status	Battery	Level	Spread	Signa	Last receiv	ed	Last note	
2012033114	UPPER THAMES ST		±2		0	0	13			MultilogLXS 3.19	IGE/0
2012031133	PRIORY LANE		1		0	0	.6	10-05-201	2 06:30	LX GPRS	IGIN0
2012031136	55945 27 of 100 V	odafone	±2	1	0	0	14	23-05-201	2 06:30	LX GPR5	1612
2012031135	55945 26 of 100 V	odafone	÷.		0	0	13	24-05-201	2 06:30	LX GPRS	1618
2012031138	55945 29 of 100 V	odafone			0	0	12	24-05-201	2 06:30	LX GPRS	191M
2012031139	55945 30 of 100 V	odatione		10	D	0	13	24-05-201	2 06:30	LX GPRS	IG IV
2012031711	55945 7 of 100 Vo	dafone	- 22	31	0	Ű,	з	25-05-201	2.06:30	MultilogLXS V3.1	
2012031259	BRYANSTON ST		*3	-	U.	0	5	30-05-201	2 18:45	LX GPRS	ISI5.0
2012031736	. 55945 32 of 100 V	odafone	50	20	0	0	5	31-05-201	2.06:30	MultilogLXS V3.1	
2012031710	55945 6 of 100 Vo	dafone	**	-	8	16	4	02-06-201	2 06:30	MultilogLX5 V3.1	
2012031186	MASONS AVENUE		50	- 22	0	0	11	07-05-201	2 06:30	LX GPR5	的现金
2012031130	WELLINGTON PLAN	Æ			5	11	0	20-06-201	2 06:30	MultilogLXS V3.1	
2012031161	ROBERT ADAM ST		Look	1.0	42	4	6	26-06-201	2 06:30	Leak Invest Onge	
	Fulham Rd				25	10	20	27-06-201	3 00.00	LV CODE	108/6

0-7 Insufficient, the device may be able to register with network but will not be able to send or receive data.

7-14 Marginal, depending upon the ambient conditions data transmission may be possible

Investigation is required if not called in for one day, see page 14 for details on possible causes.

Note: This is only a guide many loggers can still call in between 0-7 signal level. Check last call in time and history to determine course of action.

Data can be printed or exported as a CSV file which can be read by a spreadsheet program such as Excel.

ALN	IOS LEA	ĸ	Logger-	DMA status last					<u> </u>		
Show n	nap Lis	t view	Change	DMA		DMAs	8	Users	Help		Log out⊶
List view	N								Prost S	SV www.almostea	<u>k.com</u> -> List vie
Search text:		Filter: All		÷	Searc	h) [1	Show all]			
Logger no	Address		Status	Battery	Level	Spread	Signal	Last received	1	Last note	
2012030997	PARK LANE		-	1	5	5	0	10-07-2012	06:30	MultilogLXS 3.19	648
2012030998	PORTMAN 5Q		-	-	7	22	0	10-07-2012	06:30	MultilogLXS 3.19	(Be
2012030999	DUNRAVEN ST				26	11	0	10-07-2012	06:30	MultilogLXS 3.19	19-6
2012031000	PARK LANE				19	16	0	10-07-2012	06:30	MultilogLXS 3.19	134
2012031002	Reddiffe Rd		Leak	-	29	12	0	10-07-2012	06:30	LX GPRS	IQ-B
2012031003	Seymour Walk		-		15	4	0	10-07-2012	06:30	LX GPRS	0948
2012031004	Seymour Walk		Leak	-	24	4	0	07-07-2012	06:30	LX GPRS	1245
2012031005	Fulham Rd			1.1	25	10	0	27-06-2012	06:30	LX GPRS	162-0
2012031006	Fulham Rd		12		4	13	0	10-07-2012	06:30	LX GPRS	194
2012031007	Fulham Rd				8	11	0	06-07-2012	06:30	LX GPRS	1626
2012031008	Fulham Rd		-		15	23	0	10-07-2012	06:30	LX GPRS	12-6
2012031009	Fulham Rd		-	•	4	9	0	10-07-2012	06:30	LX GPRS	196
2012031010	Holloway Road 1				21	19	0	10-07-2012	06:30	LX GPR5	1046
2012031011	Holloway Road 3		Leak	-	41	20	0	10-07-2012	06:30	LX GPRS	10-6

Using PermaNet+ for PC



Configuration for DataGate

ad)

When you run PermaNet+ for the first time you will be prompted to configure your connections:-

C Patroller	J → OK
# Datagate	
C Local Folder (Toran)	X Cano
Datagate	
Server URL	
https://hwmonline.com/api/	
	Password
Account Name	
Englished Manual	

If it does not appear automatically, click the connections icon.



- 1. Choose DataGate as indicated above, then enter your Account Name and Password into the two boxes highlighted above.
- Click <<Test Settings>> to confirm your connection to DataGate. At this point you may see a warning from your system regarding internet access. Authorise the connection request to allow data to be downloaded. If the connection is successful you will see notification:

Current Message ID	
1001047942	Test Settings
	Linear and the second s
Datagate connection verified	

Note the Current Message ID is populated automatically. If you wish to retrieve messages from earlier, reduce the size of the Message ID.
Each day is roughly 1 million therefore reduce the count by the number of days you wish to go back. Do not press Test Settings again.

- 3. Once the data link is set up, you need to download the data from DataGate.
- 4. From the main menu, click the Patrol button to start downloading data.
- 5. PermaNet+ will then download data from the loggers into the PC database.

a Petral						and to be	-
Bile Estation Logo	er fjele						
Start Patrol	Sensitivity						
Ref Number	Location	Level	Spread	Leak	Time	GPS	- 4
447452467214	75 Francis Road	25	6	L	03:30	51.884174 / -0.423823	
447452467203	Outside Funeral dir Holland Road	25	6	- L	03:30	51.892254 / -0.434515	
447452467202	Jun with New Bedford/Brook Street	32	5	1	03:30	51 885891 / -0.42106	
447452487200	Corner of 222 Dane Road	34	7	L	03:30	51.8913157-0.433318	
447452467192	10 Oak Road	34 38	4	1	03.30	51.886009 / -0.430863	
447452467239	246 norman Road	16	21	N	03.30	51 891754 / -0.433968	

6. The patrol will stop automatically once all available data has been downloaded. Close the window when complete.

Creating your first DMA



1. From the main menu click Management

2. Next when prompted to create a new database

Enur	and the second se
	The database was not found.
-	Do you want to create a new (empty) database?
	<u>Yes</u> <u>No</u>

click <<Yes>> and then again when prompted to create a new DMA list, click <<Yes>>.

3. Click <<Import DMA>>

der/Patrol and						
DMA.Name :	allah .					
LantPatral						
Edirect P	IMA name hom	Recative				
0.011.00071.0					-	
Read File						
			Logger	15		
Ref Fäunder	Location	Address T	Aldress 2	GPS Co-ordinates	Additional liefs	1

Clear the checkbox and enter a name for the DMA you wish to create.

- 4. Click the <<Read File>> button to import the list of loggers and click <<Use DMA>> to store the list.
- 5. You can now click <<Show Map>> to view the loggers in your DMA.



Additional settings

If you have upgraded from a previous edition of Palmer PC Patroller II, there are a few additional options that you may need to check/set.

- 1. From the Setup menu choose Options...
- 2. When prompted, enter the password. This is **admin**, if you haven't changed it from the default.
- 3. In the Functions Tab, ensure the following options are ticked:PatrolAqualogDMA ManagementConnectionsDeployBackup/RestoreData AnalysisMaps
- 4. Under Other Options ensure Ref number format is set to 10041234

the second se		
used DiverOptons		
_		
	(de-50.0)	2
	J OK	X Cancel
	wied Difer Options	

5. Click <<OK>> to store these settings

Map view

To view details about each site where a PermaNet+ logger is installed simply click on the site:



Sites coloured Yellow are not detecting a leak, Red sites are where a leak is suspected.

The PermaNet+ logger can automatically send a sound recording file to Datagate which is downloaded during the Patrol. When sound files are available, the two buttons appear.

To listen to the sound recording, click <<Listen>>.

Should you wish to schedule your own recordings, refer to the section on Aqualog / sound Recordings.

To perform secondary confirmation validation click <<Add to Validate List>> and the click the <<Validate>> button to launch the Leak Localisation & Correlation tool.

Sound recordings and Aqualogging



- / Aqualog 1. From the main menu click Sound Rec
- 2. The Aqualog / Sound Recording menu below appears

Loggers			N.	Tr.
- 447 - 447	attractid+11201 Program H 1452467120 * * * 1452451720 * * * 14524517120 * * * 14524517123 * * * 1452457123 * * * 1452457125 tog Devident * * 1452457126 * * * * 1452457128 togs part Day * * * 1452457130 ** * * * 1452457131 * * * * 1452457133 * * * *	Lag Morval		Mode tabs
- 447 - 447	7452467134 7452467135 7452467136 7859467136 * #8	4		

Scheduling Recordings

- The first mode (Program) allows you to set loggers to make either an Aqualog recording or a Sound Recording. Note that care should be taken to decide if a recording is really necessary as each data transfer will use up some logger battery.
- 4. Choose the loggers you wish to command by ticking the check boxes on the left of the reference number.
- 5. Setup the recording parameters as required.
- 6. Click the <<Program>> button to send the commands to the loggers you chose. The loggers will pick up the commands the next time they call in, so be sure you allow sufficient time for the call in before setting the recording. i.e. If in the next 24 hours the logger is due to call in at Midnight and 5am, then if you choose 10pm today, the logger will not make a recording.



- 8. Choose the logger you wish to examine by clicking the appropriate tab. You can now quickly shift between loggers using the left & right cursor keys.
- 9. Use the **Rotation** tool to rotate the 3D chart to make it easier to view.



11. The more detailed, programmed Aqualogs can now be viewed in the same way as the histograms.

44

Leak Localisation and Correlation Tool

In addition to listening to the sounds recorded, you can use this tool to perform some rudimentary correlations to gain confidence that a leak is present.

1. Choose 2 loggers to test between. In the example below we will check between the 2 sites ringed to identify if the Leak suspected can be confirmed.

The local division of			198 A	in the second second
DMA	. O	\pm		
4474594794 4474594794 4474594798		Arright Market Mar		
Restore Burt List	Construction of the second second			
Cheer Lot	Annual States	100	The base of	Directedient
Validate	i		INT N. PROPERTY.	Ciricle No Look Loost - Sprawl
legen (h	132.0	and the second s		All Patrol Data III

- 2. For both loggers, click <<Add to Validate List>>
- 3. Next click the <<Validate>> button

(00)

4. The PermaNet+LLC (Leak, Localisation & Correlation) tool will launch and perform a correlation on the sound files available.



5. The Average indicates a confidence level for the correlation and clear the peak indicated on the graph confirms that a leak is detected with high confidence between the two loggers selected.

IMPORTANT: Whilst the PermaNet+ system is designed to assist the user with remote leak detection, local listening should always be performed before commencing site works.

Technical Specifications

Sensor Input Options	Serial	Leak Noise Sensor
	Memory	Primary recording 2 million readings
	Alarms	Leak / No leak Signal received / Not received
	Logger ID	Up to 7 alphanumeric characters. Also readable factory set serial number in firmware.
	Clock	On board 24 hour real time clock with date facility
Logger Features Internal Cellular modem Dimensions		GPRS to HWM DataGate or customer specific FTP server, multiple messages per day
		Quad band modem supplying 850/900/1800/1900MHz bands
	Dimensions	Logger without antenna = H 22mm x W 78mm x D 102mm Leak Noise Sensor = H 80mm x Dia 50mm
	Weight	Logger = 570g Leak Noise Sensor = 740g
	Operating Temp	-20 to +60°C (-5 to +140°F)
	Ingress protection	IP68 submersible
	Power	Lithium Thionyl-Chloride D cell operational for up to 5 years under standard operating conditions*, complete with low battery alarm
enabled network registr	ation is unachievable, the	ational setup and achieving network registration regularly and with ease. If GPRS- logger will convert to SMS-only operation after 24 hours and will attempt to re- ossible. A signal strength test should be performed during installation.

	Order Codes	
PNT961/L0/S	PermaNet+ Spider GPRS Data Logger with Leak Noise Sensor	

	Order Codes – Optional extras
CABA9315	USB programming 'Y' cable
EXTBATTPACK/72V/D	D-Cell Battery pack
EXTBATTPACK/72V/C	C-Cell (small body) Battery pack
CABA4255	3m Tether Line for Leak Noise Sensor
CABA8110	Magpot antenna
AER8015	T-Bar antenna 0.5m
AER8020	I-Bar antenna 1.0m
AER8025	I-Bar antenna 3.0m
AER6000	High Gain antenna 2.5m
AER6001	High Gain antenna 5.0m
AER6003	High Gain antenna 8.0m
AER6002	High Gain antenna 10.0m
CABA8510	FME Aerial Extension 10.0m
CABA8510-1	FME Aerial Extension 8.0m
CABA8510-2	FME Aerial Extension 5.0m
CABA8510-3	FME Aerial Extension 2.0m

HWM-Water Ltd Ty Coch House Llantarnam Park Way Cwmbran NP44 3AW United Kingdom +44 (0)1633 489479 www.HWM-water.com



MAN-138-0011-A (Permanet+ Spider Installation User Guide)