E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **1** of 19

HW4 Software version 3

Device Manager
HF5 Humidity Temperature Transmitter

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **2** of 19

Table of contents

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **3** of 19

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.

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **4** of 19

2   OVERVIEW

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

HW4 Functional Modules for the HF5	Usage
Device Manager	HF5 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 HF5 transmitter is already a full-fledged measuring instrument that can be used as a stand-alone device. Depending on the model, the role of the HF5 transmitter 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, calculation of additional psychrometric parameters, expanded choice of analog signal types and digital communication interfaces.

It is important to note that when used together, the HF5 transmitter 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.

HF52 (2-wire, loop powered transmitter): due to the necessity of limiting the current consumption of the combination of HF52 and HC2 probe to less than 4 mA, most probe functions such as RH sensor test, sensor alarms, data recording and probe adjustment are not available.

HF53 and HF55: the functions and settings of the HF5 transmitter and HygroClip 2 probe (HC2) operate together as indicated below:

| Function / Setting	HF5	HC2	Notes
Device protection	X	X	Individual to the HF5 and HC2 probe
RS-485 address	X	X	Individual to the HF5 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 HF5 Input Name
Calculation	X	X	Psychrometric calculation HF5 setting overrides HC2 probe setting
Fixed pressure value	X		Barometric pressure used for some psychrometric calculations
Data refresh rate	X		This setting has no effect on the HF5 and probe. The data refresh rate is always 5 s for the HF52 and 1 s for the HF53 and HF55
Simulator function	X	X	Generates fixed humidity and / or temperature value When enabled, HF5 settings override the HC2 probe settings
Unit system	X	X	HF5 setting overrides HC2 setting regarding the HF5 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 HF5 and probe.**

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **5** of 19

Function / Setting	HF5	HC2	Notes
Out-of-limits value alarm	X	X	HF5 settings are independent from the HC2 probe settings. **The probe alarm settings have an effect only when the HF5 is enabled to monitor the probe alarms. In general, enable the out-of-limit value alarm function only at the level of the HF5 and not at the level of the probe** When out-of-limit values have been defined for the same parameter for both the HF5 and probe, any alarm is triggered based on the narrowest set of limits.
Analog outputs	X	X	Parameter and scale HC2 probe settings have no effect on the HF5
Display settings	X		No effect on the HC2 probe
Automatic RH sensor test and compensation		X	Sensor status can be read with HW4 or with the optional display of the HF53 or HF55 **The automatic RH sensor test and compensation is function is not operational when the probe is connected to a HF52**
Sensor alarm and sensor failure mode		X	The HF5 can be set to monitor the HC2 sensor alarms 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). The HC2 probe can also be configured to generate a fixed value for humidity and temperature whenever a sensor alarm is triggered.
Data recording		X	Can be started or stopped either with HW4 or from the HF53 or HF55 keypad **Access to the HC2 probe data recording function is not available when the probe is connected to a HF52**

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **6** of 19

2.2 *Detecting the HF5 transmitter with HW4*

Connect the HF5 transmitter to the HW4 PC either by means of the HF5 service connector and service cable or by means of the HF5 digital interface (HF55 only). Proceed as indicated in document **E-IN-HW4v2.1-Main**.
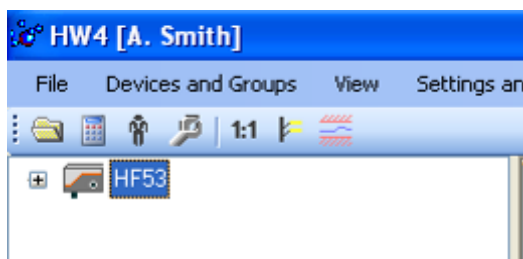

When HW4 has detected a HF5 transmitter, the HF5 appears as an icon in the left pane of the HW4 main screen. Click on the + sign to the left of the HF5 icon to display a list of the available functional modules.

Click on the + sign to the left of the HF5 icon to display the HF5 Device Manager module.

HF53 / HF55: HW4 also displays a probe icon that is used to access the probe functions
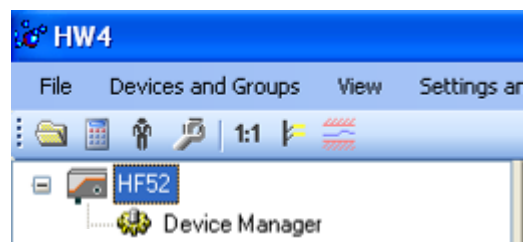
HF52: HW4 does not display a probe icon and the probe functions are not accessible

HF53 / HF55: click on the + sign to the left of the probe icon to display a list of the available functional modules for the HC2 probe.

| E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **7** of 19

3 DEVICE MANAGER HF5

Device Manager is used to configure the HF5.

To select the Device Manager for the HF5, click on it with the left mouse button. HW4 opens the Device Manager form.

Device Manager automatically interrogates the HF5 and downloads its current configuration.
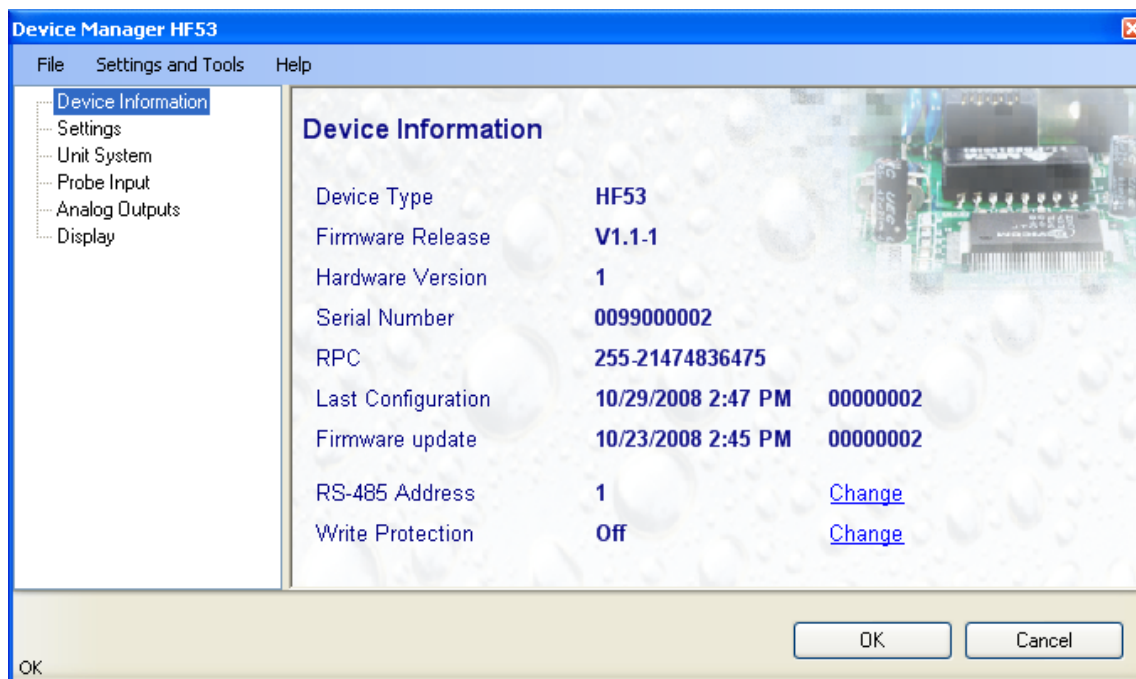
The different sub-forms that are available within the Device Manager form are listed in a tree located on the left pane of the form. The number of sub-forms depends on the HF5 model (Device Type). To select a sub-form, click on it with the left mouse button.

| E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **8** of 19

3.1 *Device Manager Menu Bar*

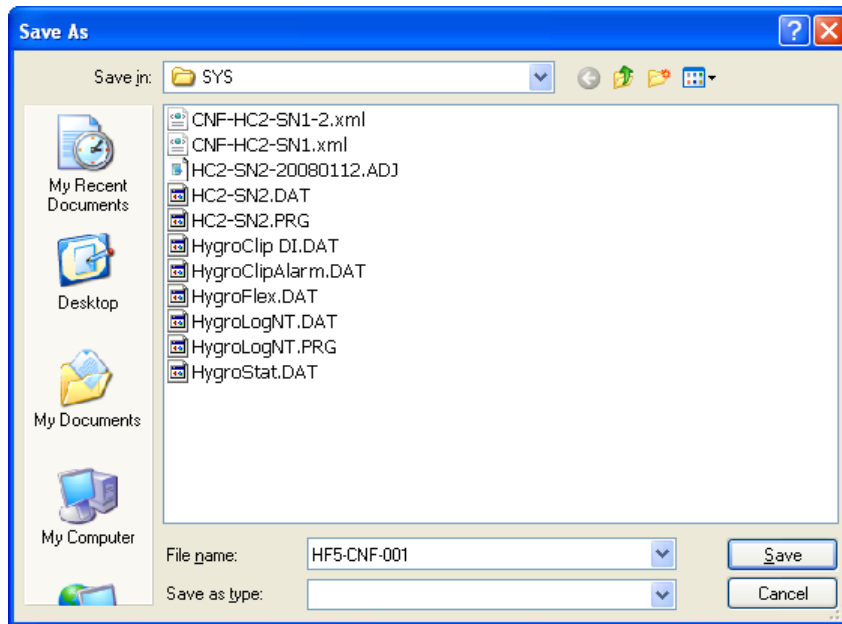The Device Manager menu bar is located at the top of the form.

File

The file menu is used to save to the PC, or to retrieve from the PC, the configuration settings of the HF5. 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.
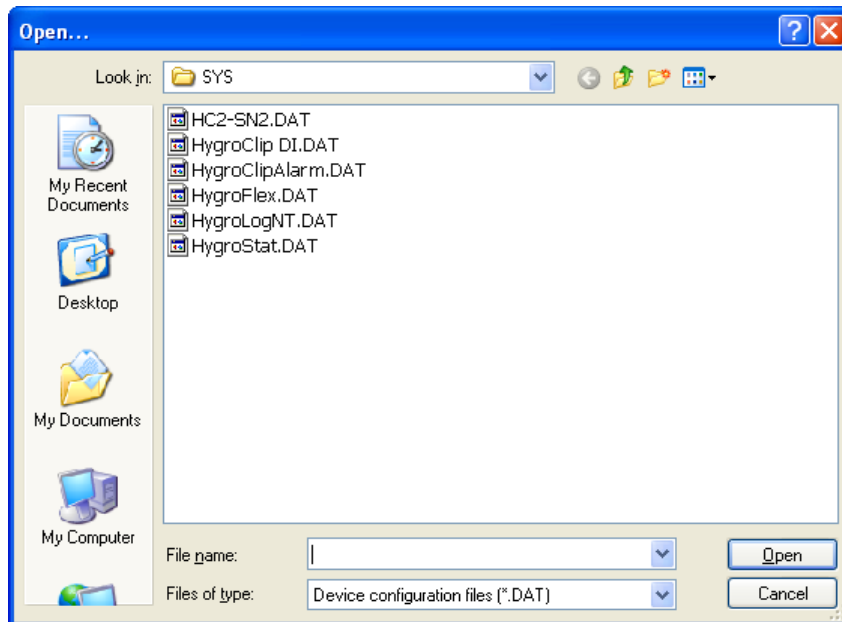
● **Save As:** saves the current configuration to an XML file with the extension DAT) in the device configuration folder specified in HW4 Global Settings - File Locations Tab. If so desired, any directory and any file type may be specified.

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **9** of 19

● **Exit:** exits Device Manager

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **10** of 19

Tools

- **Firmware Update:** This tool is used to update the firmware of the HF5 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.
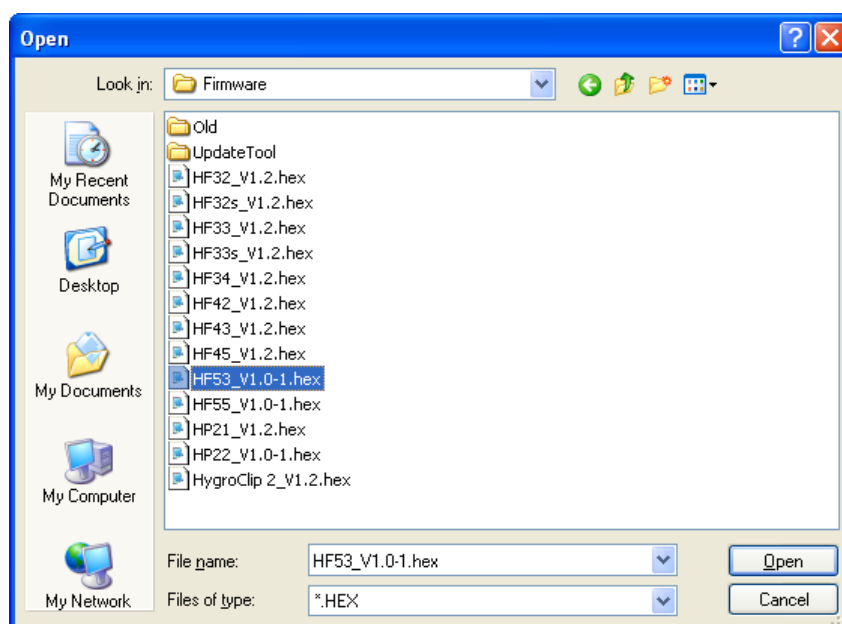
IMPORTANT: the HF5 must be powered during the entire process. Loss of power when the transmitter is being updated may have unexpected results and prevent future operation of the HF5.

- **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

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **11** of 19

3.2   *Device Information*
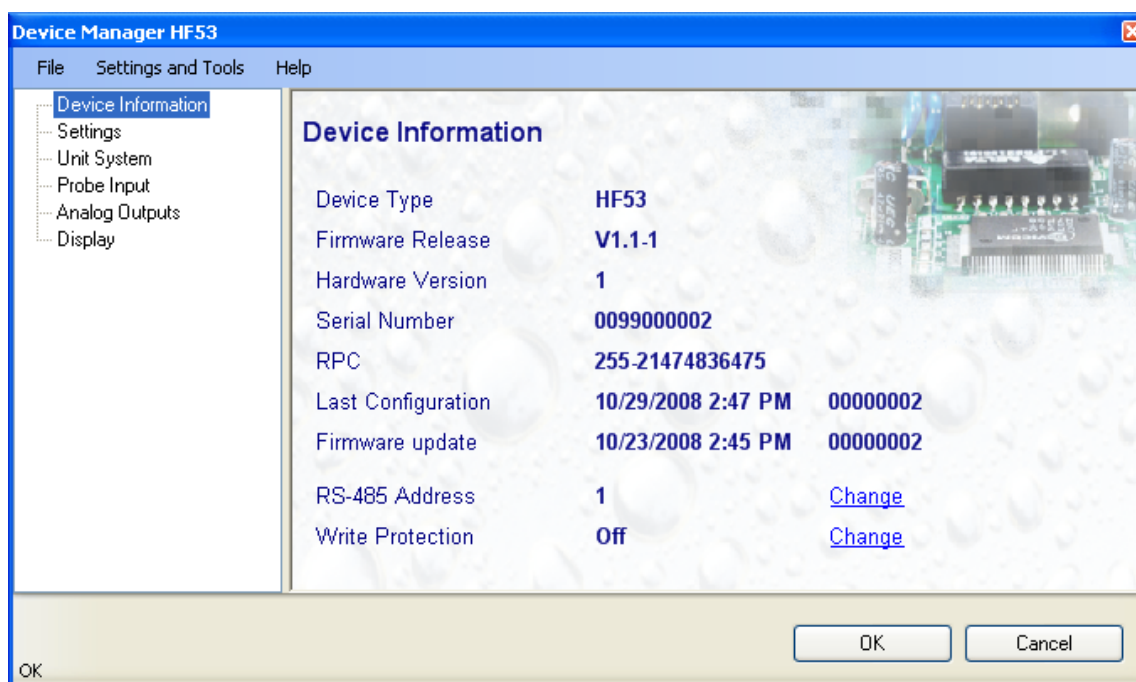
- **RS485 Address**: click on the underlined blue link to change the HF5 address to be used in conjunction with an RS-485 network (multi-drop). Each network address should be unique and within the values of 1 to 64. Note: the default factory RS-485 address is 0. Click on the Device Manager OK button to write the new address to the HF5.

- **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):
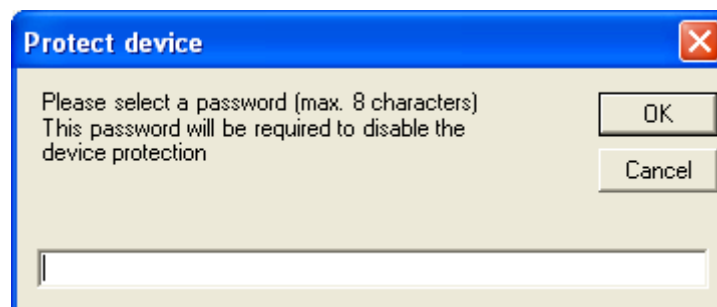
Click on the Device Manager OK button to write the new protection settings to the HF5.

FORGOT THE PASSWORD? - Power down the HF5. After powering up the HF5, 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.

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **12** of 19

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.

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **13** of 19

- **Data Refresh Rate**: this function has **no effect on the HF5 transmitter** and is used only with battery operated instruments when conserving battery power is important.

  Note:

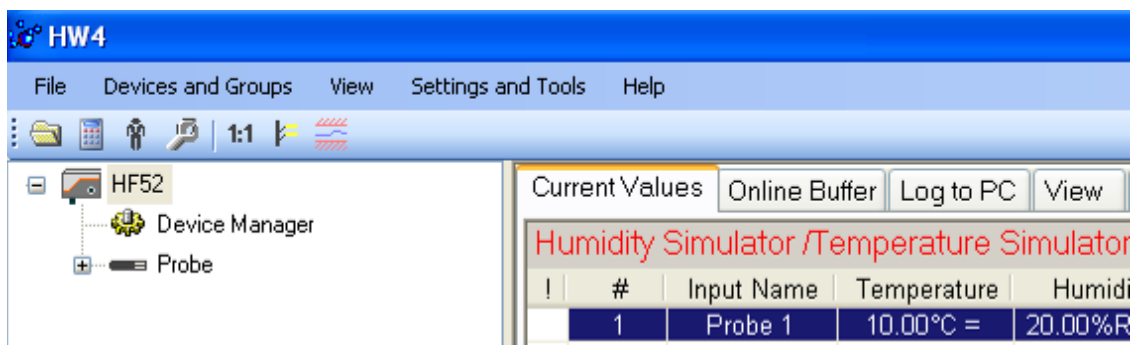 **HF52**: data is typically refreshed every 5 s.

  HF53 and HF55: data is typically refreshed every 1 s.

- **Generate Humidity Fixed Value / Generate Temperature Fixed Value**: place a check mark in these boxes to make the HF5 generate fixed humidity and temperature values instead of the actual measurements.

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

  Note: Make sure that the fixed values are within the range specified for the HF5 analog outputs

  Using the HF5 as a simulator serves the purpose of verifying the analog signal transmission (loop validation) after completing an installation. 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).

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **14** of 19

Simulator Action table

| HF5 simulation	Probe simulation	HW4 and local HF5 output / display
enabled	enabled or disabled	HF5 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 HF5 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**.

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

  Note: you may want to use fixed values that are within the range specified for the HF5 analog outputs

  Enabling this function removes the uncertainty as to the value of the analog output signals in the event that the probe is either not communicating with the transmitter or is disconnected from the transmitter. The HF5 will issue an alarm only when the alarm function has been enabled under **Probe Input** (see 3.5) and at least one of the fixed values is out of the limits defined for the alarm function.

3.4   *Unit System*
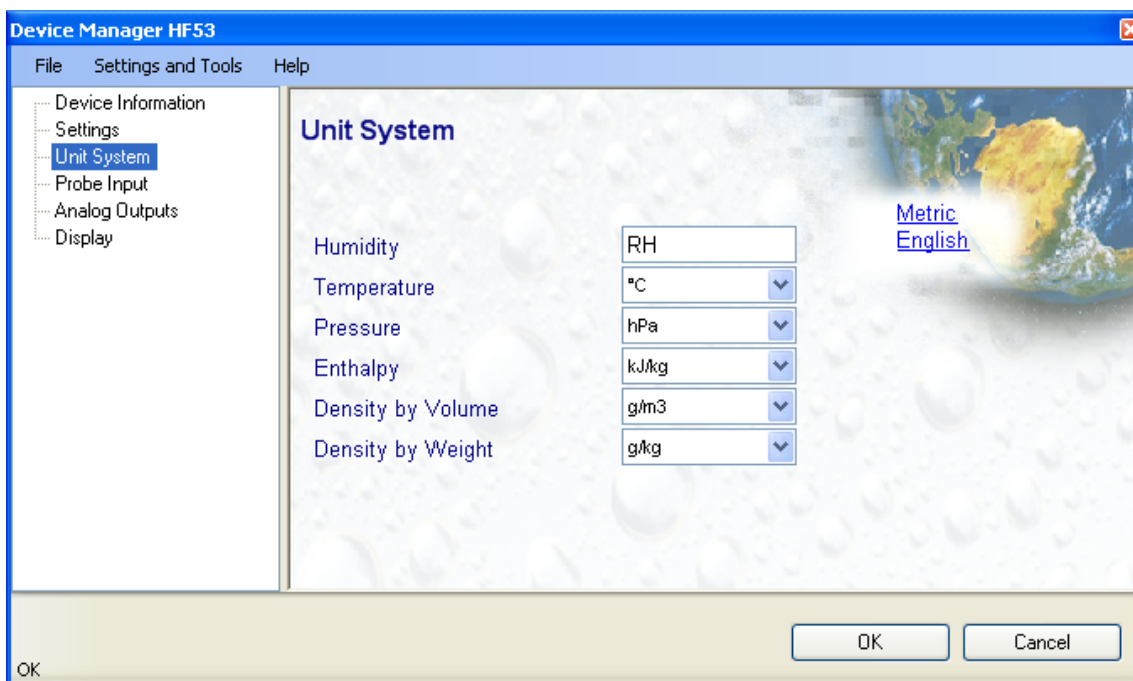
- **Humidity**: enter here the letters to be used after the "%" symbol used for relative humidity

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **15** of 19

● **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 HF5 outputs and display, the unit system selected for the HF5 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 limit value or above the high limit value will trigger a digital alarm (there is no alarm for the analog output signals). The value specified under "hysteresis" is used for both the low and the high limits.

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 HF5 and not at the level of the probe

Monitor Probe Alarms: When the function is enabled, the HF5 monitors the alarms generated at the probe level such as out-of-limit value and / or bad sensor alarm. When out-of-limit values have been defined both for the HF5 and for the probe, the narrowest set of limits is used to trigger a digital alarm.

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
	Page **16** of 19
Document title	

Monitor probe alarms – action table

HC2 probe alarm	HW4	HF5
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 the Fail Safe Mode is enabled (Probe Device Manager), 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 the Fail Safe Mode is enabled (Probe Device Manager), the parameter corresponding to the faulty sensor takes a fixed value as per the HC2 probe settings.. Note: **not available with the HF52**
Major sensor failure (shorted or open sensor)	- Warning appears on monitor screen - Entry in alarm table - When the Fail Safe Mode is enabled (Probe Device Manager), 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 the Fail Safe Mode is enabled (Probe Device Manager), the parameter corresponding to the faulty sensor takes a fixed value as per the HC2 probe settings..

E-M-HW4v3-F2-005_10	Rotronic AG
	Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager	**Instruction Manual**
HF5 Humidity Temperature Transmitter	Document Type
Document title	Page **17** of 19

3.6   *Analog Outputs (HF52 and HF53)*
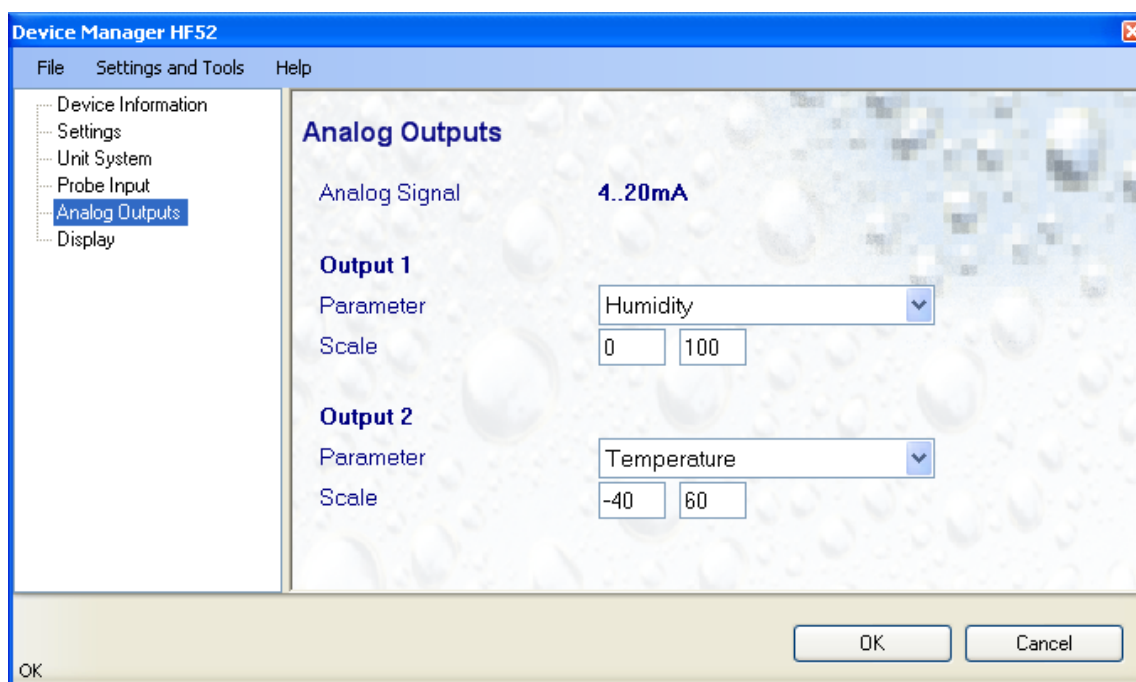
- **Analog signal**:

  HF53: the analog signal type is determined by the position of jumpers on the transmitter PCB (see document **E-M-HF5-V1**). HW4 reports the current configuration of the analog signals but does not allow changing the signal type.

  HF52: the analog signal type of the HF52 (2-wire, loop powered) is always 4…20 mA

- **Output 1 and Output 2:** select the parameter corresponding to each analog output and the range to be used.


Each output can be made to correspond to the parameters shown on the list. **Any output can also be disabled.**

The output range must be within the numerical limits of -999.99 and 9999.99

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland	
Document code	Unit	
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**	
	Document Type	
Document title	Page **18** of 19	

3.7   *Display (hardware option)*
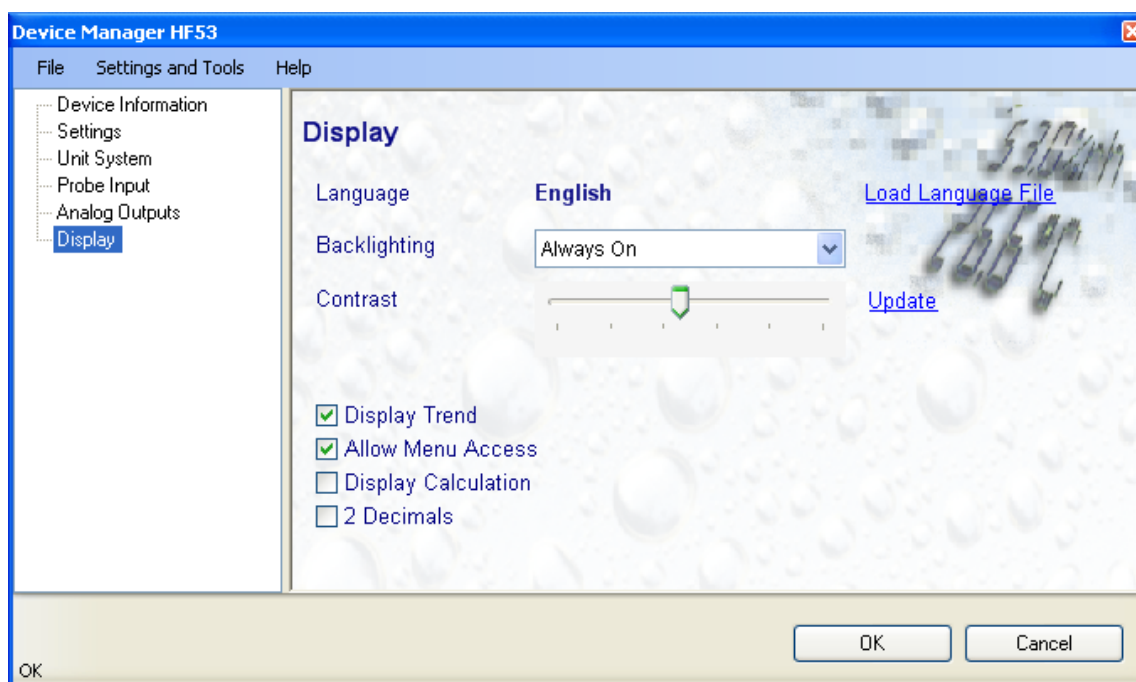
- **Load Language File**: click on this link to change the language of the HF5 internal menu by writing to the HF5 the contents of a language file present on your PC

- **Backlighting**: click on the arrow to the right of the box and select from Always off, Always on or On Key Press (this setting does not apply to the HF52 since this model is not available with a backlit display)

- **Contrast**: use the slider to adjust the contrast of the local 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 HF5.

- **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**: this box applies only for models that have a local display and keypad and is used to prevent access to the internal menu of the HF5.

- **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

E-M-HW4v3-F2-005_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager **HF5 Humidity Temperature Transmitter**	**Instruction Manual**
	Document Type
Document title	Page **19** of 19

4   PROBE (HF53 and HF55)

This function group is not available when the HC2 probe is connected to a HF52

IMPORTANT: make sure that both the probe and the HF5 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.

o   The **Device Manager** module is used to configure the HygroClip 2 probe connected to the HF53 or HF55 transmitter and is separately described in the HW4 manual **E-M-HW4v3-F2-001**

o   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**

o   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**

o   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