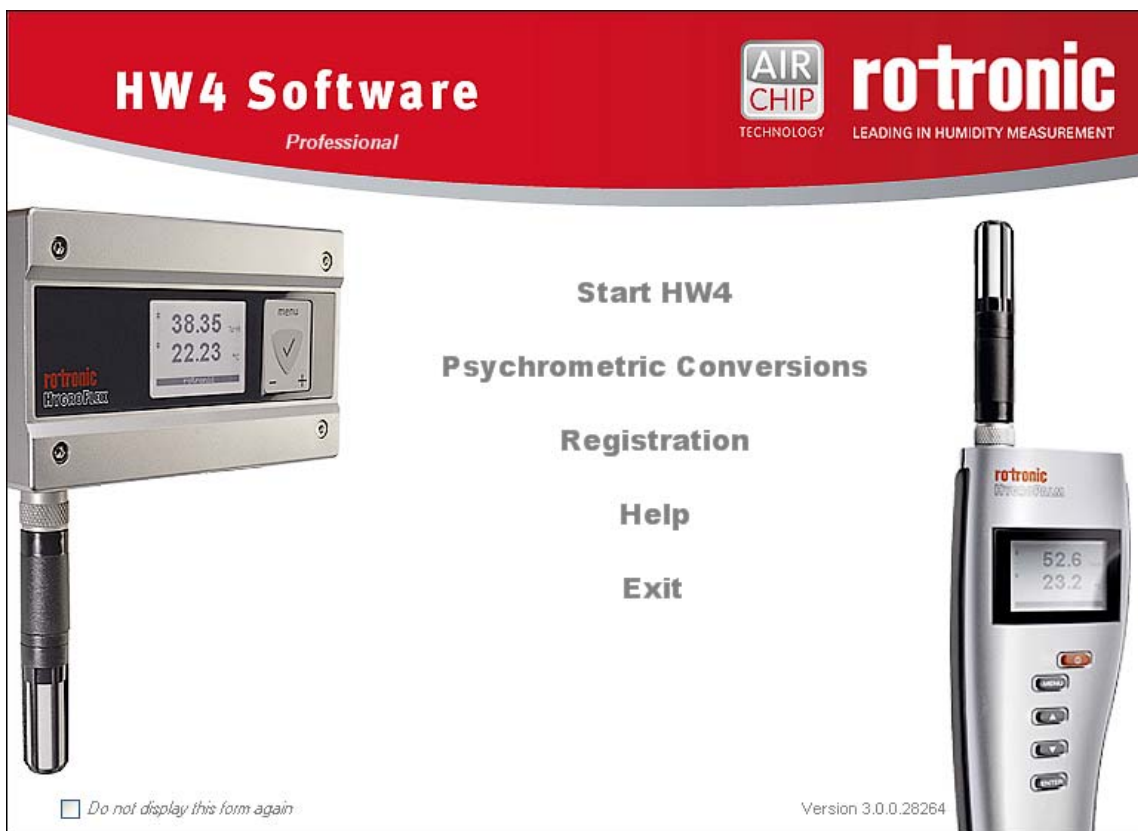


E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 1 of 19

HW4 Software version 2

Device Manager HF3 Transmitters and Thermo-Hygrostats



E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 2 of 19

Table of contents

1	ORGANIZATION OF THE HW4 MANUALS	3
2	OVERVIEW	4
3	DEVICE MANAGER.....	4
3.1	Device Manager Menu Bar	5
3.2	Device Information	10
3.3	Settings.....	11
3.4	Alarm	12
3.5	Analog Outputs (HF32 and HF33)	13
3.6	Relays (HF34).....	14
3.7	Display (HF32 and HF33 – space mount).....	16
3.8	RH Sensor Status	17
4	DOCUMENT RELEASES	19

E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	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): <ul style="list-style-type: none"> ○ HygroLog NT data logger ○ HygroFlex 2, HygroFlex 3 and M3 transmitters (same icon in device tree) ○ HygroLab 2 and HygroLab 3 bench indicators ○ HygroPalm 2 and HygroPalm 3 portable indicators ○ HygroClip DI digital interface ○ HygroClip Alarm programmable logic ○ 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"> ○ HygroClip 2 (HC2) probes ○ HF3 transmitters and thermo-hygrostats ○ HF4 transmitters ○ HF5 transmitters ○ HF6 transmitters ○ HF7 transmitters ○ HL20 and HL21 data loggers ○ HP21, HP22 and HP23 hand-held indicators ○ 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.

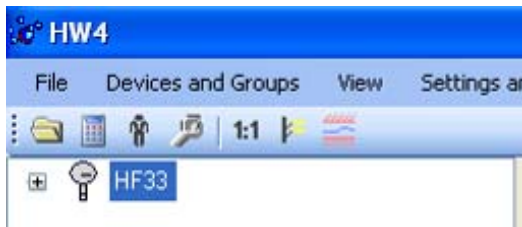
E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 4 of 19

2 OVERVIEW

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

HW4 Functional Modules for the HF3	Usage
Device Manager	<ul style="list-style-type: none"> ○ HF3 user configurable settings ○ AirChip 3000 user functions: enable and configure

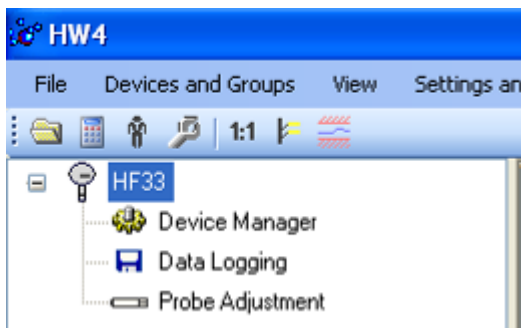
- The **Data Logging** module is common to all probes and instruments based on the AirChip 3000 technology and is separately described in the HW4 manual **E-M-HW4v3-DR-001**
- The **Probe Adjustment** module is used calibrate and adjust the humidity and temperature signals. This module is common to all 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**.



When HW4 has detected a HF3 transmitter or thermo-hygrostat, the HF3 appears as an icon in the left pane of the HW4 main screen. Click on the + sign to the left of the HF3 icon to display a list of the available functional modules.

3 DEVICE MANAGER

Device Manager is used to configure the HF3 and to enable, configure and access the AirChip 3000 functions.



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 HF3 and downloads its current configuration.

E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 5 of 19



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 and nature of the sub-forms depends on the HF3 model (Device Type). To select a sub-form, click on it with the left mouse button.

3.1 Device Manager Menu Bar

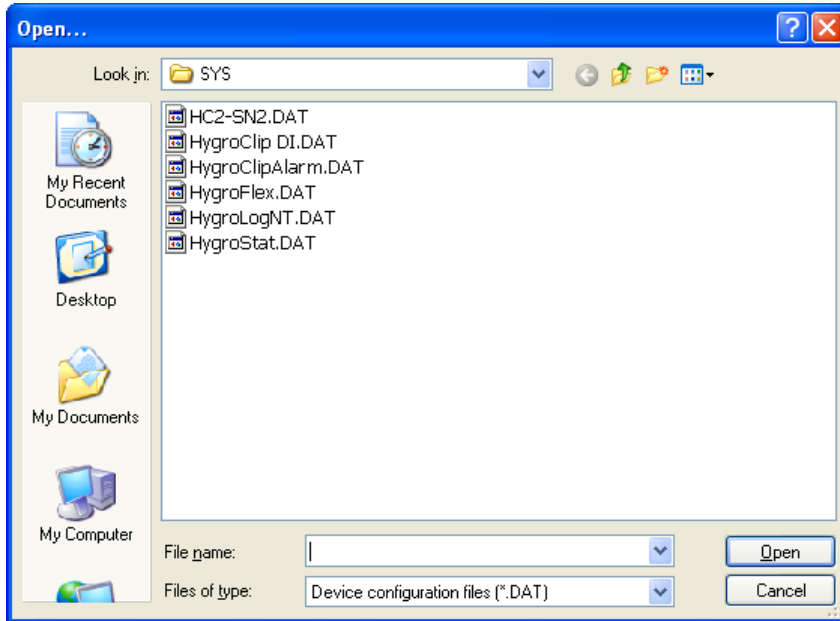
The Device Manager menu bar is located at the top of the form.

File

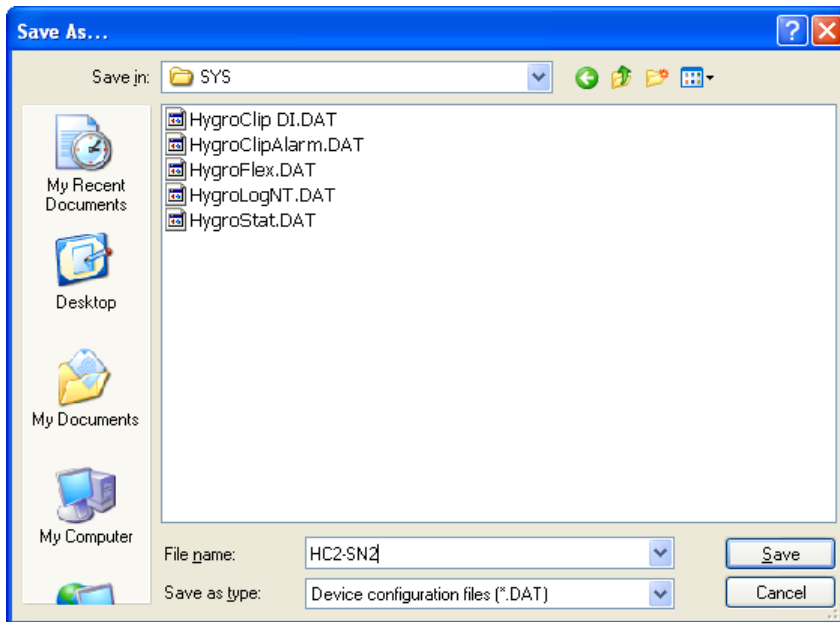
The file menu is used to save to the PC, or to retrieve from the PC, the configuration settings of the HF3. The settings are saved in an XML file with the extension DAT. Saving the configuration settings to a file is useful for several reasons:

- 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.

E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 6 of 19



- **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.



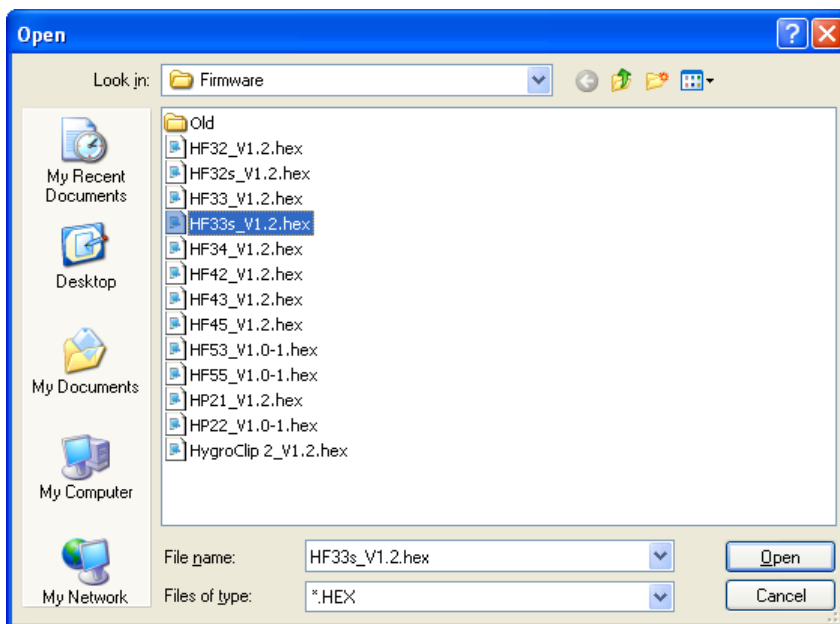
- **Exit:** exits Device Manager

E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 7 of 19

Tools

- **Firmware Update:** This tool is used to update the firmware of the HF3 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 HF3 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 HF3.

- **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.

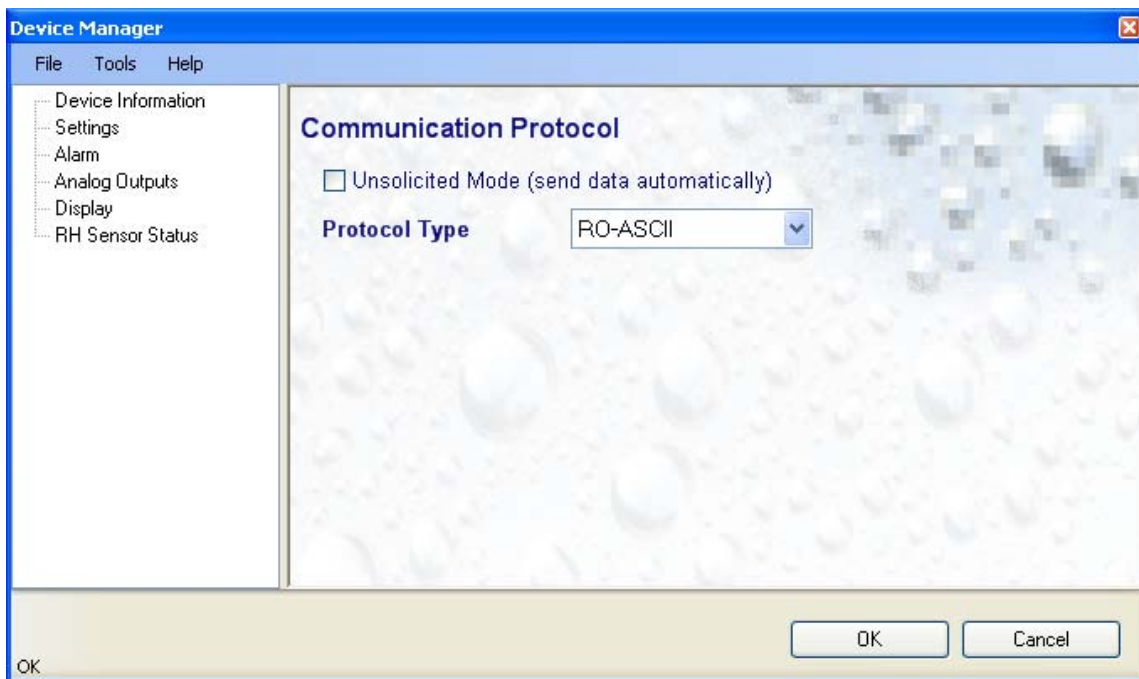
E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 8 of 19

• **Communication Protocol:**

NOTE: This tool is of no practical use with the HF3 transmitter series, as this series does not offer a digital interface other than the service connector.

The communication protocol tool is provided for users who want to communicate directly with an AirChip 3000 device with digital interface without relying on the HW4 software and is used to select and configure one of the communication protocol options available with the AirChip 3000.

The tool opens the form shown below:



Protocol Type:

Select from one of the following options:

RO-ASCII: This is the standard (default) communication protocol used by all AirChip 3000 devices and by the HW4 software.

Custom: This communication protocol can be used to provide compatibility of the AirChip 3000 device with an existing digital communication system. The Custom communication protocol is limited to reading measurement data from the AirChip 3000 device. Functions such as device configuration, humidity and temperature adjustment, etc. are not supported. The Custom protocol is applicable to all AirChip 3000 devices with a digital interface and allows RS-485 networking

Modbus: The AirChip 3000 Modbus protocol is limited to reading measurement data from the AirChip 3000 device. Functions such as device configuration, humidity and temperature adjustment, etc. are not supported by the AirChip 3000 Modbus protocol.

I2C: Use of the I2C protocol is limited to HC2 probes and to some OEM products. The I2C protocol available with the AirChip 3000 is limited to reading measurement data. Functions such as device configuration, humidity and temperature adjustment, etc. are not supported by the I2C protocol

E-M-HW4v3-F2-002_10 <small>Document code</small>	Rotronic AG Bassersdorf, Switzerland <small>Unit</small>
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats <small>Document title</small>	<div style="text-align: right;"> Instruction Manual <small>Document Type</small> </div> <hr/> <div style="text-align: right;"> Page 9 of 19 </div>

Unsolicited Mode:

Selecting this mode causes the AirChip 3000 device to send data automatically after each refresh cycle without requiring a data request. This is the only mode available with the I2C protocol.

NOTES:

- The Custom, Modbus and I2C protocols can be used only with AirChip 3000 devices with firmware version 1.3 or higher.
- For detailed instructions, see document **E-M-AC3000-CP**

Help:

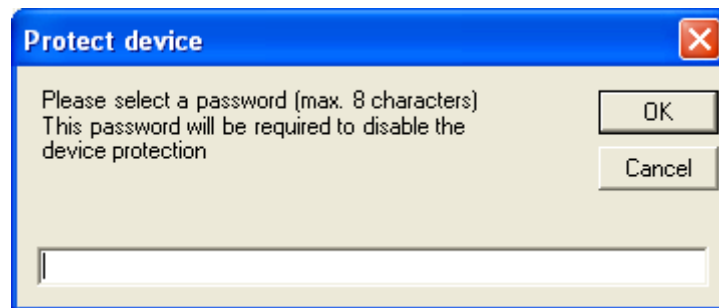
- **HW4 Help:** Opens HW4 Help
- **About HW4:** Displays the version number and ID number of HW4

E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 10 of 19

3.2 Device Information



- **RS485 Address:** click on the underlined blue link to change the HF3 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 HF3.
- **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):

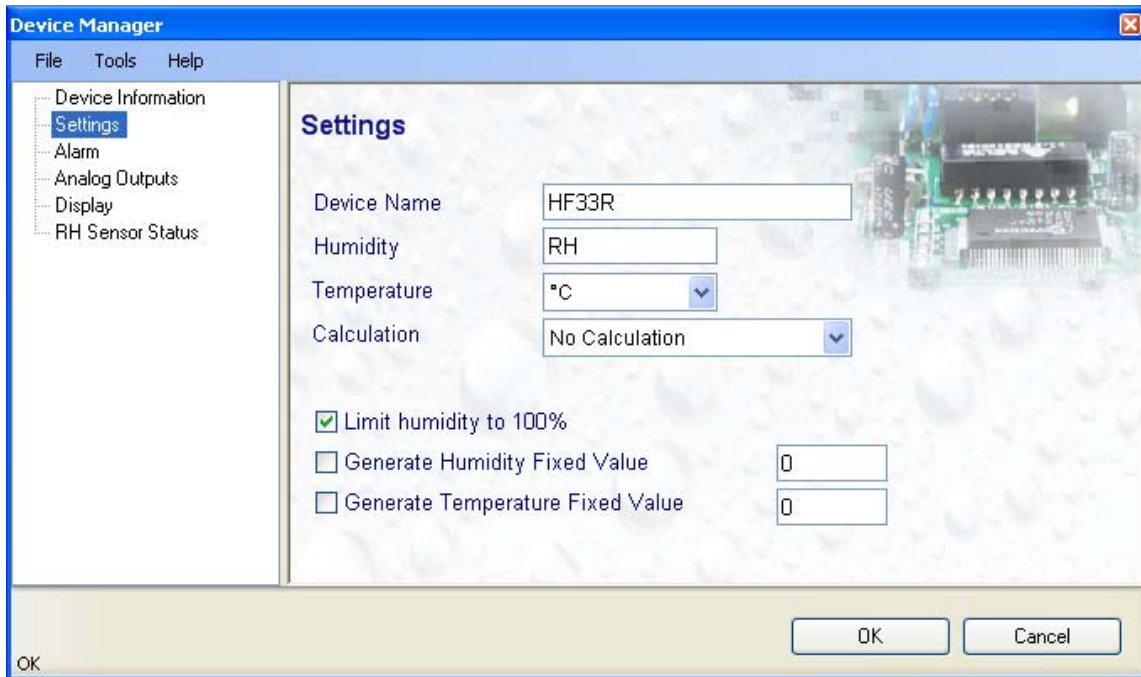


Click on the Device Manager OK button to write the new protection settings to the HF3.

FORGOT THE PASSWORD? - Power down the HF3. After powering up the HF3, 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-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 11 of 19

3.3 Settings



- **Device Name:** As far as possible use a unique device name (maximum 12 characters)
- **Humidity:** enter here the letters to be used after the “%” symbol used for relative humidity
- **Temperature:** Left click on the arrow to the right of the text box and select the temperature engineering unit (*C or *F).
- **Calculation:** Left click on the arrow to the right of the text box and select from the following: No calculation, Dew Point or Frost Point
- **Limit humidity to 100%:** typically, the humidity sensor gives a reading slightly above 100 %RH when condensation occurs at the surface of the sensor. Check this box to limit the maximum value of humidity to 100 %RH.
- **Generate Humidity Fixed Value / Generate Temperature Fixed Value:** place a check mark in these boxes to make the HF3 generate fixed humidity and temperature values instead of the actual measurements.

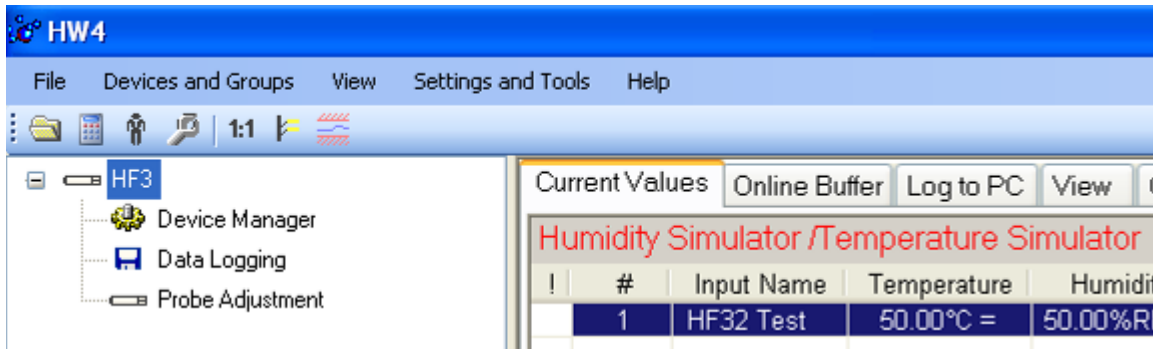
The fixed values must be with the following limits: -999.99 and 9999.99

Note: Make sure that the fixed values fall within the range specified for the HF3 analog outputs

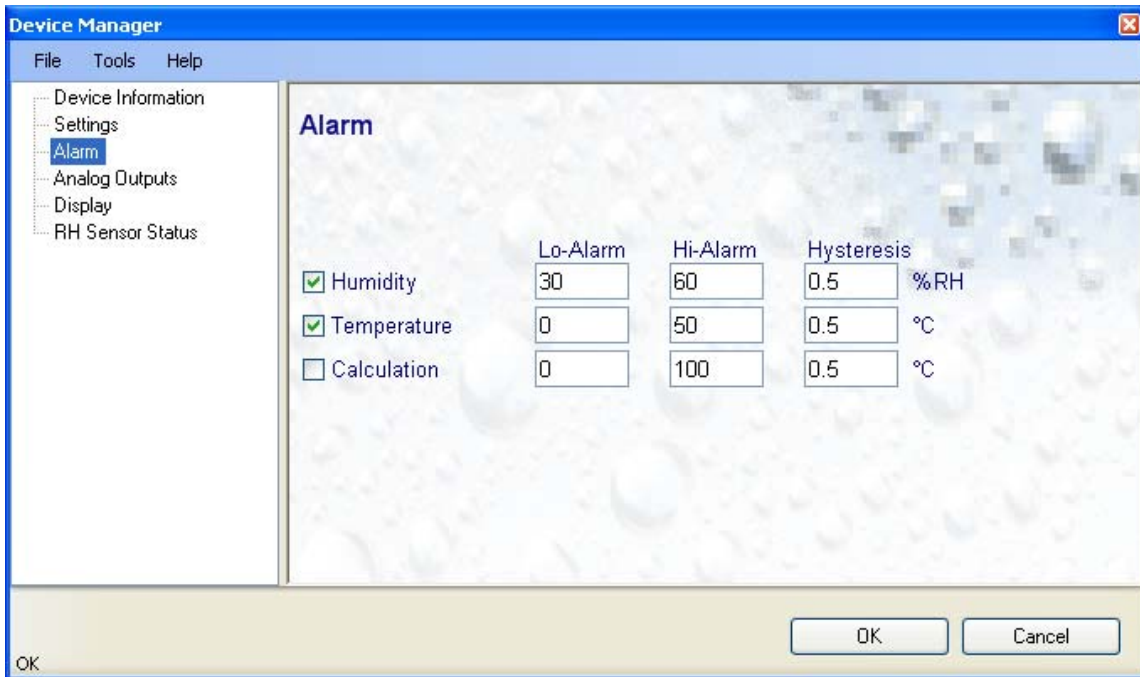
Using the HF3 as a simulator serves the purpose of verifying the analog signal transmission (loop validation) after completing an installation.

E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 12 of 19

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. The fixed value is shown in red when the transmitter is not selected.



3.4 Alarm



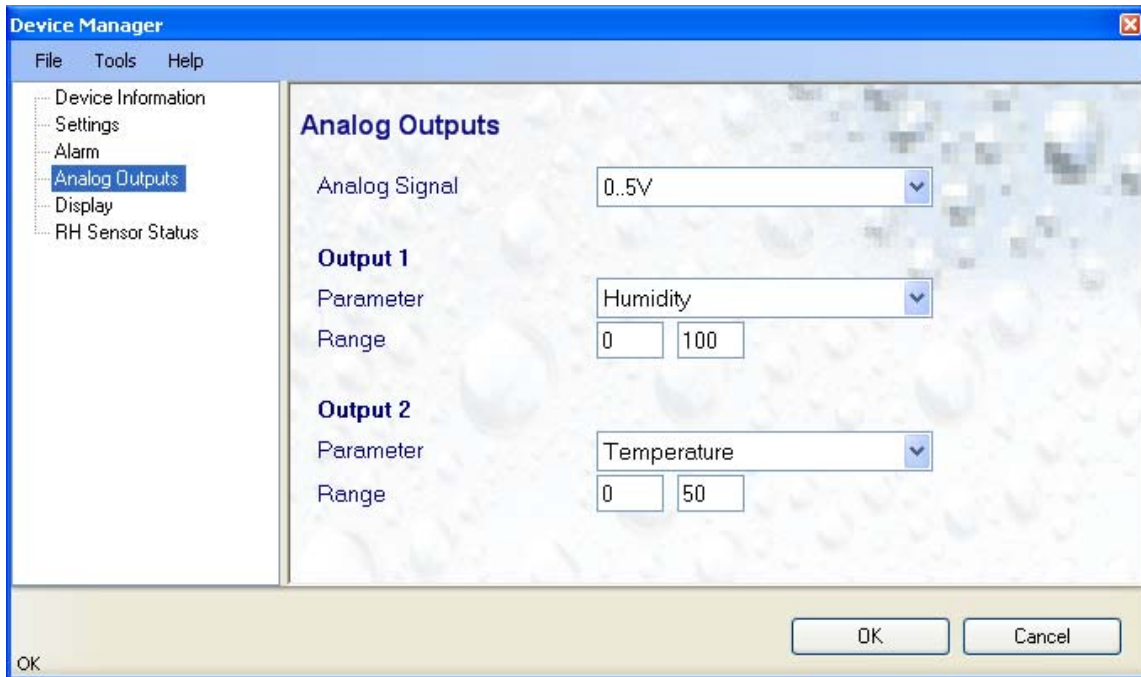
Note: The alarm function applies only to models with the optional display (an alarm symbol appears) and to the HF3 digital communication with a PC via service connector. The alarm function has no effect on the analog outputs of the HF32 and HF33 or on the relay outputs of the HF34.

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.

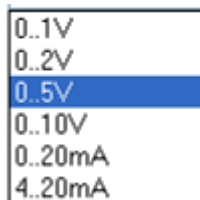
All versions of HW4 display an alarm condition on the monitor screen by using red numbers or characters. In addition, HW4 Professional can be configured (HW4 global settings - Alarm settings tab) to display an alarm table and generate a report whenever an out-of-limits condition occurs.

E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 13 of 19

3.5 Analog Outputs (HF32 and HF33)

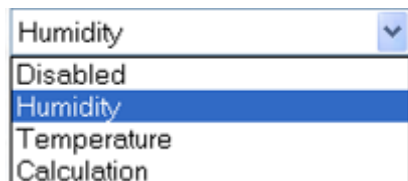


- **Analog signal:** the type of signal for both analog outputs of the HF33 (3-wire circuit type) can be configured with HW4 as shown below:



The analog signal type of the HF32 (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.

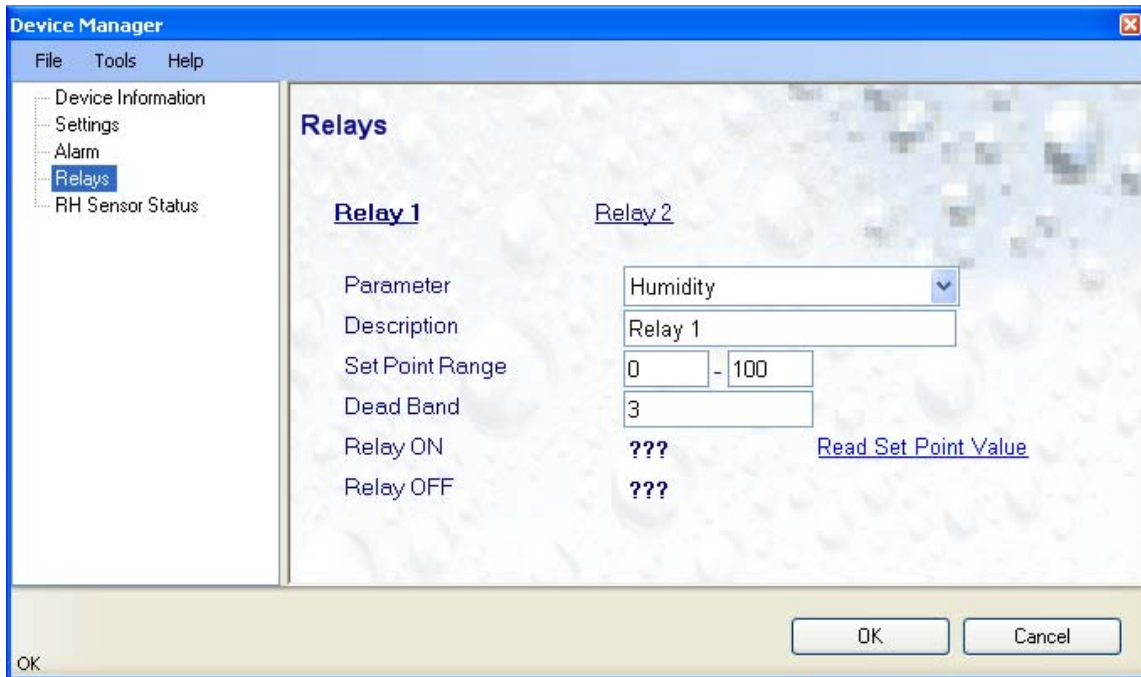


Each output can be made to correspond to one of the parameters shown on the list. **Any output can also be disabled.**

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

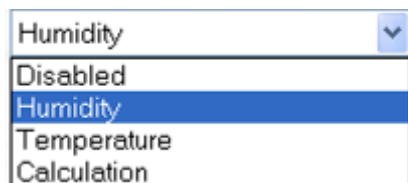
E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 14 of 19

3.6 Relays (HF34)



Each of the two relays can be selected by clicking with the mouse on the blue links labeled Relay 1 and Relay 2. The blue link changes to bold characters to show which relay is currently selected.

- **Parameter:** select the parameter corresponding to the relay output.



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

- **Description:** use a maximum of 12 characters
- **Set Point Range:** the set point of each relay is adjusted with a potentiometer located on the HF34 PCB. Open the HF34 enclosure to access this potentiometer (see document **E-M-HF3-V1**). The adjustment range of the potentiometer is determined by the two values entered here. The values must be whole numbers (no decimals) within the numerical limits of 0...100 for humidity and -100...200 for temperature or the dew / frost point (see note below)
- **Dead Band:** enter here the desired value for the dead band (see diagram below)

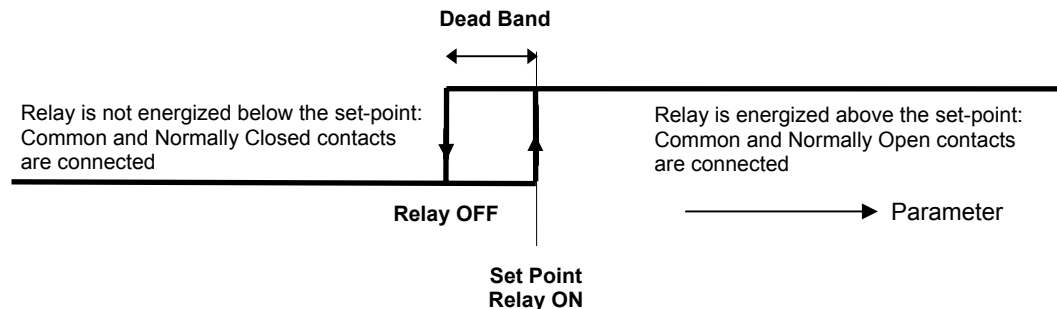
E-M-HW4v3-F2-002_10	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats	Instruction Manual
	Document Type
Document title	Page 15 of 19

- **Read Set Point Value:** click with the mouse on this link to have HW4 read from the HF34 the current value of the set point. This action returns two values:

Relay ON: the relay is energized when the parameter is at least equal to this value

Relay OFF: the relay is de-energized when the parameter is less than this value

Relay ON	87.1	Read Set Point Value
Relay OFF	86.6	



Set point adjustment procedure

Locate the potentiometer corresponding to the relay and turn the potentiometer up or down by a small amount. When done, click on the Read Set Point Value link to refresh the two values Relay ON and Relay OFF. Repeat this operation until the set point has the desired value.

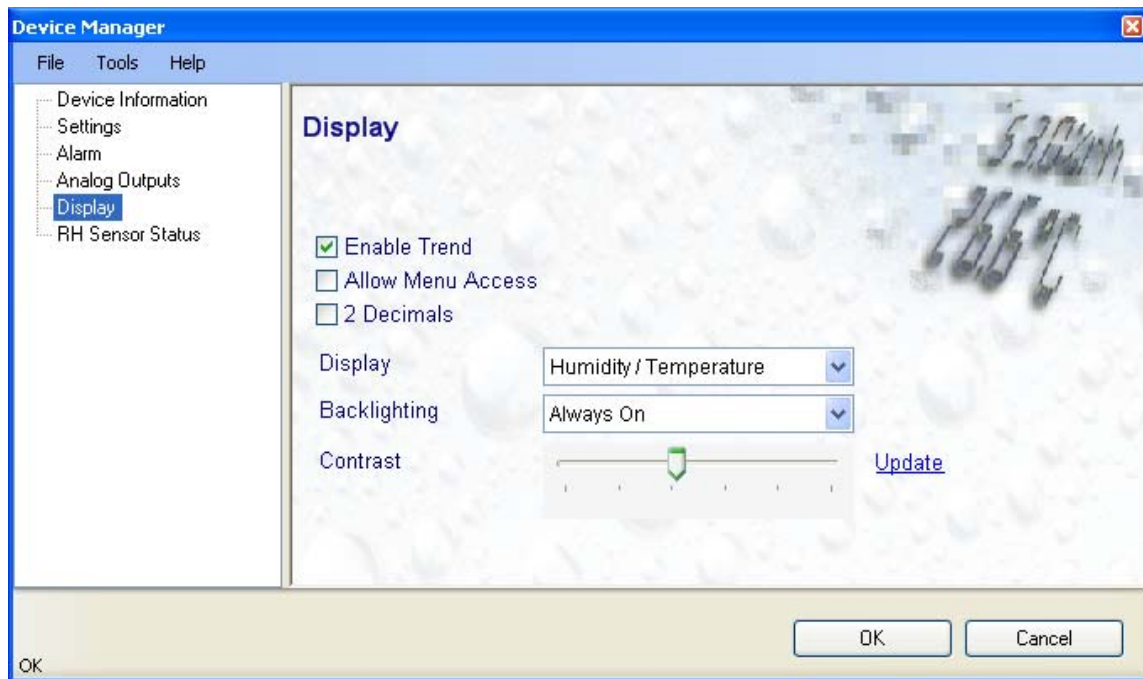
Note:

Adjustment of the set point with the potentiometer is made easier when using a narrow scale for the set point range. Using the example of a 50.0 %RH set point, it is much easier to precisely adjust the potentiometer with a set point range of 48 to 52 %RH than it is with a set point range of 0 to 100 %RH. Please also note that a set point range such as 48 to 52 %RH does limit any future set point adjustment in the field to only ± 2.0 %RH.

The set point can also be directly entered with HW4 by using the value of the set point for both the low and high end of the range. Example: enter 50 and 50 for a set point of 50 %RH. In that case, the actual position of the potentiometer has no effect on the set point and it is not possible to adjust the set point with the potentiometer.

E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 16 of 19

3.7 Display (HF32 and HF33 – space mount)



- **Enable Trend:** check this box to enable the trend indicators on the instrument 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 is used only for devices that have a local keypad and has no effect on the HF3.
- **2 Decimals:** check this box to have the display show the values with 2 decimals instead of one decimal
- **Display:** click on the arrow to the right of the box and select Humidity / Temperature or Calculation / Temperature
- **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 a keypad and should not be used with the HF3)
- **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 Device Manager OK button to write the new contrast setting to the HF3.

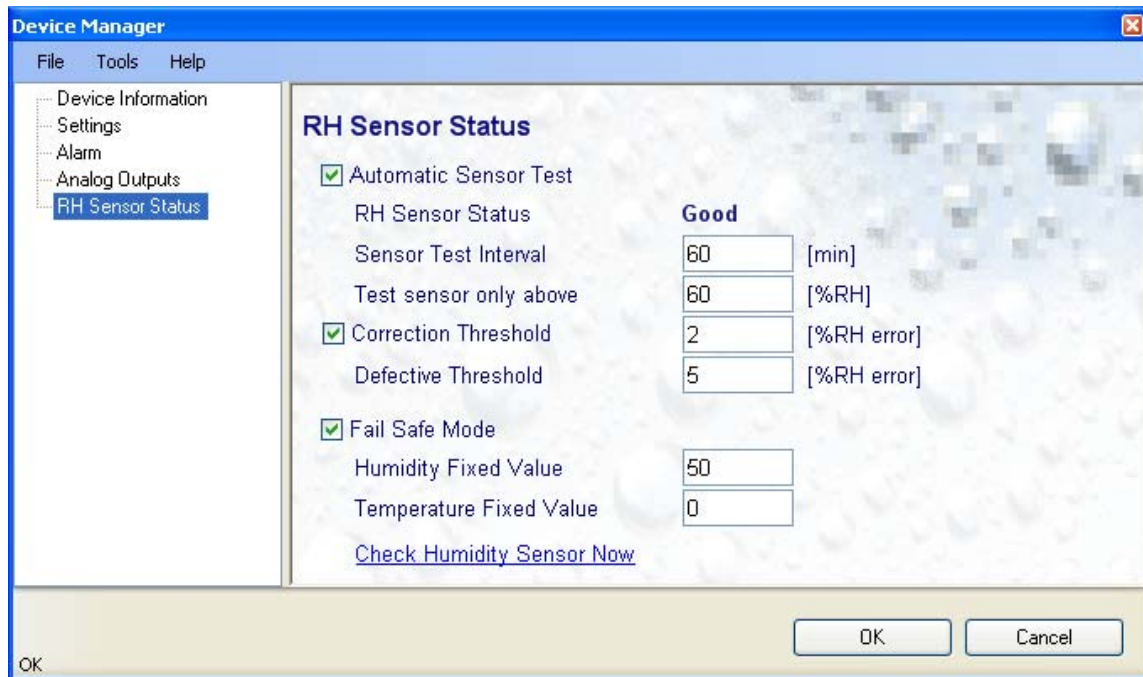
E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 17 of 19

3.8 RH Sensor Status

For a description of the RH sensor test function see document **E-T-AC3000-DF-V1**

The sensor test function uses the settings entered in the form shown below.

After each test, the sensor status is reported as Good, SQ-Tuned or Bad.



- **Automatic Sensor Test:** place a check mark in this box to enable the automatic RH sensor test.

Sensor Test Interval	Enter the desired time interval for the automatic sensor test (minutes). Recommended value: 60
Test sensor only above	The RH sensor will be tested only when the measured humidity value is equal to or higher than the value entered in this text box. Default value: 60 (may be changed by factory) Note: a different test is used to detect major sensor problems such as an open circuit or a short circuit. This test is not affected by the settings entered in this form.

Depending on the test result, the RH sensor status is reported as follows:

Not available	The sensor has not been tested. Verify the RH sensor test settings (Device Manager menu bar > Tools). The sensor will not be tested as long as the current value of %RH is below the value entered in the box labeled "Test above [%RH]"
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E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 18 of 19

Good	The sensor error is less than the correction threshold value. The correction offset (SQ) for sensor drift correction is automatically set to zero
SQ-Tuned	The sensor error is equal or larger than the correction threshold value but less than the defective threshold. A correction (SQ) is automatically added to the value measured by the sensor. The correction (SQ) is calculated based on the %RH currently measured by the sensor and on the coefficients A, B and C (RH sensor test settings).
Bad	The sensor error is equal or larger than the defective threshold value

The AirChip 3000 issues a digital alarm only when both of the following conditions are met: (a) the %RH measured prior to the test is at least equal to the value entered in Tools > RH Sensor Test Settings > Test above [%RH] box and (b) the humidity sensor test returns the result "Bad". When using HW4 to communicate with the transmitter, the text "Bad Sensor Alarm" appears in red on the monitor screen. HW4 Professional can be configured (HW4 global settings - Alarm settings tab) to display an alarm table and generate a report whenever a device alarm condition occurs.

- **Correction Threshold:** place a check mark in this box to enable the automatic RH sensor drift compensation function.

Correction Threshold	Enter the sensor error (%RH) that will trigger a correction. Recommended value: 2 (may be changed by factory)
Defective Threshold	Enter the sensor error (%RH) above which the sensor will be considered to be defective. Recommended value: 5 (may be changed by factory)

- **Fail Safe Mode:** In the event of a sensor failure, this function makes the HF3 generate predetermined humidity and temperature values so as to prevent undesirable action by a humidity or temperature control device that relies on the analog or digital signals of the transmitter. Place a check mark in this box to have the HF3 generate a fixed humidity or temperature value (both digital and analog) when any of the following occurs:

- RH sensor test returns the result "Bad"
- Major failure of either the humidity or temperature sensor (shorted or open sensor)

The fixed values must be with the numerical limits of -999.99 and 9999.99 and should also be within the range specified for the analog outputs.

Note: The calculated dew or frost point takes a fixed value whenever the value of both temperature and humidity is fixed.

- **Check Humidity Sensor Now:** this link works only when the transmitter is configured with the automatic RH sensor test function enabled and when the measured value of humidity is above the limit entered in the RH Sensor Test Settings form. When both conditions are met, click on this link to manually run a humidity sensor test and eventually have the transmitter apply a correction to the humidity output signal

E-M-HW4v3-F2-002_10 Document code	Rotronic AG Bassersdorf, Switzerland Unit
HW4 software v.3: Device Manager HF3 Transmitters and Thermo-Hygrostats Document title	Instruction Manual Document Type
	Page 19 of 19

4 DOCUMENT RELEASES

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