

E-M-HW4v3-F2-021_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager and Data Logging LOG-RC Series Data Loggers	Instruction Manual
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HW4 Software version 3

Device Manager and Data Logging LOG-RC Series Data Loggers



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1 ORGANIZATION OF THE HW4 MANUALS

The HW4 manuals are organized in separate books so as to limit the size of the individual documents. A list of the HW4 manuals is provided in document **E-M-HW4v3-DIR**

HW4 Manuals	Contents
HW4 Main Book	General software description Installation, start-up and settings Device connection methods Functions common to all devices used with HW4
Device Specific Functions 1 (separate book for each device type or model)	Legacy devices (original HygroClip technology): <ul style="list-style-type: none"> o HygroLog NT data logger o HygroFlex 2, HygroFlex 3 and M3 transmitters (same icon in device tree) o HygroLab 2 and HygroLab 3 bench indicators o HygroPalm 2 and HygroPalm 3 portable indicators o HygroClip DI digital interface o HygroClip Alarm programmable logic o HygroStat MB Device Manager (device configuration) and other device specific functions
Probe Adjustment 1	Humidity and temperature adjustment function common to all legacy devices (original HygroClip technology)
Device Specific Functions 2 (separate book for each device type or model)	Devices based on the AirChip 3000 technology: <ul style="list-style-type: none"> o HygroClip 2 (HC2) probes o HF3 transmitters and thermo-hygrostats o HF4 transmitters o HF5 transmitters o HF6 transmitters o HF7 transmitters o HL20 and HL21 data loggers o HP21, HP22 and HP23 hand-held indicators o HygroLab C1 table-top indicator o LOG-RC Series Data Loggers o Custom designed OEM products Device Manager (device configuration) and Data Logging functions
Probe Adjustment 2	Humidity and temperature adjustment function common to all devices based on the AirChip 3000 technology
Data Recording Function	Data recording function common to all devices based on the AirChip 3000 technology

Both the HW4 manuals (software) and device specific manuals (hardware) are available from the HW4 CD. The manuals can also be downloaded from several of the ROTRONIC web sites.

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2 OVERVIEW

This section of the HW4 manual covers only the following HW4 modules:

HW4 Functional Modules LOG-RC Series Data Loggers	Usage
Device Manager	<ul style="list-style-type: none"> ○ User configurable settings for the data loggers and associated accessories
Data Logging	<ul style="list-style-type: none"> ○ Memory status, log interval setting and data download

- **Calibration / Adjustment:** HW4 does not allow calibrating or adjusting the LOG-RC series data loggers. The HygroClip probe that is used with model LOG-HC2-RC cannot be calibrated or adjusted while connected to the data logger. HW4 can be used to calibrate and adjust a HygroClip probe that is directly connected to the HW4 PC by means of a service cable such as cable AC3001. For instructions, please see the HW4 manual **E-M-HW4v3-A2-001**
- HW4 functions that are not device dependent are covered in the HW4 manual **E-M-HW4v3-Main**.

3 INITIAL SETUP

The LOG-RC series data loggers use the following radio frequencies to communicate with the HW PC: 433.92 MHz (standard) or 915 MHz (USA).

Communication with the HW4 PC requires one of the following types of adapter:

- USB dongle wireless adapter
- LAN wireless adapter (Ethernet – TCP/IP protocol)

In principle, you may use as many LAN adapters as required by your application but you can only one USB dongle adapter.

3.1 *USB dongle wireless adapter*

The USB dongle wireless adapter requires a driver in order to communicate with the HW4 PC.

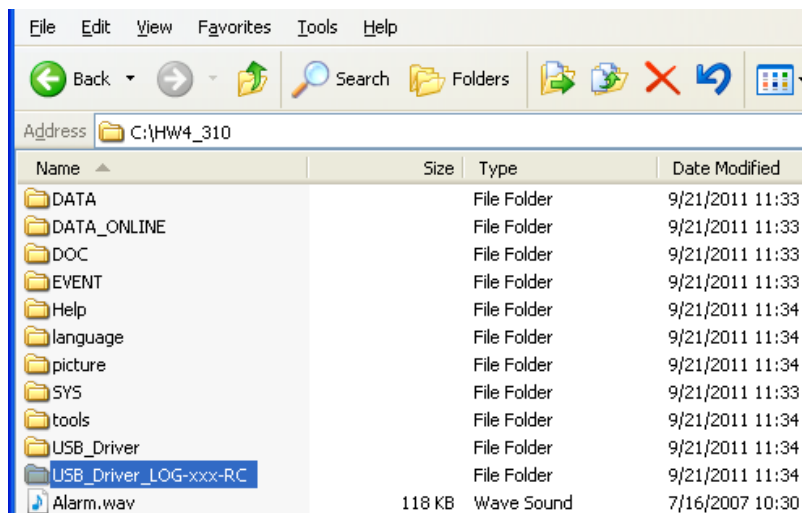
IMPORTANT:

- Do not run HW4 while installing this driver
- Do not plug-in the USB dongle to the HW4 PC before installing the driver

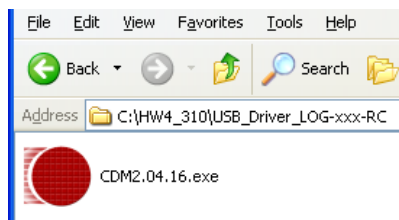
3.1.1 **USB Driver installation**

As part of its installation process, the HW4 installer creates a directory labeled “**USB_Driver_LOG-xxx-RC**” located in the HW4 installation folder:

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Open the directory and double click on the file named CDM2.04.16.exe. This automatically installs on the HW4 PC the driver required to use USB dongle wireless adapter



At this point you can plug-in the USB dongle wireless adapter to the HW4 PC and Windows should automatically associate the driver to the USB dongle. When this is done you can run HW4 and search for any available data logger as explained later on in this manual.

3.2 LAN wireless adapter

The LAN adapter is factory configured to use DHCP (Dynamic Host Configuration Protocol) and should be used only on a LAN that includes a DHCP server such as a router or a managed switch.

With DHCP enabled, the DHCP server senses when a new device (or host) is connected to the network and automatically assigns / configures the device with the next available IP address. The device is also automatically configured with the network subnet mask and gateway address. Using DHCP is simple, guarantees compatibility with the network and eliminates the possibility of conflicting IP addresses.

An IP address assigned using DHCP is also known as a dynamic address. As long as DHCP remains enabled on the host, the host IP address is subject to change. This is not desirable when using HW4.

Once the dynamic address of the host is known, and communication with the host can be established, we recommend to change the host IP address to an unused network address and to disable DHCP on the host. In this manner, the new host IP address is a static address, not subject to change.

When using more than one LAN adapter, make sure to give each one a unique name (or network name). See further down in this manual for instructions.

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4 SEARCHING FOR THE WIRELESS ADAPTER AND DATA LOGGERS

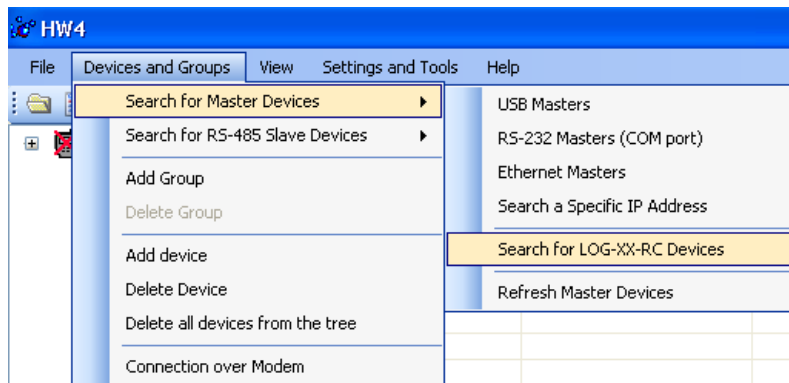
Do one of the following:

- Connect the USB dongle wireless adapter to the HW4 PC (after having installed the required USB driver)
- or
- Power up the LAN wireless adapter and connect it to the same LAN as the HW4 PC.

Note: in principle there is no limit as to the number of adapters that can be simultaneously used. However only a single USB dongle adapter is permitted.

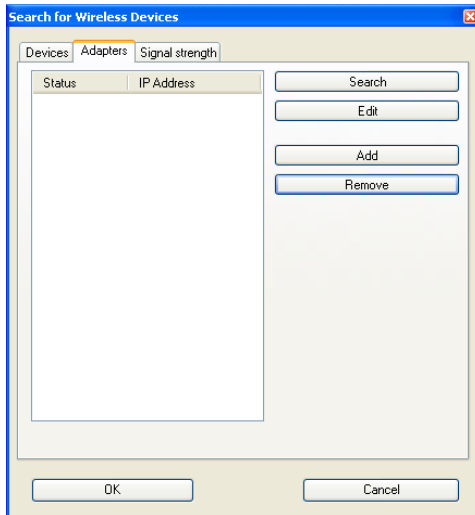
The Rotronic wireless data loggers are set by the factory to automatically transmit measurement data whenever interrogated by HW4. Initially, make sure that the data loggers are within a few meters (or yards) of the wireless adapter.

Start HW4 and use the HW4 main menu bar as illustrated below:



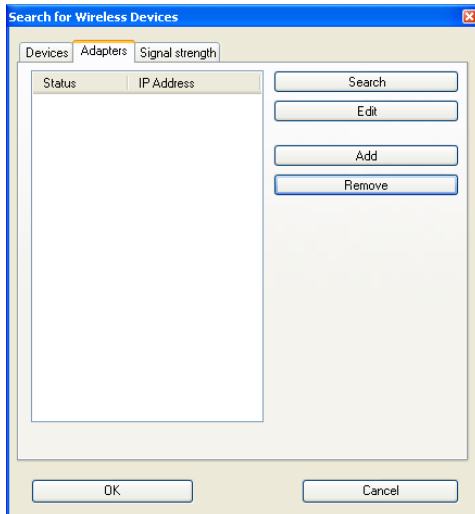
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Click on "Search for LOG-XX-RC" to open the Search for Wireless Devices form.



The form has 3 tabs labeled "Devices", "Adapters" and "Signal Strength".

4.1 Adapters Tab



The "Adapters" tab has 4 buttons located on the right hand side:

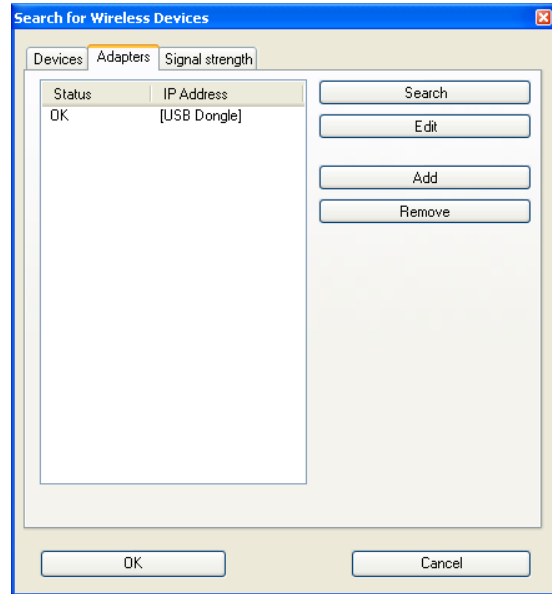
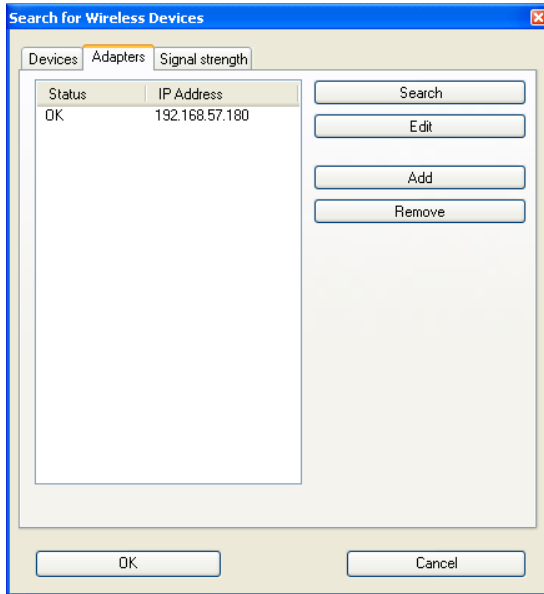
- **Search:** click on this button to detect any adapter (LAN or USB)
- **Edit:** this button works only with a LAN adapter and opens a form that can be used to change the network settings of the adapter
- **Add:** use this button to add a LAN adapter with a known IP address
- **Remove:** use this button to remove the selected adapter from the form

The adapters detected by HW4 are listed on the left hand side of the form. Any adapter can be selected by clicking on it with the mouse.

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LAN Wireless Adapter

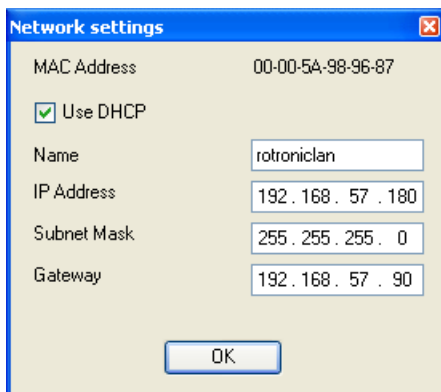
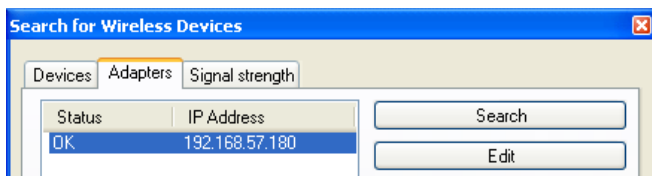
USB Dongle Wireless Adapter



The status reads "OK" when the adapter is working and when the HW4 PC can communicate with it. When a previously detected adapter can no longer be found, the status reads "unknown". In the case of a LAN adapter the form shows the IP address of the adapter. Whenever the IP address of a LAN adapter is not compatible with the LAN the status reads "invalid IP". In this case the adapter should be reconfigured as explained below.

4.1.1 Reconfiguring a LAN adapter

Select the "Adapters" tab and highlight the LAN adapter by clicking on it the mouse

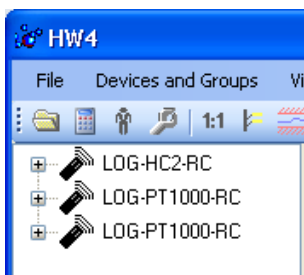
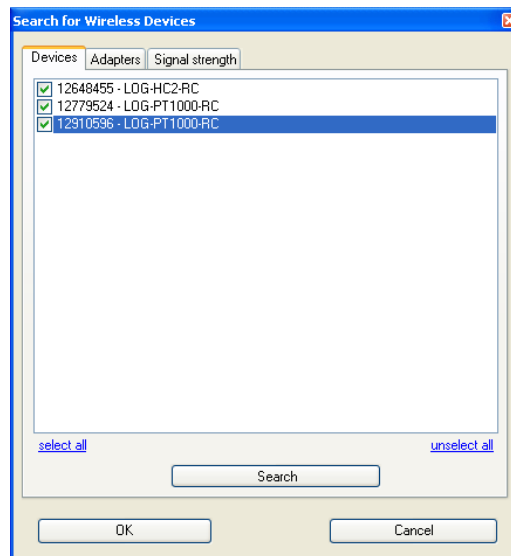
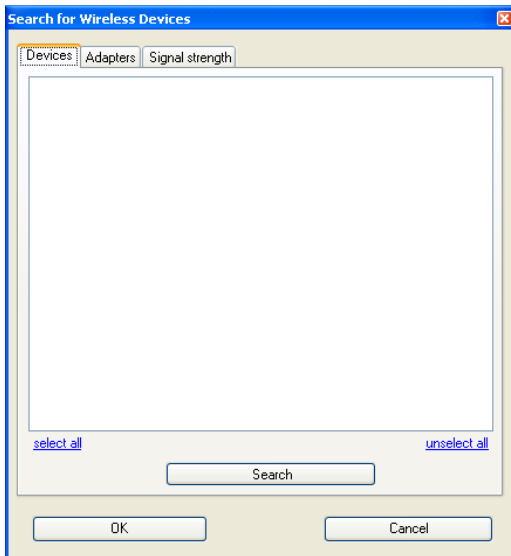


With the adapter selected, click on the "Edit" button and use the form shown to the left to change the adapter network settings.

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4.2 Devices Tab

The Devices Tab is used to make HW4 detect the wireless data loggers that are currently communicating with the wireless adapter(s). To do this, click on the “Search” button located at the bottom of the form.



The “**OK**” button is used to add the selected data loggers to the HW4 Device Tree as illustrated below.

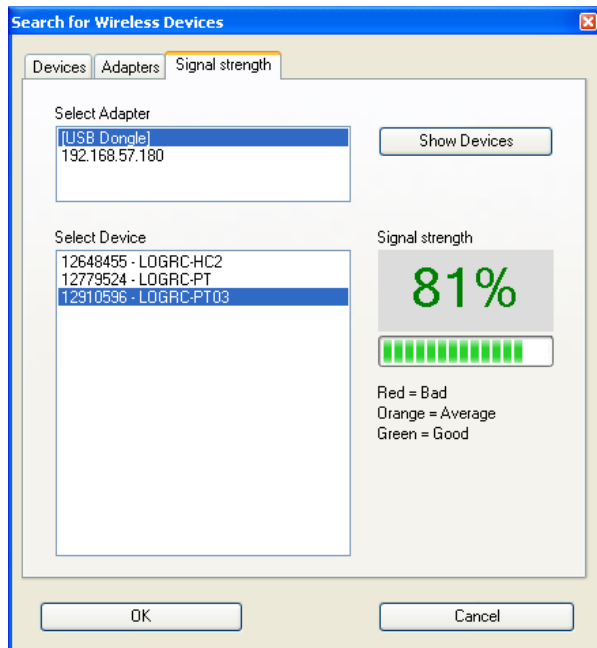
Any device can be individually selected by clicking on the box located to the left of the device (a check mark appears). All devices can also be globally selected or de-selected.

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4.3 Signal Strength Tab

This tab is used to visualize the strength of the radio signal received by each adapter from the wireless data loggers.

- Click on one of the available adapters to select it
- Click on the button labeled “Show Devices”
- Click on any device to select it and display the signal strength bar chart.



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5 HW4 Device Tree

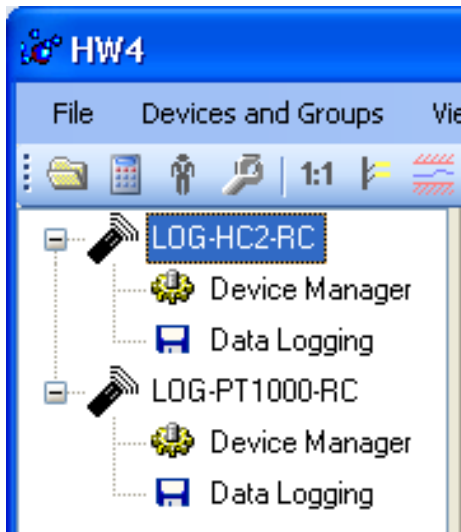


When HW4 has detected one or several wireless data loggers each device appears as an icon in the left pane of the HW4 main screen.

Click on the + sign to the left of any of the icons to display a list of the available functional modules (see below).

6 DEVICE MANAGER

The Device Manager module is used to configure the data loggers.



To select the Device Manager module, click on it with the left mouse button. HW4 opens the Device Manager form.

Device Manager automatically interrogates the data logger and downloads its current configuration.

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The different sub-forms that are available within the Device Manager form are listed in a tree located on the left pane of the form. To select a sub-form, click on it with the left mouse button.

6.1 Device Manager Form Menu Bar

The Device Manager Menu bar is located at the top of the form.

File

- **Close:** closes the form

Tools

- **Generate Protocol:** generates a Device Configuration Protocol. This text file is automatically saved in the folder specified in HW4 Global Settings - File Locations Tab. If so desired, any directory and any file type may be specified. This action is not recorded in the User Event file.

Help:

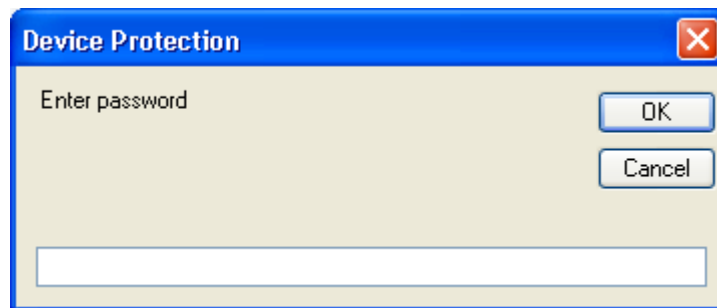
- **HW4 Help:** Opens HW4 Help
- **About HW4:** Displays the version number and ID number of HW4

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6.2 Device Information



- **Device Protection:** This function is used to prevent unauthorized access to critical functions such as configuration changes, humidity and temperature adjustment, etc. Click on the blue link labeled “Change” to activate or deactivate the device protection. The password is the 4 character access code that can be read from a sticker located on the device.



Click on the Device Manager OK button to confirm the protection settings to the data logger.

- **Set Date /Time:** click on this link to set the date and time of the data logger to the date and time of the HW4

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6.3 Settings

The contents of this form depends on the model of data logger

LOG-HC2-RC Settings

Device Manager

File Tools Help

Device Information
Settings

Settings

Device Name: LOGRC-HC2

Data Transmission: Solicited Mode

Fixed Pressure: 1013.25 hPa

Calculation: No calculation

Alarm Limits

	Low	High	Hysteresis
<input type="checkbox"/> Humidity	0	0	0
<input type="checkbox"/> Temperature	0	0	0
<input type="checkbox"/> Calculation	0	100	0

OK Cancel

LOG-PT1000-RC Settings

Device Manager

File Tools Help

Device Information
Settings

Settings

Device Name: LOGRC-PT

Data Transmission: Solicited Mode

Alarm Limits

	Low	High	Hysteresis
<input type="checkbox"/> Temperature	0	0	0

OK Cancel

- **Device Name:** As far as possible use a unique device name (maximum 12 characters)

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- **Data Transmission:**

Off: the data logger does not send measurement data when polled by HW4. Device Manager and Data Logging are still fully functional

Solicited Mode: select this data transmission mode if you wish to display the measurement data on the HW4 main screen. In this mode the data logger sends measurement only when solicited by HW4 via the wireless adapter. Measurement data cannot be sent by the data logger any faster than once every minute. This means that when the HW4 polling interval is less than one minute, measurement data is received from the data logger only once every minute. To set the HW4 polling interval: use the HW4 Main Menu Bar > Settings and Tools > HW4 Global Settings > General Tab. It is important to note that the measurement data sent by the data logger is refreshed only at the rate of the log interval used by the logger (see Data Recording in this manual). Both the HW4 polling interval and the data logger log interval should be set by the user so as to conserve battery power.

Unsolicited Mode: the data logger automatically sends measurement data every 6 seconds. This data transmission mode is meant for use with data logger model LOG-GPRS-RC (under development)

- **Fixed Pressure:** use this field to enter a numerical value for calculated psychrometric parameters that require barometric pressure as an input value.

- **Calculation:** Left click on the arrow to the right of the text box and select from the following: No calculation, Dew Point, Frost Point or other psychrometric parameter. Please note that the data logger itself does not perform any calculation and that the calculation setting is not retained in the data logger. The calculation setting must be re-entered whenever the data logger is deleted from the Device Tree and is searched again.

- **Lo-Alarm, Hi-Alarm, Hysteresis:** Alarm conditions can be defined for humidity, temperature and the calculated parameter. Values that are below the low alarm value or above the high alarm value will trigger an alarm. The value specified for the alarm function hysteresis is used for both the low and the high alarm. To enable the alarm function click on the box located to the left of each parameter that you wish to monitor. A check mark appears in the box when monitoring is enabled.

All versions of HW4 show an out-of-limits value alarm by using red characters on the monitor screen. In addition, HW4 Professional can be configured (HW4 global settings - Alarm settings tab) to display an alarm table and generate a report whenever an out-of-limits condition occurs

Please note that the data logger itself does not monitor alarm conditions and that alarm settings are not retained in the data logger. The alarm settings must be re-entered whenever the data logger is deleted from the Device Tree and is searched again.

6.3.1 Unit system

The unit system (metric / English) for both the measurement data displayed by HW4 and the recorded data downloaded to the HW4 PC is determined by the HW4 Global Settings (HW4 main menu bar > Settings and Tools > HW4 Global Settings, Language / Unit System tab)

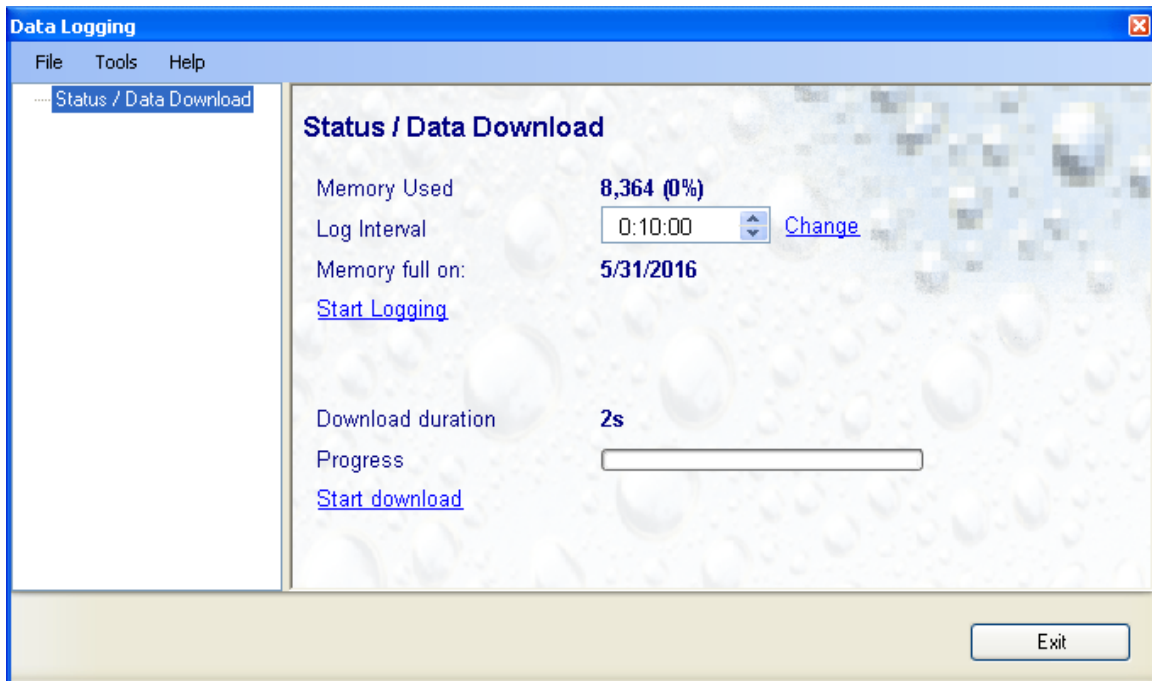
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7 DATA LOGGING

The Data Logging module is used to set the log interval, download the recorded data to the HW4 PC and clear the memory.



To select the Data Logging module, click on it with the left mouse button. HW4 opens the Data Logging form.



Note: this series of data loggers is designed to record data continuously until the memory becomes full. No data recording stop function is provided.

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- **Log interval:** 5 seconds to 12 hours, in 5 seconds increments.
- **Change :** click on this link to write the value of the log interval to the data logger

NOTE: Based on both the memory size and on the log interval, the form provides an estimate of the date when the memory will be full. At that time the data logger will stop recording data. The estimated date does not take into account the remaining battery lifetime or the effect of the log interval value on the battery power.

- **Start Logging:** click on this link to erase the memory contents and start recording a new set of measurement data
- **Start Download:** click on this link to download and view the recorded data. The type of file used for storing the recorded data on the HW4 PC can be set from the menu bar of the Data Logging form (Tools > File Format)

7.1 Data Logging Form Menu Bar

The Data Logging menu bar is located at the top of the form.

File

- **Exit:** This menu item closes the form

Tools

- **File Format:** use this menu item to set the file format (text file - .txt or binary - .log) that HW4 uses when saving the data to disk.
- **Generate Protocol:** generates a Log Settings Protocol. This text file is automatically saved in the folder specified in HW4 Global Settings - File Locations Tab. If so desired, any directory and any file type may be specified. This action is not recorded in the User Event file.

Help:

- **HW4 Help:** Opens HW4 Help
- **About HW4:** Displays the version number and ID number of HW4

7.2 Adding a calculated parameter to the log file

HW4 View Data can be used to add a calculated parameter such as dew point to a log file comprised of relative humidity and temperature records. The parameter is calculated for each data record based on the relative humidity and temperature values.

HW4 View Data can also be used to replace the calculated parameter in a log file with a different one.

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HW4 View Data opens automatically after downloading data from the data logger. Files that have already been downloaded can be opened from the HW4 main menu bar by selecting File > Open. To access the “**Add / Change calculated parameter**” function, click on **Tools** in the HW4 View Data menu bar and select “Add / Change calculated parameter”. This opens the following form:

Use the form shown on the left to select one of the available calculated parameters.

NOTE: some parameters such as Enthalpy, Mixing Ratio etc. require barometric pressure as a calculation input. Be sure to enter the correct pressure value in the form.

Click on the OK button to add the selected calculated parameter or change the existing calculated parameter.

8 DOCUMENT RELEASES

Release	Software Ver.	Date	Notes
_10	3.1.0	Oct. 31, 2011	Original release