HW4 Software version 3

Device Manager
HP22 Humidity Temperature Indicator

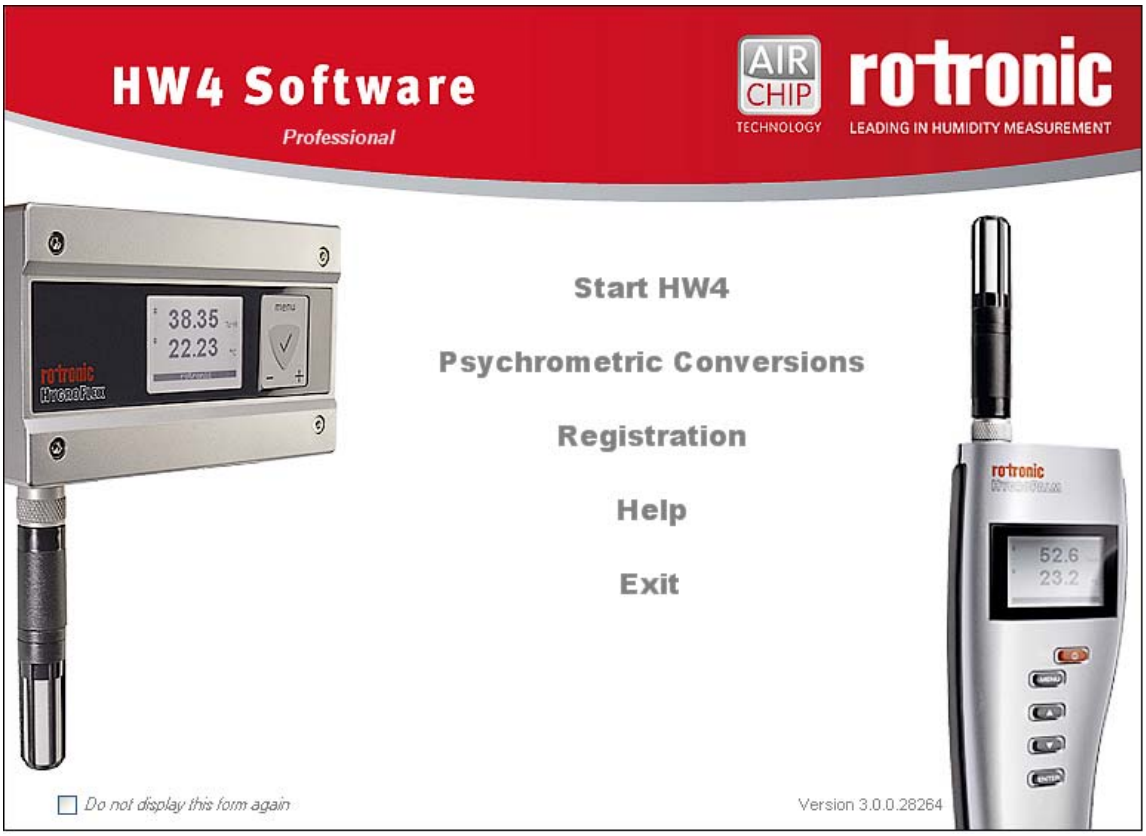


Table of contents

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): 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: 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 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.

2 OVERVIEW

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

HW4 Functional Modules for the HP22	Usage
Device Manager	o HP22 user configurable settings

o HW4 functions that are not device dependent are covered in the HW4 manual **E-IN-HW4v3-Main**.

2.1 *Functions and settings overview*

By itself, the HC2 probe (HygroClip 2) used with the HP22 indicator is already a full-fledged measuring instrument that can be used as a stand-alone device. The role of the HP22 indicator is to provide power to the HC2 probe and to offer additional functionality and features such as: local data display, local keypad for accessing some settings and functions, and calculation of additional psychrometric parameters.

It is important to note that when used together, the HP22 indicator and HC2 probe (HygroClip 2) constitute a 2-component system. Each system component has its own microprocessor, firmware and functions. Some of these functions are unique to each system component. Other functions are found in both components.

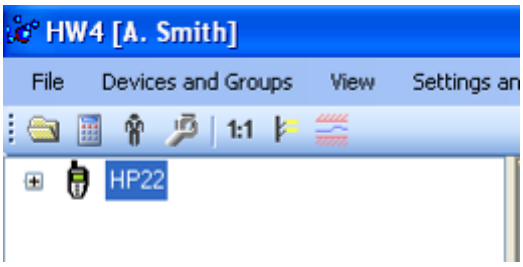
The functions and settings of the HP22 indicator and HygroClip 2 probe (HC2) operate together as indicated below:

Function / Setting	HP22	HC2	Notes
Device protection	**X**	**X**	Individual to the HP22 and HC2 probe
RS-485 address	**X**	**X**	Individual to the HP22 and HC2 probe
Device Name	**X**	**X**	User defined description The device name of the HC2 probe is not displayed by HW4 and is replaced with the HP22 Input Name
Calculation	**X**	**X**	Psychrometric calculation HP22 setting overrides HC2 probe setting
Fixed pressure value	**X**		Barometric pressure used for some psychrometric calculations
Data refresh rate	**X**		When set above 1 s, causes the HC2 probe not to be powered in between measurements
Simulator function	**X**	**X**	Generates fixed humidity and / or temperature value When enabled, HP22 settings override the HC2 probe settings
Unit system	**X**	**X**	HP22 setting overrides HC2 setting regarding the HP22 HC2 probe settings still apply at the level of the probe **Make sure to use the same humidity symbol and the same temperature unit for both the HP22 and probe.**

Function / Setting	HP22	HC2	Notes
Out-of-limits value alarm	X	X	HP22 settings are independent from the HC2 probe settings. **The probe alarm settings have an effect only when the HP22 is enabled to monitor the probe alarms. In general, enable the out-of-limit value alarm function only at the level of the HP22 and not at the level of the probe** When out-of-limit values have been defined for the same parameter for both the HP22 and probe, any alarm is triggered based on the narrowest set of limits.
Analog outputs		X	Parameter and scale HC2 probe settings have no effect on the HP22
Display	X		No effect on the HC2 probe
Automatic RH sensor test and compensation		X	The sensor status can be read with HW4 or with the HP22 display
Sensor alarm and sensor failure mode		X	The HC2 probe can be configured to trigger an alarm when the RH sensor test returns a bad result. Independently of the RH sensor test, the HC2 probe will trigger an alarm in the event of a major failure of either the RH or temperature sensor (shorted or open sensor). Additionally, the HC2 probe can be configured to generate a fixed value for humidity and temperature whenever a sensor alarm is triggered. HP22 can be set to monitor the HC2 sensor alarms
Data recording		X	Can be started or stopped with either HW4 or the HP22 keypad

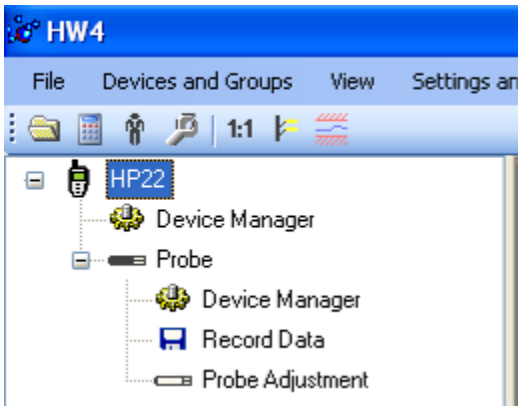
2.2 *Detecting the HP22 indicator with HW4*

Connect the HP22 indicator to the HW4 PC by means of the HP22 service connector and service cable. Proceed as indicated in document **E-IN-HW4v2.1-Main**.



When HW4 has detected a HP22 indicator, the HP22 appears as an icon in the left pane of the HW4 main screen. Click on the + sign to the left of the HP22 icon to display a list of the available functional modules.

Click on the + sign to the left of the HP22 icon to display the HP22 Device Manager module as well as a probe icon.



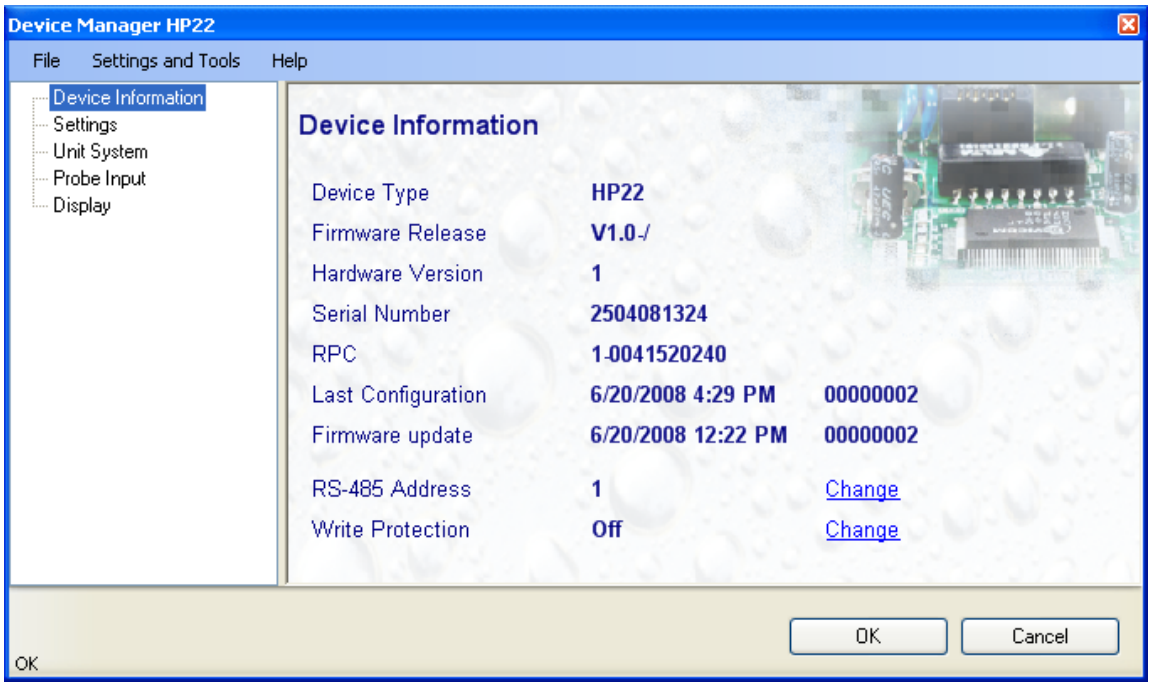
Click on the + sign to the left of the probe icon to display a list of the available functional modules for the probe.

3 DEVICE MANAGER HP22

Device Manager is used to configure the HP22.

To select the Device Manager for the HP22, click on it with the left mouse button. HW4 opens the Device Manager form.

Device Manager automatically interrogates the HP22 and downloads its current configuration.



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.

3.1 *Device Manager Menu Bar*

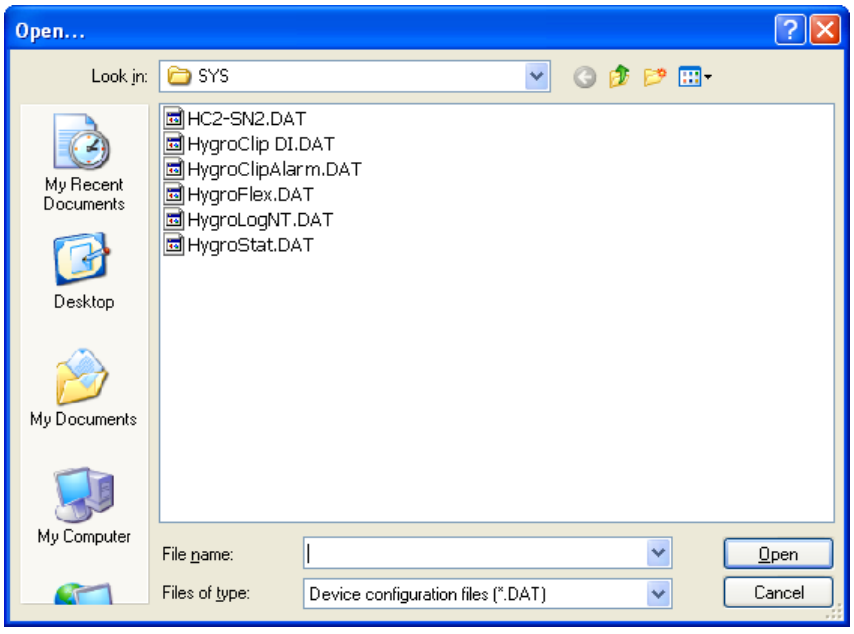
The Device Manager menu bar is located at the top of the form.

File

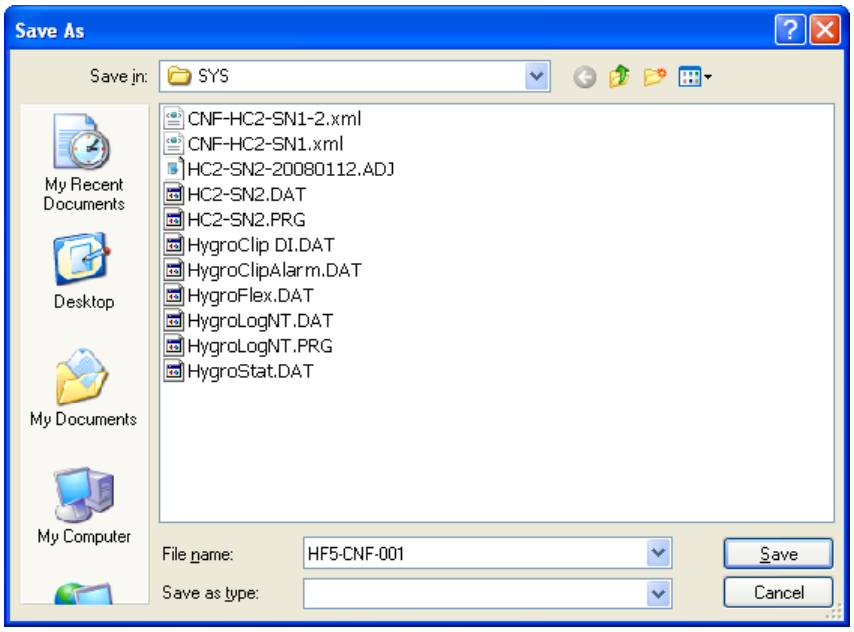
The file menu is used to save to the PC, or to retrieve from the PC, the configuration settings of the HP22. The settings are saved in an XML file with the extension DAT. Saving the configuration settings to a file is useful for several reasons:

- provides a backup when the device configuration has been changed in error
- provides a means of quickly configuring a replacement device in the exact same manner as the original device
- provides a means of quickly configuring a number of identical devices

- **Open:** opens the device configuration folder specified in HW4 Global Settings - File Locations Tab - and displays all available probe and device configuration files (extension DAT). Select the appropriate file and click on Open in the explorer form. The contents of the configuration file are loaded to the Device Manager form. Review the contents of the Device Manager sub-forms. Click on the Device Manager OK button to write the configuration settings to the device or click on the Cancel button to leave the device unchanged.



- **Save As:** saves the current configuration to an XML file with the extension DAT) in the device configuration folder specified in HW4 Global Settings - File Locations Tab. If so desired, any directory and any file type may be specified.

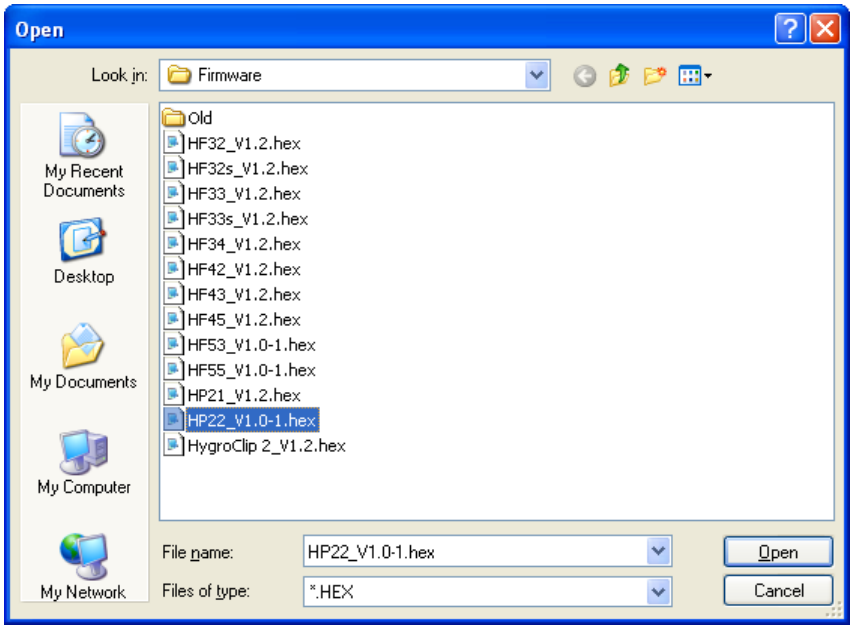


- **Exit:** exits Device Manager

Tools

- **Firmware Update:** This tool is used to update the firmware of the HP22 after downloading a new firmware file from the ROTRONIC website to your PC. Firmware files are given a name that shows both to which device the file applies and the version number of the firmware. All firmware files have the extension HEX. The ROTRONIC website will publish firmware updates as required.

  The tool opens a form that allows you to specify the folder where the firmware update file is located and to select the file. Click on OPEN to start the update process.



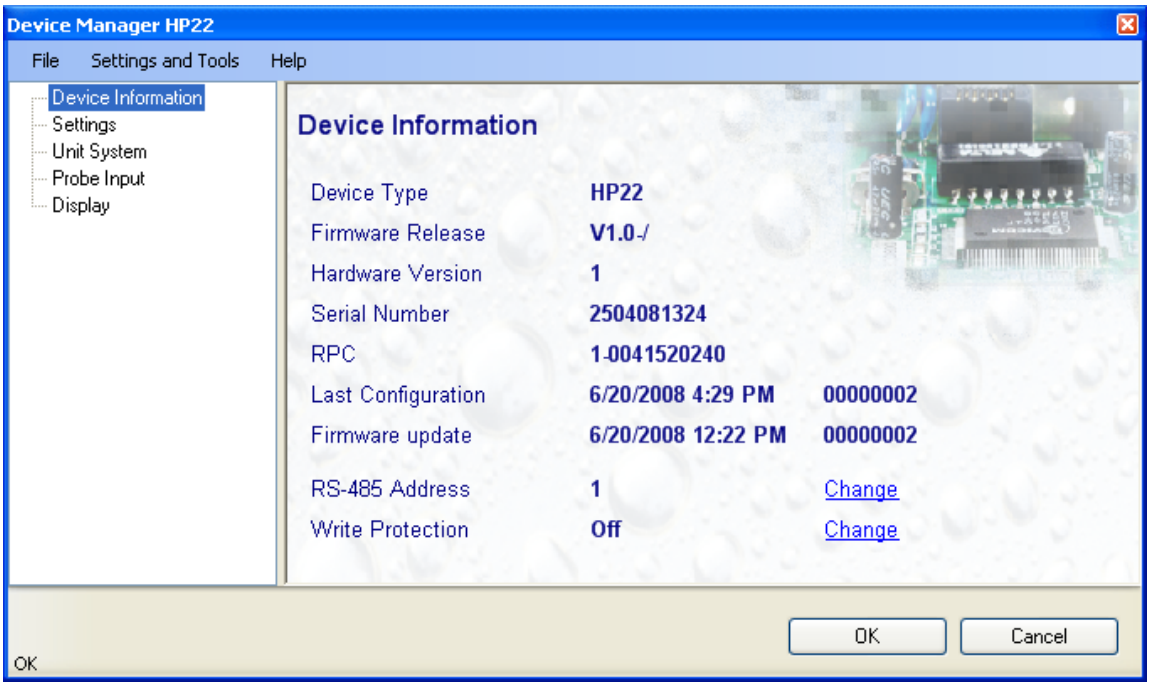
  IMPORTANT: the HP22 must be powered during the entire process. Loss of power when the transmitter is being updated may have unexpected results and prevent future operation of the HP22.

- **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:

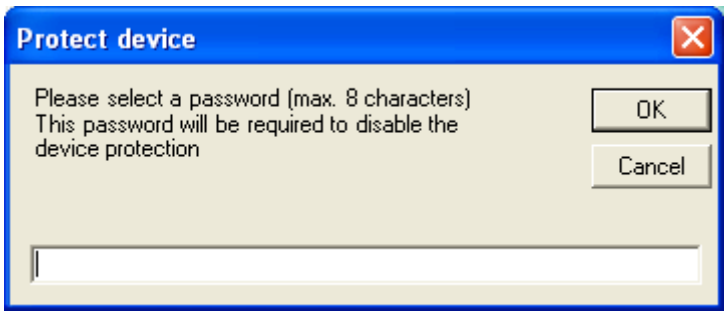
- **HW4 Help:** Opens HW4 Help
- **About HW4:** Displays the version number and ID number of HW4

3.2 *Device Information*



- **RS485 Address**: click on the underlined blue link to change the HP22 address to be used in conjunction with an RS-485 network (multi-drop). Each network address should be unique and within the values of 1 to 64. Note: the default factory RS-485 address is 0. Click on the Device Manager OK button to write the new address to the HP22.

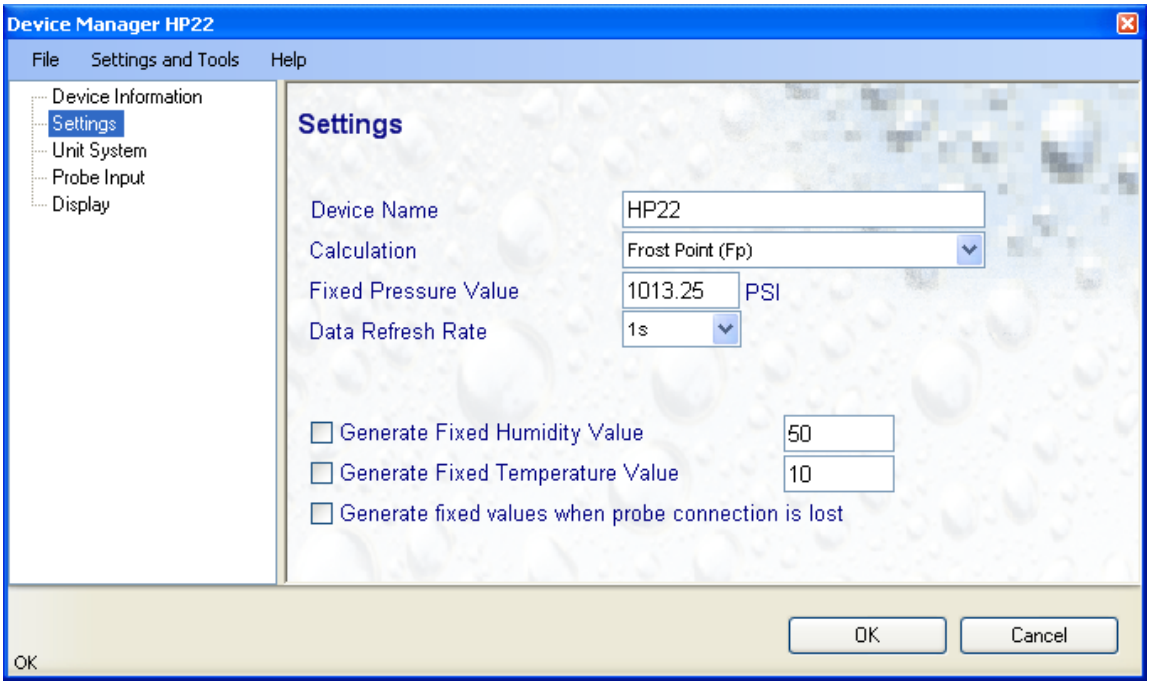
- **Device Protection**: This function is used to prevent unauthorized access to critical functions such as configuration changes, humidity and temperature adjustment, etc. Click on the underlined link next to Device Protection. HW4 opens the following form where a password can be entered (maximum 8 characters):



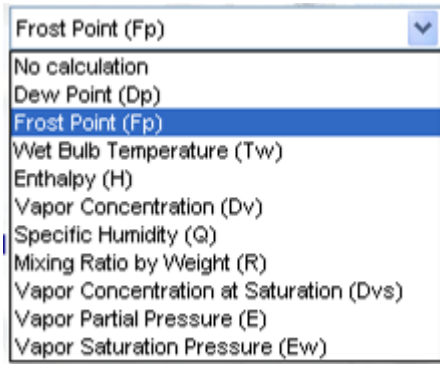
Click on the Device Manager OK button to write the new protection settings to the HP22.

FORGOT THE PASSWORD? - Power down the HP22. After powering up the HP22, you have about one minute to use the default password **!resume!** (include the exclamation marks). After one minute the default password is no longer accepted.

3.3 *Settings*



- **Device Name**: As far as possible use a unique device name (maximum 12 characters)
- **Calculation**: Left click on the arrow to the right of the text box and select from the list of available psychrometric parameters:



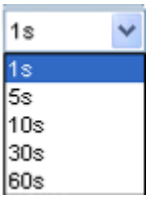
Notes:

Dew Point: calculates the dew point above and below freezing

Frost Point: calculates the frost point below freezing and the dew point above freezing

- **Fixed Pressure Val.**: enter here the fixed numerical value to be used for barometric pressure when calculating the following parameters: Wet bulb temperature, Enthalpy, Specific humidity and Mixing ratio by weight. This numerical value should correspond to the typical barometric pressure at your elevation (or in your process) and should be consistent with the unit system that is being used.

- **Data Refresh Rate**: the user can select a time interval for refreshing data on the display. When the interval is 5 s or more, the HC2 probe is not powered in between measurements.



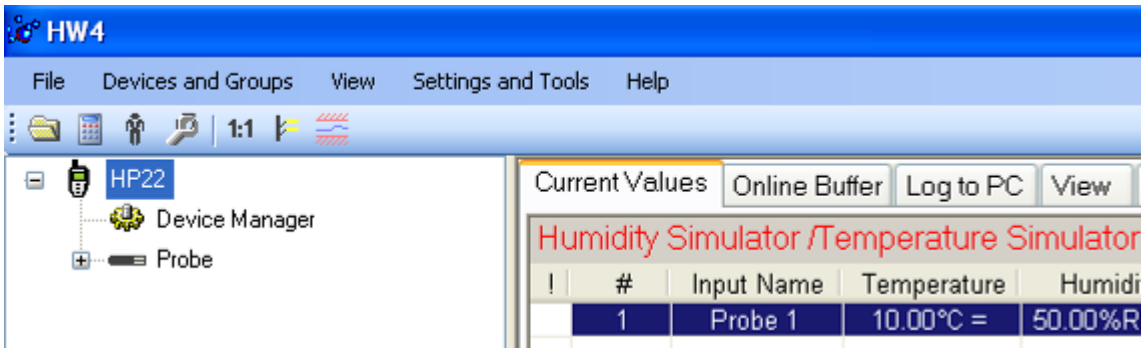
Note: this function is useful when conserving battery power is important. In other situations we recommend leaving the data refresh rate at its default value of 1 s.

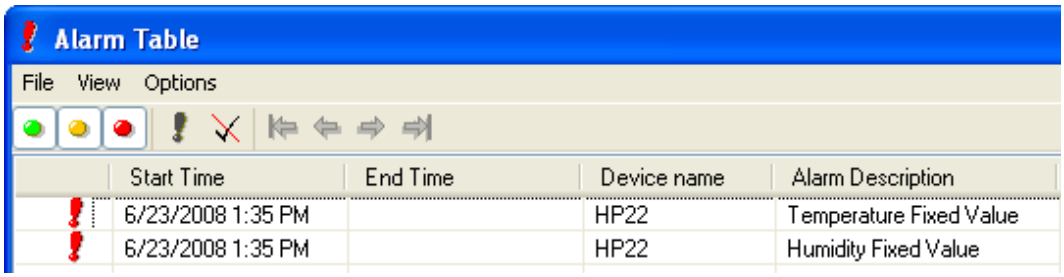
Important: when using the probe data recording function, make sure that the data refresh interval is not greater than the data logging interval (the probe needs to be powered to record data).

- **Generate Humidity Fixed Value / Generate Temperature Fixed Value**: place a check mark in these boxes to make the HP22 generate fixed humidity and temperature values instead of reporting the actual measurements.

  The fixed values must be with the following limits: -999.99 and 9999.99

  Whenever the humidity and/or temperature signal is set to a fixed value, this is reported on the HW4 main screen (current Values tab) as shown below. In addition, an entry is made in the Alarm Table (HW4 Professional)



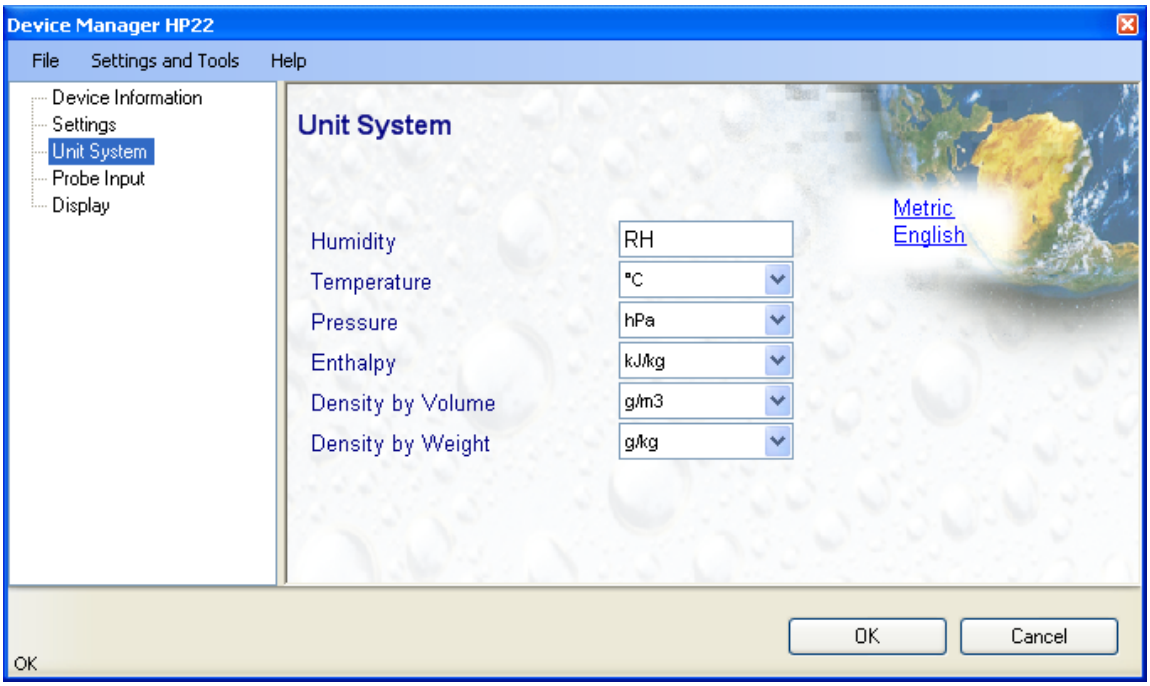


Simulator Action table

HP22 simulation	Probe simulation	HW4 and local HP22 display
enabled	enabled or disabled	HP22 simulated values
disabled	enabled	Probe simulated values
disabled	disabled	Actual measurement values

- **Generate fixed values when probe connection is lost**: place a check mark in this box to make the HP22 generate fixed humidity and temperature values whenever communication with the probe is lost. The fixed values are the same as specified under **Generate Humidity Fixed Value / Generate Temperature Fixed Value**.

3.4 *Unit System*

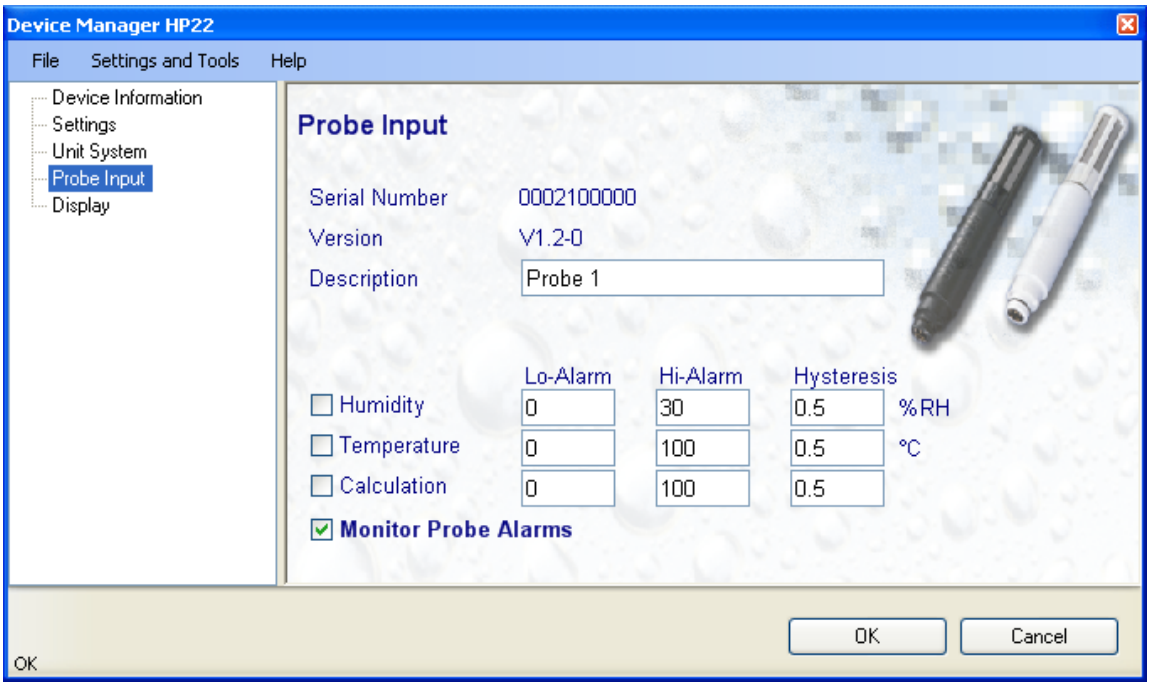


- **Humidity**: enter here the letters to be used after the “%” symbol used for relative humidity
- **Temperature and other parameters**: Left click on the arrow to the right of the text box and select the engineering unit.

Click with the mouse on the blue links labeled Metric or English to globally set the unit system for all parameters.

Note: regarding both HW4 and the local HP22 display, the unit system selected for the HP22 overrides the unit system selected for the probe.

3.5 *Probe Input*



Description: enter here a description for the probe input (maximum 12 characters). This text can be displayed in the HW4 current Values tab.

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.

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.

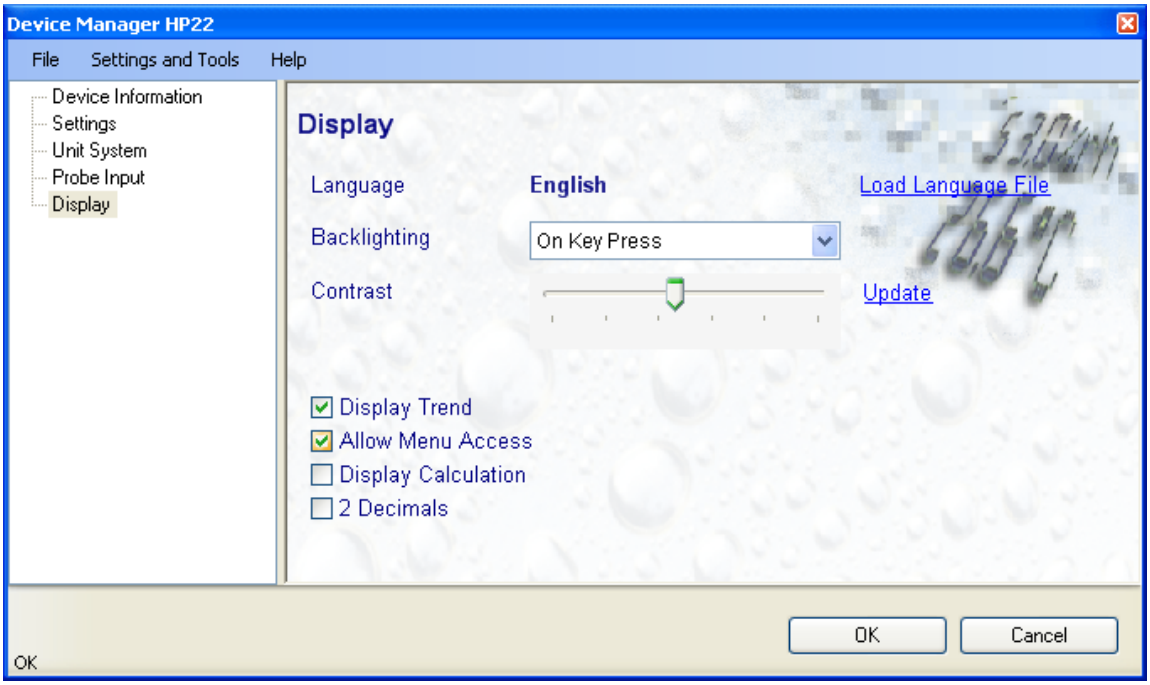
Note: in general, enable this alarm function only at the level of the HP22 and not at the level of the probe

Monitor Probe Alarms: enable this function to make the HP22 monitor alarms generated at the probe level such as out-of-limit value and / or bad sensor. When out-of-limit values have been defined for the same parameter for both the HP22 and probe, any alarm is triggered based on the narrowest set of limits.

Monitor probe alarms – action table

HC2 probe alarm	HW4	HP22
Out-of-limit value	- Value appears in red - Entry in alarm table	Alarm symbol appears on local display next to the out-of-limit value
RH sensor test result = Bad	- Warning appears on monitor screen - Entry in alarm table - When sensor failure mode is enabled, the parameter corresponding to the faulty sensor takes fixed value as per the HC2 probe settings.	- Sensor Alarm appears at the bottom of local display - When sensor failure mode is enabled, the parameter corresponding to the faulty sensor takes fixed value as per the HC2 probe settings.
Major sensor failure (shorted or open sensor)	- Warning appears on monitor screen - Entry in alarm table - When sensor failure mode is enabled, the parameter corresponding to the faulty sensor takes a fixed value as per the HC2 probe settings.	- Sensor Alarm appears at the bottom of local display - When sensor failure mode is enabled, the parameter corresponding to the faulty sensor takes a fixed value as per the HC2 probe settings.

3.6 *Display*

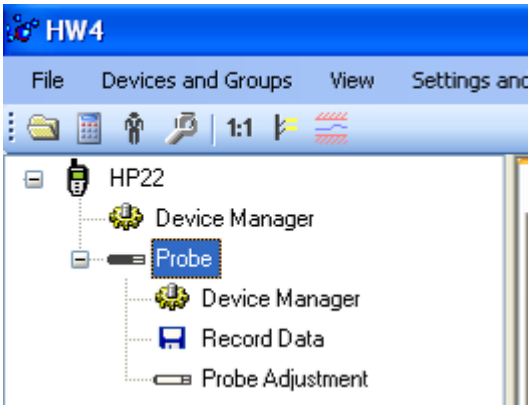


- **Load Language File**: click on this link to change the language of the HP22 internal menu by writing to the HP22 the contents of a language file present on your PC
- **Backlighting**: click on the arrow to the right of the box and select from Always off, Always on or On Key Press (this last choice applies only to instruments that have the optional display with backlighting)

- **Contrast**: use the slider to adjust the contrast of the LC display and click on the Update link to change the contrast. Click on the Update link to write the new contrast setting to the HP22.
- **Enable Trend**: check this box to enable the trend indicators on the optional local display. Trend indication in the HW4 Current Values tab is a Global Setting of HW4 (HW4 Main Menu > Settings and Tools > View tab)
- **Allow Menu Access**: put a check mark in this box to prevent access to the internal menu of the HP22 from the keypad.
- **Display Calculation**: check this box to have the display show by default relative humidity, temperature and the calculated parameter.
- **2 Decimals**: check this box to have the display show the values with 2 decimals instead of one decimal

4 PROBE

IMPORTANT: make sure that both the probe and the HP22 use the same humidity symbol and the same temperature unit (°C or °F)



To select a function module, click on it with the left mouse button.

- The **Device Manager** module is used to configure the HygroClip 2 probe connected to the HP22 indicator and is separately described in the HW4 manual **E-M-HW4v3-F2-001**
- The **Data Logging** module is common to all probes and instruments based on the AirChip 3000 technology and is separately described in the HW4 manual **E-M-HW4v3-DR-001**
- The **Probe Adjustment** module is used calibrate and adjust the probe humidity and temperature signals. This module is common to all probes and instruments based on the AirChip 3000 technology and is separately described in the HW4 manual **E-M-HW4v3-A2-001**
- HW4 functions that are not device dependent are covered in the HW4 manual **E-IN-HW4v3-Main**.

5 DOCUMENT RELEASES

Release	Software Ver.	Date	Notes
_10	3.0.0	Jun. 18, 2010	Original release