

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 1 of 174

HW4 Software

General instructions and functions common to all devices

HW4 Software

Production







Start HW4

Psychrometric conversions

Registration

Help

Exit



This version of HW4 is not intended to be used by the end-user.
By using this version, you may damage your device.
You may order an official version of the HW4 from HW4@rotronic.ch

Do not display this form again

Version V3.9.0.18277

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 2 of 174

Table of contents

1	ORGANIZATION OF THE HW4 MANUALS	5
2	OVERVIEW	7
2.1	HW4 Standard Edition	7
2.2	HW4 Professional Edition	7
2.3	HW4 Lite	8
2.4	HW4 Professional with OPC Server.....	8
2.5	HW4 Professional with AwQuick.....	8
2.6	HW4 Professional Trial Version	8
2.7	HW4 Validated.....	8
3	NEW IN HW4 VERSION 3	9
3.1	HW4 v. 3.0.0	9
3.2	HW4 v. 3.1.0	11
3.3	HW4 v. 3.2.0	12
3.4	HW4 v. 3.3.0	13
3.5	HW4 v. 3.4.0	15
3.6	HW4 v. 3.5.0	16
3.7	HW4 v. 3.6.0	18
3.8	HW4 v. 3.7.0	19
3.9	HW4 v. 3.8.0	21
3.10	HW4 v. 3.9.0	25
4	HW4 REQUIREMENTS AND OTHER IMPORTANT INFORMATION.....	27
4.1	Computer/Operating System Requirements	27
4.2	Operating System Compatibility	27
4.3	Microsoft .NET framework	27
4.4	Location of the HW4 User Folder.....	28
5	INSTALLATION.....	29
5.1	Software Licensing Agreement	29
5.2	Installing HW4.....	30
5.3	Updating HW4 to a newer version	33
5.4	Uninstalling HW4 (full uninstall)	33
6	CONNECTING DEVICES TO THE HW4 PC.....	34
6.1	Definition: masters and slaves (HW4 Professional)	34
6.2	Connection methods for master devices.....	34
6.3	Connectivity hardware	34
6.4	Devices used as RS-485 slaves (HW4 Professional)	34
7	PREPARING FOR DEVICE CONNECTION	36
7.1	Physical serial port.....	36
7.2	USB port	36
7.3	Ethernet (TCP/IP) connection	39
7.4	RS-485 slaves: address and Baud rate requirements.....	42
8	INITIAL START-UP	44
8.1	Language selection.....	44
8.2	Product key and registration	45
8.3	Device discovery after the initial start-up	46
8.4	Creating the first user (HW4 Professional).....	46
8.5	Access to functions and screens (HW4 Professional).....	47

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 3 of 174

9	SEARCHING FOR DEVICES WITH HW4	48
9.1	Searching for master devices.....	48
9.2	Searching for RS-485 slaves (HW4 Professional)	48
10	HW4 MAIN SCREEN	49
10.1	Device Tree (left pane)	50
10.2	Right pane in Group View mode	54
11	HW4 MAIN MENU BAR	64
11.1	File	64
11.2	Devices and Groups	64
11.3	View	68
11.4	Settings and Tools	69
11.5	Help	69
11.6	Shortcut buttons.....	69
12	ETHERNET CONFIGURATION TOOL	70
13	DEVICE CONFIGURATION TOOL	71
14	USERS AND PASSWORDS (HW4 Professional)	72
14.1	Minimum user rights.....	72
14.2	Additional user rights	73
14.3	Creating and logging-on the first user	74
14.4	Copy and create a new user	76
14.5	User table form	79
14.6	Menu bar.....	79
14.7	User login security	81
15	COLUMN HEADERS	82
16	HW4 GLOBAL SETTINGS	84
16.1	View Tab	84
16.2	General Tab	86
16.3	Language/Unit System Tab	88
16.4	File Locations Tab.....	89
16.5	Graph Settings Tab.....	90
16.6	Alarm Settings Tab (HW4 Professional)	91
16.7	Events Tab (HW4 Professional).....	100
17	USER EVENTS (HW4 Professional)	101
17.1	Menu bar.....	101
18	ALARM TABLE (HW4 Professional)	103
18.1	Alarm acknowledgement.....	104
18.2	Alarm table menu bar a.....	105
19	PSYCHROMETRIC CONVERSIONS	108
20	DEVICE PROTECTION	109
21	ACCESSING LOG FILES, PROTOCOLS AND EVENT FILES	111
22	VIEW / SIGN A PROTOCOL	113
22.1	Protocol viewer menu bar	114
23	VIEW / SIGN A LOG FILE	115
23.1	Opening a log file in HW4 View Data	115
23.2	View Data menu bar	117

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 4 of 174

23.3	HW4 View Data Toolbar	123
23.4	Chart Tab.....	123
24	ALARM INDICATION & REPORTING – Overview	126
24.1	Device tree.....	126
24.2	Right Pane – Current Values Tab	126
24.3	Alarm recording and reporting (HW4 Professional).....	128
24.4	Additional alarm data	129
25	ERES REGULATORY COMPLIANCE (HW4 Professional).....	132
25.1	Required settings and selections	132
25.2	Electronic records	134
25.3	Log File Format.....	135
26	RECORD KEEPING – Overview (HW4 Professional)	136
26.1	Event Files	136
26.2	Alarm Records and Alarm Archive Files	141
26.3	Protocols.....	142
26.4	Cross referencing protocols and event files	145
27	FILE PROTECTION	146
27.1	Authentication stamp	146
27.2	Overview	146
28	RELOCATING THE HW4 USER FOLDER	147
28.1	General guidelines	147
28.2	Procedure	149
29	CONCURRENT HW4 SESSIONS ON DIFFERENT WORKSTATIONS.....	152
29.1	Polling synchronization	153
30	MUPLE HW4 SESSIONS ON THE SAME PC.....	156
31	STARTING HW4 AUTOMATICALLY with Windows.....	157
32	BASIC ETHERNET CONCEPTS.....	158
32.1	Compatibility requirements	158
32.2	DHCP	159
32.3	MAC Address.....	159
33	CHANGING THE BAUD RATE OF AN ETHERNET DEVICE.....	160
34	WATER ACTIVITY MEASUREMENT WITH HW4	163
34.1	Applicability.....	163
34.2	Water Activity: definition and applications.....	163
34.3	Instruments and probes for measuring water activity.....	164
34.4	Water activity measurement modes in HW4	165
34.5	Mode selection and settings	166
34.6	Working with individual probes or with a group of probes	167
34.7	Measurement procedure (AwQuick or AwE Mode)	168
34.8	Automatic report generation (AwQuick or AwE Mode).....	170
34.9	Water activity measurement report	171
35	DOCUMENT RELEASES	174

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 5 of 174

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 ○ HF8 transmitters ○ HL20 and HL21 data loggers ○ HP21, HP22, HP23 and HP32 hand-held indicators ○ HygroLab C1 table-top indicator ○ LOG-RC Wireless Data Loggers ○ HL-1D, TL-1D and BL-1D data loggers ○ HS5 thermo-/ hygrosat ○ AWTherm ○ HygroGen 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 on the HW4 CD. The manuals can also be downloaded from several of the ROTRONIC web sites.

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<div style="text-align: right;"> Instruction Manual Document Type </div> <hr/> Page 6 of 174

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 7 of 174

2 OVERVIEW

The HW4 software was developed by ROTRONIC AG for use with the ROTRONIC line of digital instruments and devices. HW4 is available in the following versions:

2.1 *HW4 Standard Edition*

- Unlimited number of instruments (depends on capabilities of PC and available ports)
- On-line display of the measured and calculated values (dew point or other), limited to one instrument at a time.
- Automatic retention of the most recent data in a temporary on-line buffer (multiple instruments).
- Logging of measured and calculated values to the PC (multiple instruments).
- Easy-to-read graphs and data tables.
- Statistical data tools: mean, standard deviation, minimum and maximum of the recorded data (off-line only).
- Data print-out (table or graph)
- Automatic device/instrument recognition and identification
- Device/instrument configuration
- Access to the data recorded by a data logger and data transfer to the PC
- Adjustment (calibration) of the HygroClip digital probes
- Psychrometric Conversion Tool
- Built-in security to protect against data manipulation
- PDF report: including statistical data and graph

2.2 *HW4 Professional Edition*

HW4 Professional edition complies with ERES regulations. This version of HW4 allows multiple users, with either administrator or standard rights and password protection.

- All the functionality of HW4 Standard Edition
- RS-485 multi-dropped sub-networks of up to 64 instruments per sub-network
- On-line display of the data from multiple instruments and probes
- Possibility to overlay and synchronize data from several log files into a single graph
- User Event Logging: automatically records user main operations.
- Multiple users distributed into two groups: administrator and standard, each with different rights
- Self Event Logging: automatically records any software problem to facilitate troubleshooting
- Logger Event Logging: automatically records the data logger internal events and configuration changes.
- Automatic creation of protocols detailing instrument configuration and programming changes as well as and probe adjustments.
- Optical or acoustical indication of an alarm condition, tracking of alarm conditions in a table, and possibility of printing a report, sending an e-mail, etc.
- Visual Indication an alarm conditions when viewing log file data
- Password protected log-in
- Meets the requirements of FDA 21CFR Part II for electronic records and electronic signatures
- Meets the EU GMP requirements regarding pharmaceuticals.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 8 of 174

2.3 **HW4 Lite**

HW4 Lite is a special version of HW4 which is based on HW4 Professional while being restricted to the following devices:

- HL-20
- HL-21
- HL-1
- TL-1
- HC2-WIN-USB

Compared to HW4 Professional the following features are removed:

- User management
- Alarm table
- Alarm settings
- User events table
- Log to PC
- Trial code generation
- "Search for devices" is limited to automatic USB / RS-232 detection

2.4 **HW4 Professional with OPC Server**

HW4 Professional with OPC server is a special version of HW4 Professional which includes all features of HW4 Professional while also providing OPC tags that can be enabled for each individual device communicating with HW4. This allows transferring data with practically any OPC client (requires configuration / programming of the OPC client by the user).

2.5 **HW4 Professional with AwQuick**

HW4 Professional with AwQuick is a special version of HW4 Professional designed to facilitate measurement of the water activity (Aw) of foods, pharmaceuticals, etc. This version includes all the features of the regular HW4 Professional Edition. Two modes are available for measuring water activity: AwE and AwQuick. Both modes can be used with any of our instruments. In the AwE mode, HW4 monitors the natural equilibration of the product being measured and automatically stops the measurement process when equilibrium is reached. With most products, natural equilibrium requires from 45 to 90 minutes. The AwQuick mode reduces the time required to measure water activity to a few minutes, usually with almost the same accuracy as the AwE mode.

2.6 **HW4 Professional Trial Version**

HW4 Trial is a fully functional version of HW4 Professional, including the OPC server and water activity measurement functionality. A compressed installation file (zip) can be downloaded free of charge from the ROTRONIC website at:

http://www.rotronic-humidity.com/software/humidity_software_download.php

Note: this web page is subject to change

Activation requires an HW4 product key which can be requested by filling a form on the ROTRONIC web site. A trial product key will be sent to your e-mail address. This must be entered in the registration form which appears when starting HW4 for the first time. After 30 days, the trial product key expires and HW4 can no longer be started.

2.7 **HW4 Validated**

HW4 Validated offers the same functionality as HW4 Professional with OPC server. Additionally, the "HW4 e-compliance Package" is available. This extensive collection of documents is designed to support the "regulated user" by qualifying/validating HW4-based solutions.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 9 of 174

3 NEW IN HW4 VERSION 3

3.1 HW4 v. 3.0.0

HW4 version 3.0.0 includes all the functions and features of HW4 version 2.3.0 (last validated version) and 2.4.0 with the following modifications and additions:

- **Devices compatible with HW4**

HW4 version 3.0.0 supports all devices supported by the latest release of HW4 version 2 and adds the support for the following devices:

- HF8 transmitter with firmware version 2
- HP23 and HP23-AW indicators with firmware version 2

- **Right pane in Group View mode**

Note: device groups are available only with HW4 Professional edition.

The right pane is in the **Group View mode** whenever a group of devices is selected in the device tree (left pane).

In addition to the Current Values tab (table of measured and calculated values for all the devices within the group), HW4 v 3.0.0 offers the following tabs:

- **Visual Layout Tab:** this tab is used to superimpose the devices in a group over a background picture (room, machinery or other) so as to facilitate the visual monitoring of a process. Each device within the group is represented by a data label that can be freely positioned by the user. A data label displays the values measured or calculated by the corresponding device. Device alarms such as low battery, simulator mode, etc., are not shown. Within limits, the contents of a data label can be customized. In addition, the user can create and position descriptive test labels.
- **Probe Adjustment Tab:** this tab allows the metrology laboratory to calibrate and adjust the probes attached to the devices within a group against a reference environment or against a reference probe. Any number of probes can be simultaneously selected. Due to differences in the process used for calibration and adjustment, probes based on the HygroClip 1 technology (legacy) cannot be selected at the same time as probes based on the HygroClip 2 technology.,
- **Log to PC Tab:** this tab allows recording to a file on the HW4 PC the values measured or calculated by any probe attached to the devices within a group. Any number of probes can be simultaneously selected.

- **On-line graph in Group View mode**

Note: device groups are available only with HW4 Professional edition.

One of the reasons for creating an instrument group is the ability to display a graph showing data from different instruments within the group. The data shown in the graph can be customized by selecting individual probes and parameters in the data table. HW4 v 3.0.0 remembers the selections made by the user for each group.

- **HW4 Users (HW4 Professional)**

In addition to allowing the deletion of a user, HW4 now allows de-activating a user. Unlike a deleted user, a de-activated user can be reinstated at any time.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 10 of 174

● HW4 Professional Alarm Function

Note: with all HW4 editions, any individual device reporting an alarm condition appears in red in the device tree. Device groups also appear in red when a member of the group reports an alarm condition. Values that are out of limits appear in red in the Current Values Tab, both in Device View and in Group View. Other types of alarms appear also as a red text in the Current Values Tab (low battery, simulator mode, etc.)

The additional alarm functions available with HW4 Professional (alarm priorities, alarm records, alarm table, alarm schedule and alarm actions) have been completely re-worked to provide a much greater level of flexibility such as multiple alarm levels each with different actions.

The HW4 Professional re-designed Alarm Function makes use of “Alarm Trigger Sets” that fall into two categories: the HW4 software Alarm Trigger Set (software or PC errors) and an unlimited number of Device Alarm Trigger Sets that can be created and defined by the user.

Alarm Trigger Sets consist of one or several Trigger Events, each associated with a priority level, a time schedule and a set of actions. Except for the HW4 software Alarm Trigger Set, devices can be freely associated with any Alarm Trigger Set.

HW4 offers a pre-defined list of Trigger Events such as communications error, low battery, etc. and also allows the user to define additional Trigger Events based on high and low limits for the measured or calculated values.

● Adjustment of Individual HygroClip 2 probes and devices

The adjustment function now includes the option of limiting the range of the humidity adjustment for a probe or device. For example, when all humidity calibration points are all smaller than 50%RH, it may make sense to limit the effect of the adjustment function to measurements below 50 %RH and to leave the original adjustment unchanged for measurement values above 50 %RH.

● File name: Log to PC (all devices) and Auto-Download (HygroLog NT and HL-NT only)

In order to make individual log files easier to identify, HW4 now provides additional flexibility regarding the name of the files that are automatically generated during Log to PC or Auto-Download operations.

● HW4 View Data

HW4 View data is the functional module that allows a user to view recorded data and to perform a number of operations with the log files. This module has been improved as follows:

- **View Data Window:** HW4 now remembers both the size and position of the HW4 View Data window as determined by the user. The last configuration of the window is repeated each time that HW4 View Data is opened, until the user makes a change to the window.
- **Calculated parameter:** HW4 now allows adding a calculated parameter such as the dew point to an existing log file consisting only of relative humidity and temperature records. This is useful in the case of probes and devices that cannot record a calculated parameter. In addition, it is also possible to change the calculated parameter recorded by or added to an existing log file. For example if a log file was recorded with the dew point as a calculated parameter, HW4 can change the calculated parameter to the frost point or other. The file can then be saved under the same name or under a different name.

● OPC Tags (HW4 Professional with OPC Server)

The OPC Tags have been expanded to reflect the addition of new devices to our product line

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 11 of 174

3.2 HW4 v. 3.1.0

HW4 version 3.1.0 includes all the functions and features of HW4 version 3.0.0 with the following modifications and additions:

• Devices compatible with HW4

HW4 version 3.1.0 supports all devices supported by the latest release of HW4 version 2 and adds support for the following devices:

- HygroLab C1 table-top indicator with firmware version 1
- HC2-AW-USB water activity probe with firmware version 1
- LOG-RC wireless data loggers with firmware version 1

• Left pane (Device Tree)

Note: device groups are available only with HW4 Professional edition.

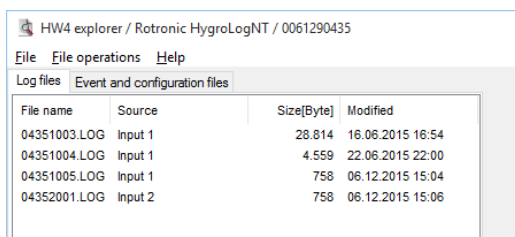
Sort Order of the Devices within the Device Tree: depending on the selection made in the HW4 Main Menu bar (View > Device Name or Device Type or Device Address or Device Serial Number), the devices shown in the Device Tree now appear either in alphabetical order or in numerical order. This also applies to devices within a group.

Adding or Removing a Device from a Group: as with previous versions of HW4 professional devices can be dragged with the mouse into a group or dragged out of a group (assuming that at least one group has been created prior to this). HW4 v. 3.1.0 offers the additional option of using the device menu to do the same. To open this menu, select the device with the mouse and right click.

Analog Probes: some devices feature one or several probe inputs that can be configured to accept an analog probe. With HW4 v. 3.1.0 any analog probe displayed in the Device Tree is marked "Analog". No menu can be opened for an analog probe.

• HW4 View Data

HW4 now allows the log files located on the flash card of the HL-NT data logger to be sorted on the HW4 View Data screen by file name, source, size or date modified. The sort order can be changed by left clicking on the column header corresponding to the desired sort order.



The screenshot shows the 'HW4 explorer' window with the following table of log files:

File name	Source	Size[Byte]	Modified
04351003.LOG	Input 1	28.814	16.06.2015 16:54
04351004.LOG	Input 1	4.559	22.06.2015 22:00
04351005.LOG	Input 1	758	06.12.2015 15:04
04352001.LOG	Input 2	758	06.12.2015 15:06

• HW4 Professional Alarm Function

HW4 v. 3.1.0 adds the following functionality to the actions that can be taken when an alarm is triggered:

- Start another application
- Send an SMS as an alternative to sending an e-mail
- Energize one or several relays

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 12 of 174

In addition the triggering of an alarm based on the different limits that can be defined with the alarm function can be made conditional to the status (or value) of a logical input.

- **Other improvements**

HW4 v. 3.1.0 implements minor improvements such as:

- Improved scalability of the Visual Layout (right pane of the HW4 main screen in Group View mode)
- HW4 View: the X-Axis is now scalable
- Probe Adjustment: added a chart that allows verifying the stability of the environment

3.3 HW4 v. 3.2.0

HW4 version 3.2.0 includes all the functions and features of HW4 version 3.1.0 with the following modifications and additions:

- **Device Configuration Tool for devices not based on the HygroClip technology**

In the main menu bar of HW4, the menu item Settings and Tools gives access to a new item named Device Configuration Tool.

The Device Configuration Tool is used to configure a number of devices that are not based on the HygroClip technology and do not appear in the HW4 Device Tree. Such devices include but are not limited to the HF1 transmitter, the CP11 indicator, etc. Depending on the device, the tool also gives access to functions such as adjustment, data recording, etc.

- **Custom calculations with the HF8 transmitter**

Device Manager for the HF8 transmitter now allows the user to define up to two custom calculations based on measured values such as relative humidity or on calculated parameters such as the dew point. Custom calculations are constantly updated by the HF8 and can be shown on the local display and / or displayed on the monitor of a PC running the HW4 software.

A custom calculation can be associated with any of the HF8 inputs. When associated with an input, the custom calculation can be associated with any of the HF8 analog outputs. The user can also define low and high limits for a custom calculation and use these limits to generate an alarm and to energize a relay.

- **Water activity measurement**

Water activity probes such as the HC2-AW-USB can now be put within a group to the purpose of making simultaneous measurements with several probes without having to switch from one probe to the other.

The AwQuick Mode / AwE Mode tab located in the right pane of the HW4 main screen has been entirely reworked. The form displayed by this tab allows the user to enter a batch number, a product name and comments. This information will appear in the measurement report.

The water activity measurement report can now be signed by the user. A signed report cannot be modified.

- **Acknowledgement of Alarms**

When acknowledging an alarm, the user has the option of entering an "acknowledgement text" or comment. As a means of facilitating the entry of repetitious comments, the different texts entered by the user are retained by HW4 and are presented as a list from which the user can choose.

- **Time Change Event**

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 13 of 174

HW4 now makes an entry in the User Events file whenever the PC time clock is changed by more than 5 minutes while HW4 is running.

- **Automatic download to the HW4 PC of logger data files**

The automatic download to the HW4 PC of logger data files was previously only available with the HL-NT data logger series. This function is now also available with the LOG RC wireless data logger series.

- **HW4 View Data**

HW4 View Data can be used to open a file consisting of recorded data and can also be used print a graph. Additional information such as Process Name, Device Name, etc. can now be printed on the same page as the graph. This information can be selected in HW4 Global Settings > Graph Settings Tab.

- **OPC Tags (HW4 Professional with OPC Server)**

The OPC Tags are now compatible with 64-bit systems

3.4 *HW4 v. 3.3.0*

HW4 version 3.3.0 includes all the functions and features of HW4 version 3.2.0 with the following modifications and additions:

- **Devices compatible with HW4**

HW4 version 3.3.0 supports all devices supported by HW4 version 3.2.0 and adds support for the following devices:

- PF4 Differential Pressure Transmitter

- **Temperature adjustment of the LOG-PT1000-RC wireless data logger**

HW4 version 3.3.0 allows a 1-point temperature adjustment of the LOG-PT1000-RC wireless temperature data logger.

- **Firmware update of the LOG-RC data logger series**

HW4 version 3.3.0 allows updating the firmware of the LOG-HC2-RC and LOG-PT1000-RC wireless data loggers. The firmware of the USB wireless adapter can also be updated.

- **Aw Mode selection for the HC2-AW and HC2-AW-USB probes**

Both the HC2-AW and HC2-AW-USB probes are normally used to measure the water activity (Aw) of food products, pharmaceuticals, etc.

Prior to HW4 version 3.3.0 the HC2-AW probe used %RH as the measurement unit for humidity and could not use water activity (Aw) as the humidity measurement unit (1.00 Aw = 100 %RH). To provide readings using water activity as the humidity measurement unit the probe had to be connected to a HP23-AW or to a HygroLab C1 indicator. Conversely, the HC2-AW-USB probe could not be set to display relative humidity instead of Water Activity. With HW4 version 3.3.0 both probes can be set to measure and display humidity either as relative humidity or as water activity:

- **Left pane (Device Tree)**

Note: Device Groups are available only with HW4 Professional edition.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 14 of 174

Devices that are present in the Device Tree can be grouped together as required, making use of the HW4 Group feature. This makes it possible to show on the PC monitor the values measured by all of the devices belonging to the same Group (data table and live graph). HW4 v 3.3.0 allows adding Subgroups to any Group. Subgroups can also be added to any existing Subgroup. There is no limitation regarding the number of levels.

Devices shown in the Device Tree can be sorted in different ways such as by serial number or by device name, etc. The sort order is the same whether or not the devices are grouped.

- **HW4 View Data: data export to the Clipboard**

When a data file is open in HW4 View Data, either the data currently displayed in the graph of data selected with the mouse from the data table can be exported to the Windows Clipboard.

- **Device alarms**

Device alarms such as empty battery, out-of-limits value, etc. are now evaluated and shown only when they are also activated in the HW4 alarm settings. Similarly, The OPC alarm tags are activated only when the alarm is also monitored by HW4.

- **HW4 Professional Alarm Function**

HW4 v. 3.3.0 adds the following functionality:

Color coding of the alarms based on the priority level. The color corresponding to priority level can be selected by the user. The color code affects several areas of HW4 such as the Device Tree, the Current Values table, the Alarm Table, etc.

Alarm Table filter: selected alarm records can be displayed based on a text or on one or several key words. Alarm records can be shown for a user defined period of time.

- **Right to close HW4**

The right to close HW4 can be limited to specific users. However anybody can still close HW4 using Windows Task Manager.

- **Calibration Protocol**

HW4 v. 3.3.0 offers the user the possibility of specifying within a calibration protocol whether a calibration point is an As-Found (prior to any adjustment) or an As-Left value (after adjustment).

- **Other improvements**

HW4 v. 3.3.0 implements minor improvements such as:

- The font size for the displayed values can be separately selected for the Device View Mode and the Group View Mode
- The device name is now included as part of a text alarm message
- SSL can be used to send alarm messages

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 15 of 174

3.5 HW4 v. 3.4.0

HW4 version 3.4.0 includes all the functions and features of HW4 version 3.3.0 with the following modifications and additions:

• Devices compatible with HW4

HW4 version 3.4.0 supports all devices supported by HW4 version 3.3.0 and adds support for the following devices:

- PF4 Differential Pressure Transmitter with optional E2 connector for either a HC2 digital probe or an analog probe
- HC2-S humidity temperature digital probe (2014 version)
- HC2-LDP low dew point probe
- HF52-EX transmitter
- HL-1 and TL-1 data loggers

• Automatic AW-report generation

HW4 Professional with AwQuick version 3.4.0 offers the option to automatically generate and save a report after each water activity measurement.

• Start / Stop function for the LOG-RC wireless data logger series

HW4 version 3.4.0 allows the user to manually start or stop the recording of data.

• Communication alarm visualization

HW4 Professional version 3.4.0: communication alarms are visualized in the same manner as any other type of alarm in the HW4 main screen > Group View. Alarms are visualized both in the Device Tree (left pane) and in the data table (right pane).

• Alarm notification of the HW4 main screen

HW4 version 3.4.0 allows to enable or to disable alarm notification on the HW4 main screen by type of alarm. All alarms are always tracked in the Alarm Table.

• Layout View: device labels and background image

The position of device labels and the background image are independent for each group and subgroup.

• HW4 View Data

HW4 version 3.4.0 provides a "Print Selection" function that can be used to print at the same time the following log file data: graph, tabular data and the statistical data.

• Bug fixes

HW4 v. 3.4.0 includes the following bug fixes:

- Group adjustment of temperature: HW4 version 3.3.0 did not adjust temperature properly in the case of a group adjustment when temperature at the time of adjustment was different from the temperature at the time of the calibration point capture
- CO2-display: LOG-file is now correctly displayed
- LOG-RC wireless data logger series: device protection and temperature low limit now work properly.

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 16 of 174

3.6 HW4 v. 3.5.0

HW4 version 3.5.0 includes all the functions and features of HW4 version 3.4.0 with the following modifications and additions:

- **Devices compatible with HW4**

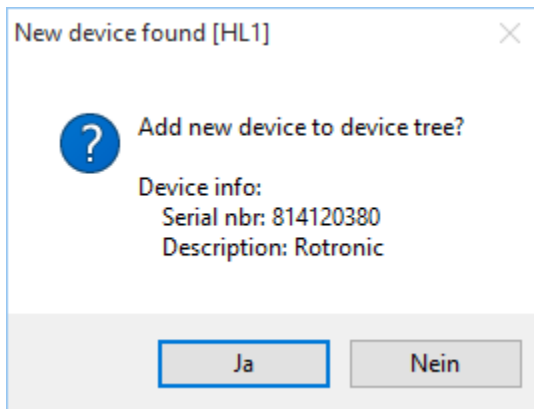
HW4 version 3.5.0 supports all devices supported by HW4 version 3.4.0

- **Compatibility with USB 3**

HW4 version 3.5.0 is compatible with USB 3 ports.

- **Automatic detection of devices connected to a USB port**

When a new device is connected to a USB port of the PC, HW4 version 3.5.0 can be set to detect the device. After detecting the device, HW4 allows the user to add the device to the device tree. When a device connected by means of a USB service cable is replaced with another device, HW4 detects the new device and asks the user if he wants to add the device to the device tree. The device that was replaced should be manually deleted from the device tree.



- **Optional pdf file format when automatically generating an AW-report**

HW4 Professional with AwQuick version 3.5.0 offers the option to automatically generate and save a report in the pdf file format after each water activity measurement.

- **Optional automatic closing of HW4 when the wrong password has been entered**

The automatic closing of HW4 when the wrong password has been entered can be enabled or disabled in HW4 Global Settings > General tab.

- **Calibration of the HL-1 and TL-1 data loggers as well as of the PF4 differential pressure transmitter**

For details, see separate software manual for these devices: **E-M-HW4v3-F2-022 (HL-1 / TL-1)** and **E-M-HW4v3-P-001 (PF4)**.

- **HW4 Main Screen > Current Values Tab: live graph**

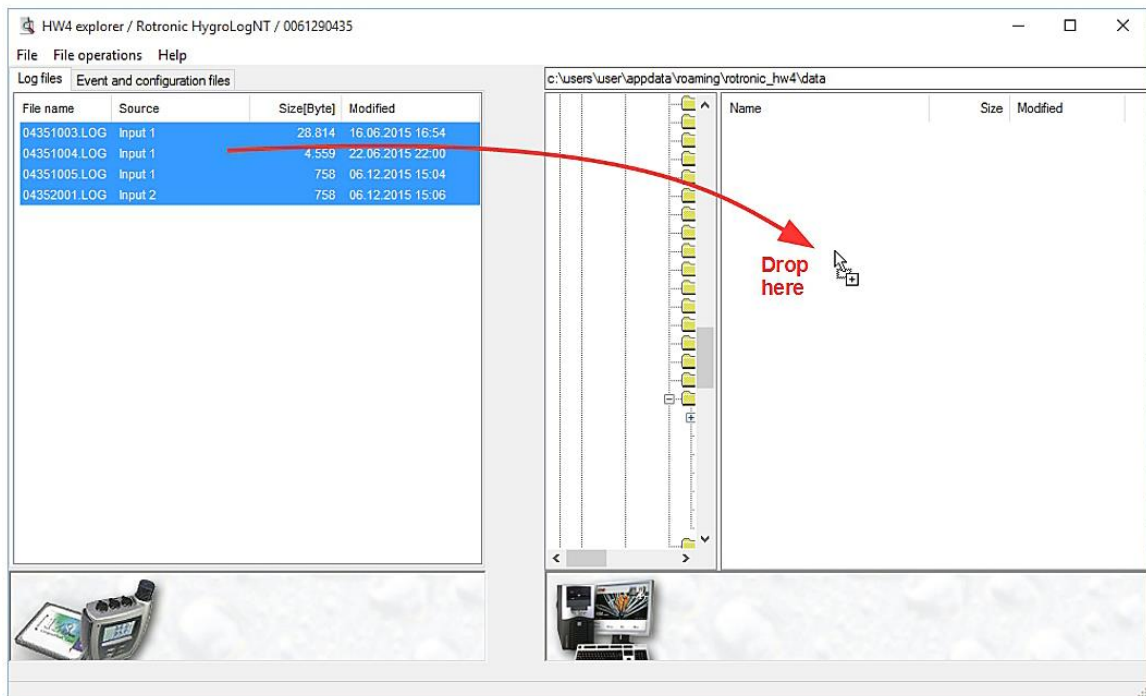
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 17 of 174

By default, HW4 now displays a separate live graph for each type of parameter (humidity, temperature, etc.). This default can be disabled by using Settings and Tools (HW4 Main Menu bar) > HW4 Global Settings > Graph Settings tab by putting a check mark in the box labeled "Use single chart for all parameters".

- **HW4 View Data: a report can be generated in the pdf file format**

When several log files are opened, the user can choose between generating a separate report for each file or to generate a single report for all opened files.

- **HL-NT data logger: multiple log files can be downloaded simultaneously to the PC by using drag and drop**



- **Bug fixes and other improvements**

HW4 v. 3.5.0 includes the following bug fixes:

- Water activity: corrected decimal point issue in log files (for example 40%RH was saved as 0.004 aw instead of 0.4 aw)
- Configuration Protocol generation for the HF52 transmitter is now working
- FDA information for a temperature group adjustment has been corrected
- HL-20 data logger: writing new log settings no longer changes the device time
- Correct dialogs for low dew point probes connected to HF transmitters, HP indicators, etc
- Firmware updates with .ROF files can be done when .ROF file or folder is write protected

HW4 v. 3.5.0 includes the following improvements:

- "File Open" default path: when the save path has been changed by the user, HW4 remembers the new path.

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<p style="text-align: right;">Instruction Manual</p> <p style="text-align: right;">Document Type</p> <hr/> <p style="text-align: right;">Page 18 of 174</p>

3.7 HW4 v. 3.6.0

HW4 version 3.6.0 includes all the functions and features of HW4 version 3.5.0 with the following modifications and additions:

- **New products**

- Clean room panel CRP5
- Wireless data loggers with battery monitoring HL-RC-B / HL-RC-T
- Temperature controlled water activity station AwTherm

- **New data view**

The log-files are now displayed with separated graph for each parameter (same as in the live chart)

- **Configuration wizard for data loggers**

Wizard for fast device configuration for standalone loggers (HL-1 / TL-1 / HL-20 / wireless loggers)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 19 of 174

3.8 HW4 v. 3.7.0

HW4 version 3.7.0 includes all the functions and features of HW4 version 3.6.0 with the following modifications and additions:

- **New products**

- CRP1 clean room panel
- HS5 thermo- / hygrostat

- **Live chart**

- Standardization of live chart and data chart (zoom functions, diagrams, etc.).

- **Alarm table**

- New entries in alarm table
 - Min / max values
 - Alarm duration

- **Removed functions**

- Following functions are removed and its functions are provided by the PDF report:
 - Print selection
 - Create statistical data

- **PDF report**

- PDF report enhancements
 - Direct download of data files from data loggers and creation of PDF report
 - Alarm statistics available (min, max, duration, etc.)
 - Creation of PDF via button in main menu header
 - Report settings can be saved and used as master file for further reports
 - Customized PDF report by using individual logo in report header
 - Notes from chart view are included in PDF report
 - PDF report can be sent as e-mail directly via HW4

- **Bulk download**

- Bulk data download for HL-1D / TL-1D / HL-20 / wireless loggers
 - Bulk data download for all connected data loggers
 - Direct creation of PDF report
 - PDF report can be sent as e-mail

- **WIZARD**

- Configuration WIZARD for HL-1D / TL-1D / HL-20 / wireless loggers
 - Accessible via device tree
 - All settings in one pop-up window
 - Logger settings can be saved as master file and loaded for further programming

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<p style="text-align: right;">Instruction Manual</p> <p style="text-align: right;">Document Type</p> <hr/> <p style="text-align: right;">Page 20 of 174</p>

● **Others**

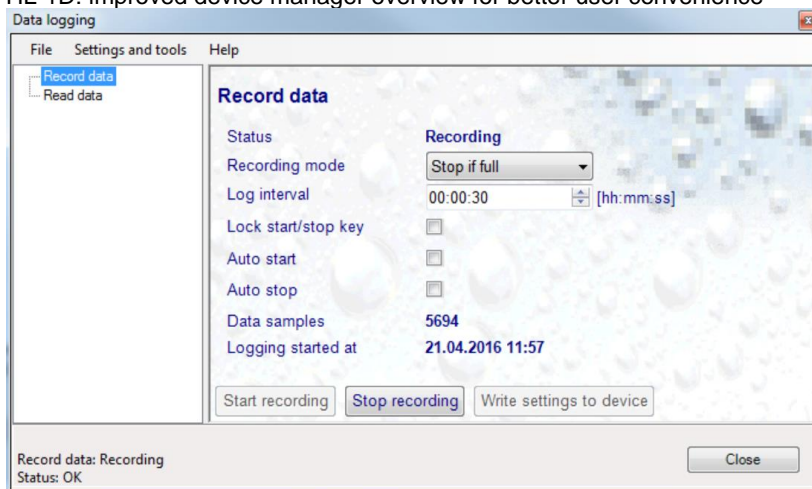
- Calibration / AW reports
 - New header and footer for both reports
- New alarm for ended AW measurement
- User management
 - Change of password can be forced by the administrator
 - User can be duplicated
 - Active directory can be used
- HW4 LITE version is limited to functions for offline data loggers (HL-1D / TL-1D / HL-20)
 - User management is removed
 - Configuration of software alarms is removed
 - Log to PC is removed
- Auto download for HF8 and HP23 with optional direct PDF report generation
- AW settings: Tab in general settings "AwE Mode" is removed. General AW settings can be accessed via "AwE Mode" tab in live view:
- Online buffer can be set in days, hours and minutes instead of measurement points
- LOG to XLS file converter (or vice versa)
- Battery level and signal strength of HL-RC loggers is displayed in live chart
- Expected battery live time can be calculated and displayed in device manager
- Start / stop function for HL-1D / TL-1D loggers

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 21 of 174

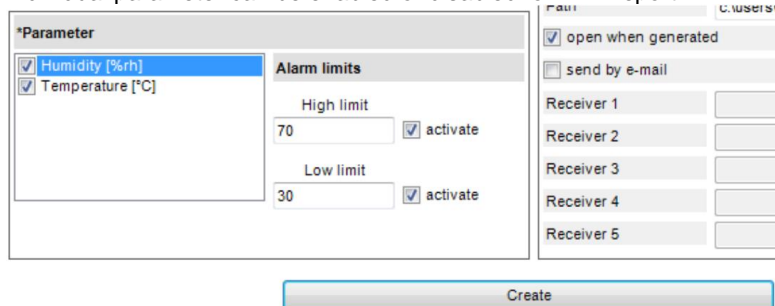
3.9 HW4 v. 3.8.0

HW4 version 3.8.0 includes all the functions and features of HW4 version 3.7.0 with the following modifications and additions:

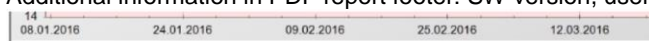
- **Enhancements**
 - Aw Therm
 - Change of temperature set point
 - Temperature control on / off
 - Change of display contrast
 - Change of date & time
 - Pad sensitivity
- **New features**
 - HL-1D: improved device manager overview for better user convenience



- Individual parameter can be enabled or disabled for PDF report



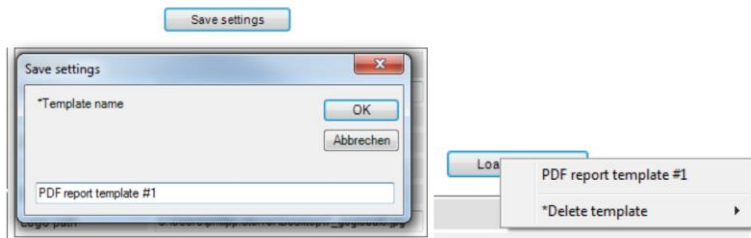
- Additional information in PDF report footer: SW version, user, unique report ID



HW4, Version V3.8.0 Beta (Build 16112), (Admin), (ID: 20160422-152601)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 22 of 174

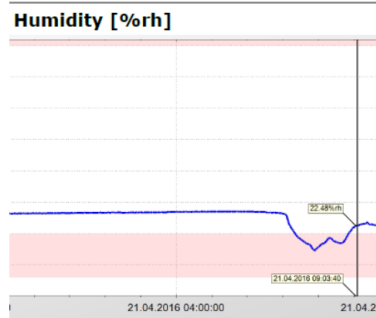
- o Multiple templates for PDF report



- o Reset to factory settings for HL-1D, TL-1D



- o Ruler is integrated in PDF report

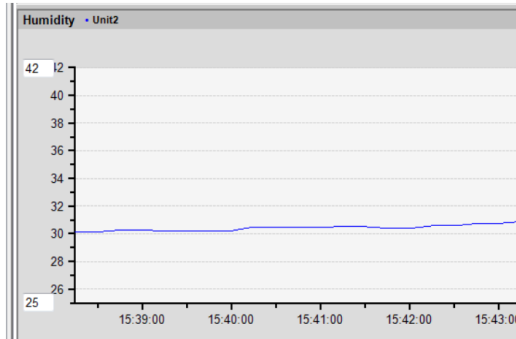


- o Numbers in PDF report are equipped with units

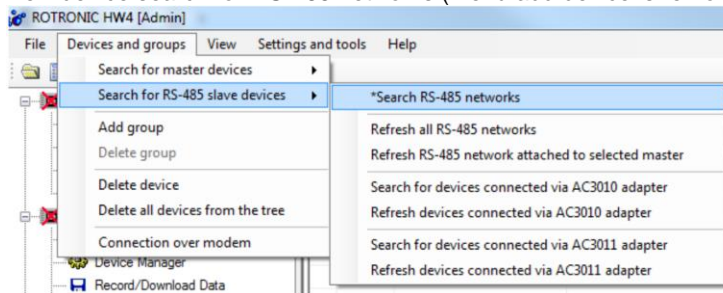
Statistics	
Count	2471
Interval	00:00:30
Begin	20.04.2016 15:21:40
End	21.04.2016 11:56:40
Min	14.50%rh 21.04.2016 07:54:10
Max	27.94%rh 20.04.2016 17:08:40
Average	24.865%rh
STDEV	2.799%rh

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 23 of 174

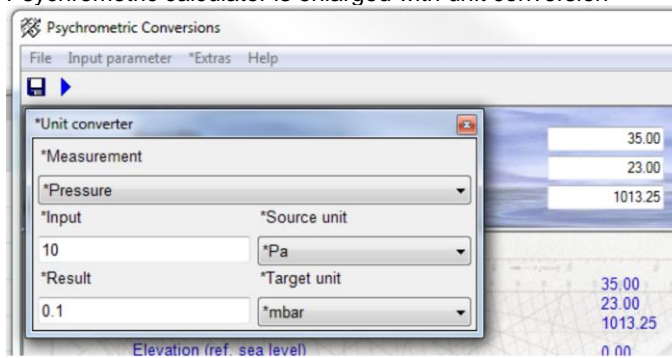
- Scaling of y-axis manually



- New device search for RS-485 networks (menu add device is removed)



- Psychrometric calculator is enlarged with unit conversion



- More stable data download for wireless logger.
- Combined chart view available
- USB drivers are automatically installed during HW4 installation
- Additional software alarm condition for ended alarms

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<p style="text-align: right;">Instruction Manual</p> <p style="text-align: right;">Document Type</p> <hr/> <p style="text-align: right;">Page 24 of 174</p>

- **Bugs (V3.7.0) fixed**

- Deactivated users can immediately be reactivated.
- PDF report: text in report footer includes “serial number” as text instead of HW4 version.
- Data download from wireless data loggers brakes down, if administrator right on PC are missing
- When US time format (AM/PM) is set on the PC, HW4 caused software exceptions.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 25 of 174

3.10 HW4 v. 3.9.0

HW4 version 3.9.0 includes all the functions and features of HW4 version 3.8.0 with the following modifications and additions:

- **New products**
 - HygroGen Reference via IP address for Remote from external PC
 - Readout humidity and temperature
 - HP32
 - Adjustment (HC2)
 - Calibration (HC2)
 - Battery monitoring
 - Start / Stop
 - Device information
 - Device settings
 - Alarm settings
 - Log Interval
 - Display illumination
 - Time/date
 - Pressure
 - Displayed calculated parameter
 - Set/upload Language
 - Buzzer
 - Reset to factory settings
 - Naming
 - PF4/5 second generation
 - Adjustment
 - Calibration
 - Alarm settings
 - Display settings
 - Output configuration
 - Relay Settings
 - Calculations
 - Digital Communication
 - Flow Settings
 - BL-1D (further family member beside HL-1D and TL-1D)
 - Read log data (%rh / °C, pressure, dew point)
 - Read live data (%rh / °C, pressure, dew point)
 - Read / write device settings / configuration
 - Alarm settings (%rh / °C, pressure, dew point)
 - Output configuration
 - Lock key
 - Write protection
 - Auto display switch period
 - Display refresh rate
 - Time/date
 - Adjustment (%rh)
 - Calibration (%rh / °C, pressure, dew point)
 - Start / stop function
 - Set standard configuration (similar to HL-1D)
- **Products taken out**
 - AF1
 - AF4

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 26 of 174

- **New feature**
 - CRP5: Trend implemented
 - CRP5: menu protection added
 - HygroGen: Reference via localhost (127.0.0.1) running on the HW4 installed on the HygroGen2

- **Improvements**
 - HW4 chart: Rule instead of databox
 - HW4: Indication of the licence key before the update. The user might be indicated that the licence key is necessary in case of an SW update.
 - HW4: Minimum requirements: Microsoft .NET framework (version 4.0) has to be installed on the PC
 - HL-RC loggers: HW4 provides the battery life time calculation directly in the configuration WIZARD.
 - Loggers: Permit bulk settings for all loggers in the same time e. g. for mapping:
 - Bulk download
 - Bulk configuration
 - Bulk start of logging
 - Start/Stop of logging is programmable
 - Device can be sorted according to the serial number

- **Licence**
 - All devices can be configured with th lowest licence volume key.
 - Lowest licence volume is gratis – no key necessary anymore.

- **Bugfix**
 - HW4: Corrected “HW4 global setting and view settings” related to the minimum user rights.
 - HW4: Corrected binary log function to pdf using the languages Japanese, Chinese and Korean
 - HW4: Correct alarm confirmation – link to the correct alarm
 - HW4: Correct alarm confirmation – table is renewed only if a new alarm appears
 - HW4: Corrected “HW4 global setting and view settings” related to the minimum user rights.
 - Aw Therm: Correction of the AWQuick measurement. The deviation of temperature setpoint from measured temperature as a stability criteria is taken out.
 - HP32: Corrected log time table
 - HP32: Corrected alarm settings if switching from °C to °F
 - HygroGen: Corrected logfile is created but empty if

- **SW21 – no change**
 - HygroGen Reference via IP address
 - 127.0.0.1 for HW4 running at the HG2 and
 - individual IP address for remote access to HG2 from an external PC

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 27 of 174

4 HW4 REQUIREMENTS AND OTHER IMPORTANT INFORMATION

4.1 *Computer/Operating System Requirements*

The following are the minimum values required to install and run HW4 on a computer. It is highly recommended to exceed these values.

- Processor: 1 GHz
- RAM: 512 MB
- Available hard disk space: 250 MB
- Monitor: SVGA, 1280 x 960, 65535 colors
- Ports: one free serial (COM) port or one free USB port or Network Interface Card / Ethernet LAN with one free port (RJ45 connector)

4.2 *Operating System Compatibility*

- Vista, Windows 7, Windows 8, Windows 10, Windows Server. All OS: 32 and 64-bit.

4.3 *Microsoft .NET framework*

HW4 was written for the Microsoft .NET framework (version 4.0) and requires this framework to be installed on the computer.

The .NET framework offers significant improvements in the areas of networking and user security. When new software is being installed, the .NET framework also eliminates the potential problem of conflicting dynamic library files (DLL). According to Microsoft, the .NET framework will be used by all future Microsoft operating systems.

Prior to installing HW4 you should verify that the Microsoft .NET framework (version 2.0) is installed on the PC. To do this, open Control Panel in Windows and select Add or Remove Programs. Windows displays an alphabetical list of installed programs. If Microsoft .NET framework is not listed it is not installed on the PC.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 28 of 174

4.4 Location of the HW4 User Folder

During the initial startup, HW4 automatically creates a user folder named **ROTRONIC_HW4**. HW4 also creates the folders DATA, DATA_ONLINE, SYS, DOC and EVENT within the ROTRONIC_HW4 folder.

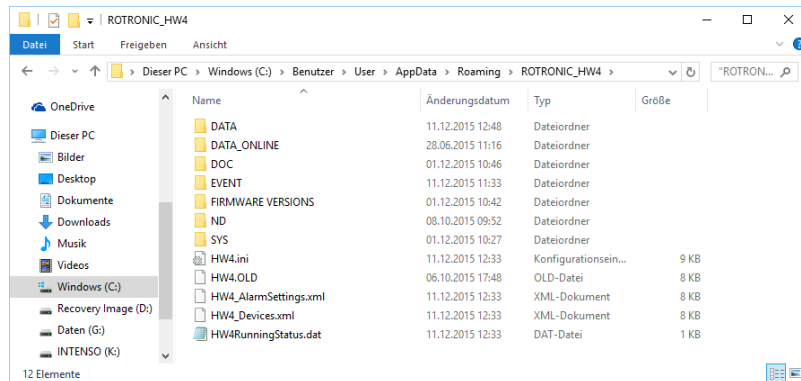
The ROTRONIC_HW4 folder holds the HW4 configuration files. The subfolders DATA, DATA_ONLINE, SYS, DOC and EVENT hold the log files (measurement data), protocols, event files and alarm records.

Depending on the operating system, the location of this folder is as follows:

- **Windows XP:** C:\Documents and Settings\Windows User\Application Data
- **Vista and Windows 7, 8 or 10:** C:\Users\Windows User\AppData\Roaming

Windows User is the name that was used to log into the current Windows session.

Contents of the ROTRONIC_HW4 folder:



By default, *Windows User* has **exclusive access** (permissions) to any folder or file that is located in C:\Documents and Settings\Windows User\Application Data (Windows XP) or in C:\Users\Windows User\AppData\Roaming (Vista and Windows 7 or 8). For this reason, the default path for the HW4 user folder may not be always suitable for the intended use of HW4.

For instructions about changing the path of the HW4 User Folder, see [Relocating the HW4 User Folder](#) BEFORE INSTALLING HW4.

4.4.1 Running HW4 on a LAN with several workstations and a Windows 2003 file server

The HW4 software is not designed to be installed on a Windows 2003 file server. When you wish to run HW4 on multiple workstations viewing and sharing the same data, you should proceed as follows:

- Log in on one of the workstations as an administrator of the Windows 2003 server.
- Install HW4 on the workstation following the procedure described under **Installing HW4**
- After installing HW4 **and prior to starting HW4**, go to the HW4 installation directory on the workstation and change the path used by HW4 to locate the HW4 User Folder to the root directory of a file server drive that is mapped on each workstation (see [Relocating the HW4 User Folder](#)).
- Start HW4 following the procedures described in this manual under **Initial Startup**
- Close HW4 before installing HW4 on the next workstation
- Repeat this procedure for each workstation

Note: It is important to distinguish between a Windows user and a HW4 user. It is equally important to distinguish between the Windows permissions to a folder and HW4 rights. When the HW4 User Folder is located on the File server and is shared by all workstations, you should give all Windows users sufficient permissions to the HW4 User Folder and subfolders (Folder Properties – Security).

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 29 of 174

5 INSTALLATION

5.1 *Software Licensing Agreement*

3) Rights to software, know-how and process

Without any specific agreement, the customer may make use of the available software HW4, the know-how, the data carriers and the documentation to the extent provided for, but must not pass it on to third parties.

Any improvement, amendment or copying of the software by the customer requires permission in writing from ROTRONIC. The customer must include the same property rights notations on all modifications and copies as there are on the original.

In all cases, ROTRONIC or its licensors retain the ownership of the software and the know-how and also retain the right to continued utilization, even if ROTRONIC supplies the source codes or if the customer subsequently makes amendments to the software programs or know-how recordings.

2) Warranty against defects

The customer's warranty rights presume that he or she has fulfilled his or her legal obligation to examine and make a complaint in respect of a defect immediately on receipt of the goods as is required.

ROTRONIC shall be released from all obligations under all warranties either expressed or implied, if the software covered hereby is modified by persons other than its own authorized personnel, unless such modification by others is made with the written consent of ROTRONIC or unless such modification in the sole opinion of ROTRONIC is minor or unless such modification is merely the installation of a new ROTRONIC update or patch for the software. ROTRONIC makes no warranties which extend beyond the description of the software covered hereby other than as expressly stated herein, ROTRONIC expressly and specifically disclaims the implied warranty of merchantability and makes no warranty with respect to the fitness of the software covered hereby for any particular purpose or use unless such a warranty is expressly set forth.

The buyer or anyone claiming under any warranty relating to the software sold hereunder agrees that if ROTRONIC breached any such warranty, or any warranty implied either in fact or by operation of law, or if the software warranted hereunder proves defective in any manner whatsoever, ROTRONIC sole liability hereunder is limited to either replacement of the defective software or at the option of ROTRONIC, refunding to the buyer the purchase price paid for such defective software. The buyer and anyone else claiming under any warranty relating to the software sold hereunder expressly and specifically agree that ROTRONIC is not responsible for, and the buyer or such other claimant or claimants shall assume, any liability for property damage, prospective profits, special, indirect, or consequential damage, or other commercial or economic loss arising out of use or possession of the software sold hereunder. ROTRONIC shall not be liable for, and a buyer or anyone else claiming under any warranty relating to the software sold hereunder further agrees, and shall assume, any liability for personal injury arising out of use or possession of the software sold hereunder. Representations and warranties made by any person, including dealers and representatives of ROTRONIC which are inconsistent or in conflict with the terms of this warranty (including but not limited to the limitations of the liability of ROTRONIC as set forth above), shall not be binding upon ROTRONIC unless given in writing and approved by an expressly authorized representative of ROTRONIC.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 30 of 174

5.2 Installing HW4

Go to the Download area rotronic.ch [Link](#). Search for HW4 v.3.9.0 and download the setup.exe. Execute the setup file, the installation program should start automatically.

IMPORTANT: HW4 requires a PC with the Microsoft .NET Framework version 4.0 or higher installed.

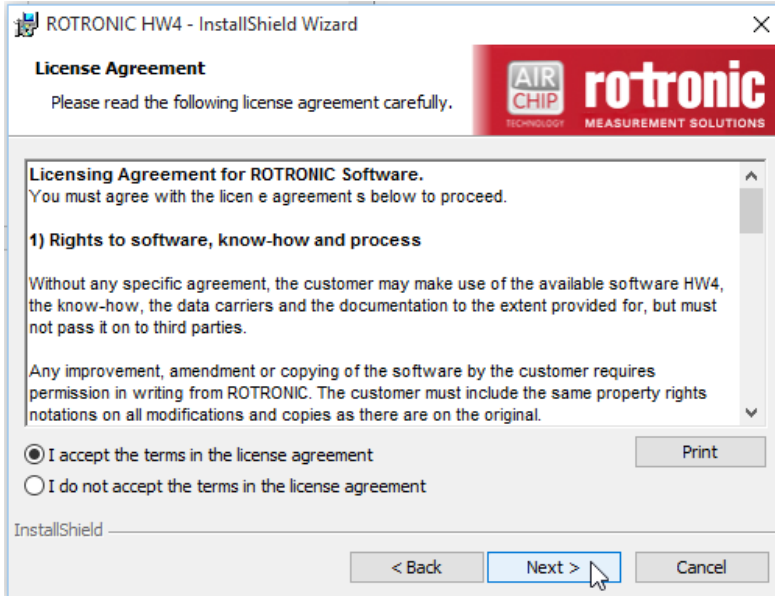
Note: Save your work and close all open files because the computer will have to restart to complete the installation process.

After making sure that the Microsoft .NET Framework is installed on the PC, click on step 1 with the mouse to install HW4. Installation begins with the following form:

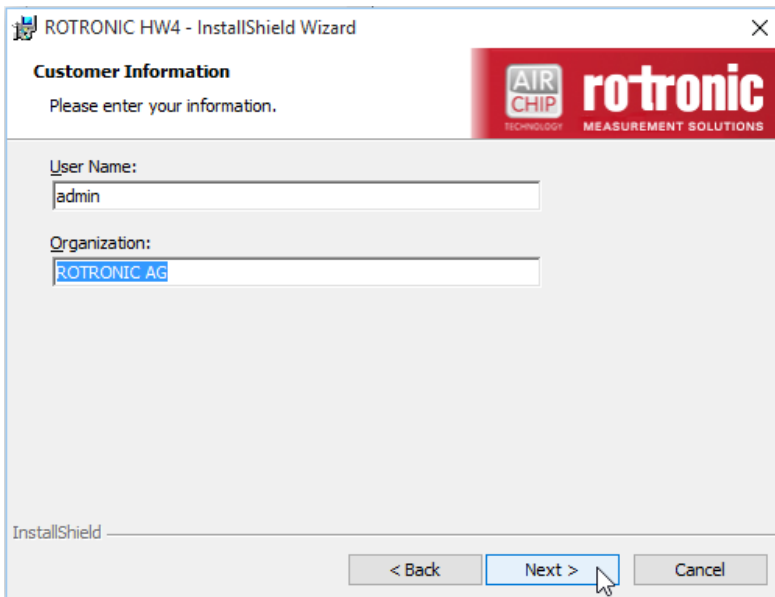


Click on the NEXT button:

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 31 of 174

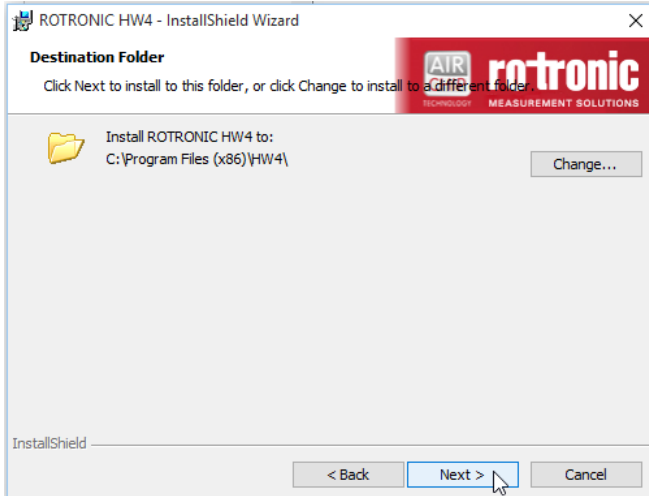


Click on the NEXT button to move through the different installation steps and follow the instructions provided on the screen.



The choice made above determines how the HW4 install program will make entries in the Windows registry (entries for all users or for the current user only).

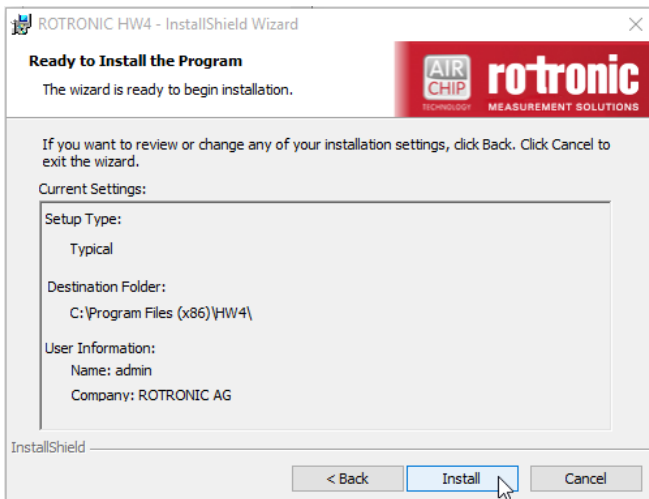
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 32 of 174



The default installation directory is C:\Program Files (x86)\HW4 and can be changed during installation.

The shortcut HW4 is automatically created on the desktop during installation:

Note: Upon starting HW4 for the first time, the folder ROTRONIC_HW4 will be automatically created in C:\Documents and Settings\Windows User\AppData, where *Windows User* is the name that was used to log into the current Windows session.



After confirming with “Next” the following summarizing screen appears prior to the beginning of the installation process.

When installation is complete, the following screen should appear:



STOP HERE!

Do not start using HW4 without reading the following:

- [Relocating the HW4 User Folder](#)
- [Preparing for device connection](#)

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 33 of 174

5.3 **Updating HW4 to a newer version**

Uninstalling manually is not necessary/mandatory when updating to Version 3.3.0 or higher

IMPORTANT: do not delete the HW4 User Folder (ROTRONIC_HW4) created by the old HW4 version.

Deleting the HW4 User Folder will erase all users, all configuration and measurement data as well as all event tracking and protocols. It is advisable to make a temporary back-up copy of this folder.

Unless otherwise mentioned, this folder can be used with the updated HW4.

Depending on the operating system, the location of this folder is as follows:

- **Windows XP:** C:\Documents and Settings\Windows User\Application Data
- **Vista and Windows 7 or 8:** C:\Users\Windows User\AppData\Roaming

Windows User is the name that was used to log into the Windows session the first time that HW4 was started.

5.4 **Uninstalling HW4 (full uninstall)**

IMPORTANT: Not following this procedure may result in problems later if HW4 is installed again.

To properly uninstall HW4 and remove its main components, you should click on Start in Windows and open the Control Panel. Select Add or Remove Programs. ROTRONIC HW4 should be listed as one of the installed programs. Select ROTRONIC HW4 and click on the Remove button.

To complete a full uninstall you should manually delete the HW4 User Folder (ROTRONIC_HW4).

Depending on the operating system, the location of this folder is as follows:

- **Windows XP:** C:\Documents and Settings\Windows User\Application Data
- **Vista and Windows 7 or 8:** C:\Users\Windows User\AppData\Roaming

Windows User is the name that was used to log into the Windows session the first time that HW4 was started.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 34 of 174

6 CONNECTING DEVICES TO THE HW4 PC

6.1 *Definition: masters and slaves (HW4 Professional)*

HW4 Professional makes use of the following definitions:

Master: any device, probe or docking station that is

- connected either to a physical or to a virtual port of the PC either directly or by means of an interface adapter cable
- directly connected to an Ethernet port (TCP/IP) either by cable or by wireless.

Slave: any device or docking station that is connected to a master by means of an RS-485 multi-drop. Slaves cannot be used in conjunction with HW4 Standard Edition.

6.2 *Connection methods for master devices*

All versions of HW4 are compatible with the following methods for connecting devices to the HW4 PC:

- Physical serial port
- Bluetooth serial port (virtual COM port)
- USB port
- LAN (TCP/IP) – cable or wireless connection

6.3 *Connectivity hardware*

Please consult your probe or device hardware manual as well as document E-M-HC2-accessories (available from our website).

6.4 *Devices used as RS-485 slaves (HW4 Professional)*

HW4 Professional allows the use of one RS-485 multi-drop with each master device. Any RS-485 multi-drop is limited to a maximum of 64 devices (1 master and up to 63 slaves). Any device with a RS-485 port can be used either as a master or a slave, without special configuration.

IMPORTANT:

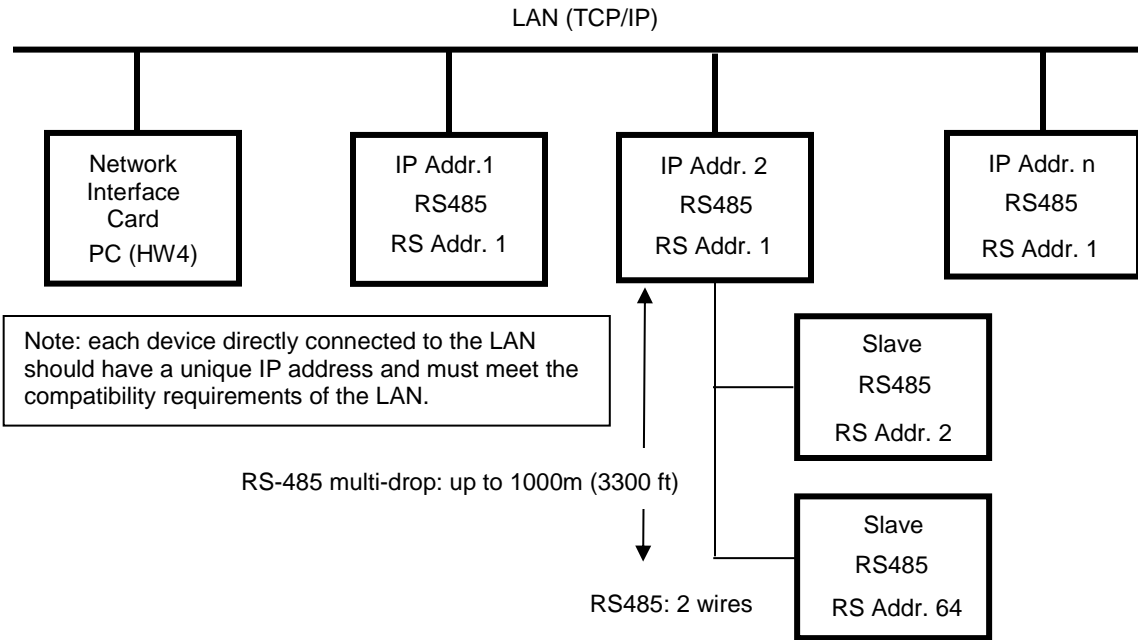
- **RS-485 compatibility:** the communications protocol used by the products based on the AirChip 3000 technology is not compatible with the protocol used by the previous generation of ROTRONIC products as well as by the HygroLog HL-NT. Do not connect legacy products and AirChip 3000 products to the same RS-485 multi-drop network. HW4 is compatible with both AirChip 3000 products and legacy products as long as these products are connected to separate RS-485 multi-drop network.

The AC3011 converter is an exception to the above rule and can be used to make a RS-485 network consisting both of legacy products and AirChip 3000 products (all devices must use the same Baud rate).

- **Baud rate:** unlike legacy products, the 19200 Baud rate used by all products based on the AirChip 3000 cannot be changed

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 35 of 174

Example: slaves connected to an Ethernet master



See [RS-485 slaves: address and Baud rate requirements.](#)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 36 of 174

7 PREPARING FOR DEVICE CONNECTION

Note:

- Both the HygroLog NT and HL-NT require a docking station to provide an interface with the PC.
- If you want to run HW4 on multiple workstations connected to a Windows 2003 file server, use only devices connected by Ethernet (wired or wireless) because this is the only type of connection that can be shared by all workstations. Devices connected by RS-485 to an Ethernet device can also be shared.

7.1 Physical serial port

Connecting an instrument or device to a physical COM port of the HW4 PC does not require any preparation. Simply connect the device to any available serial (COM) port on the PC.

7.2 USB port

Prior to connecting any ROTRONIC device to a USB port you should install the **ROTRONIC USB driver** on the HW4 PC.

IMPORTANT: do not run HW4 while installing the USB driver on the PC.

The ROTRONIC USB driver (ROTRONIC USB Option) can be installed before or after installing HW4.

The following example shows how to install the driver with Windows XP.

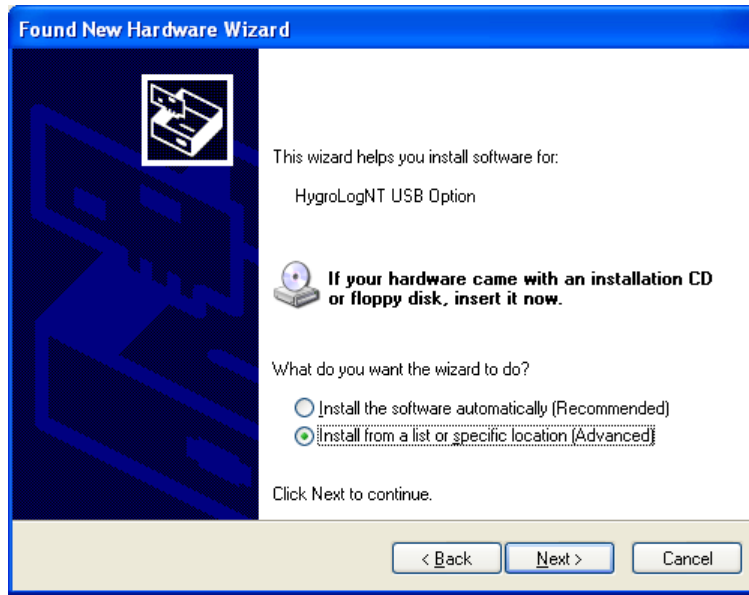
3. Prior to connecting the device to the PC, insert the HW4 CD-ROM in any available PC drive. The HW4 installation screen starts automatically. Exit this screen.
2. Connect the instrument or docking station to any available USB port. Upon detecting the presence of a device connected to the USB port, Windows XP automatically starts the following wizard:

If you are using Windows XP Professional SP2, the following screen appears. Select "No, not this time" and click on Next. This screen does not appear if you have not installed SP2.



E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<p style="text-align: center;">Instruction Manual</p> <p style="text-align: right;">Document Type</p> <hr/> <p style="text-align: center;">Page 37 of 174</p>

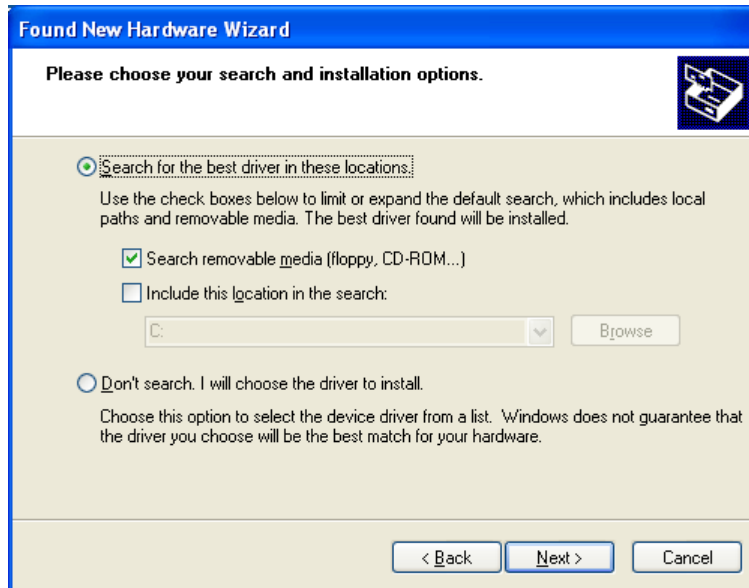
3. The following screen appears:



Select "Install from a list or specific location" and click on Next.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 38 of 174

3. Select "Search for the best driver in these locations".



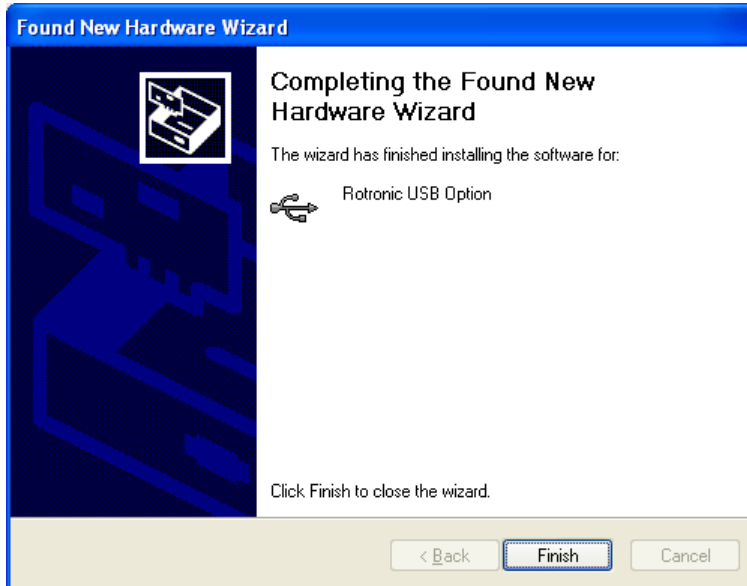
Click on Next

4. You will receive the following warning. Disregard this warning and click on "Continue anyway".



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 39 of 174

5. Windows copies the USB driver.



Click on "Finish" to complete the process.

Note: If your device has only a serial port and the PC has a USB port but no COM port, you can install a USB Serial Adapter on one of the PC USB ports. In this situation, install the driver supplied with the USB serial adapter (not the driver supplied with HW4) and connect the device to this adapter. HW4 will assume that the device is connected to a serial (COM) port.

7.3 Ethernet (TCP/IP) connection

NOTES:

- ROTRONIC devices with an Ethernet interface require configuration of the TCP/IP settings to ensure compatibility with the LAN to which the HW4 PC is connected (IP address, sub-net mask, gateway, etc.). Detailed instructions for configuring a ROTRONIC device with Ethernet (TCP/IP) interface are provided separately in document **IN-E-TCPIP-Conf_11**. A PDF version of this document can be downloaded from our web site. You may also want to read "**Basic TCP/IP concepts**" in this manual or consult with your network administrator prior to connecting any device to your local area network.
- ROTRONIC devices with an Ethernet interface (both wired and wireless) are shipped with a Device Configuration Certificate that provides information about the factory configuration settings of both the Ethernet module and device.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 40 of 174

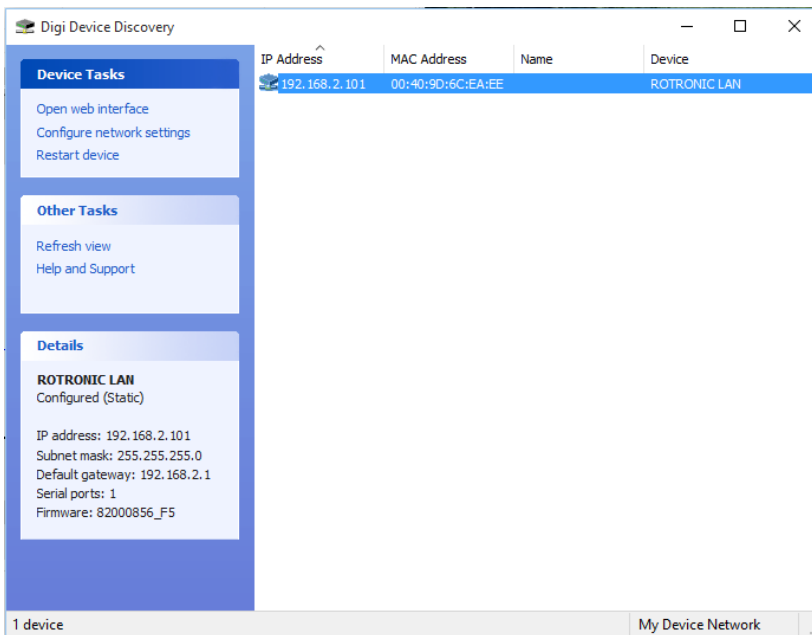
Before configuring the device TCP/IP settings, you should make sure that the following is available to you:

- An unused static IP address that is compatible with your network
- The subnet mask of your network
- The local IP address of the router used on the same LAN as the HW4 PC, the default gateway used by all devices on the LAN

In addition, the following information is required for a wireless connection:

- The wireless network name (SSID)
- The security mode (WAP, WEP or other) used by the HW4 network and the key or keys used by the security mode.

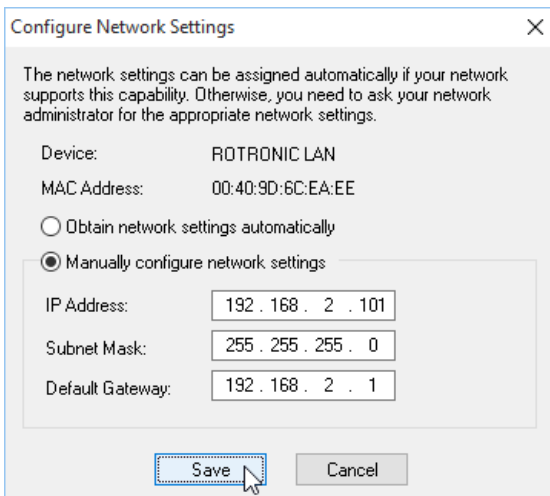
7.3.1 Wired TCP/IP connection



A device discovery utility (**Digi Device Discovery**) is provided in the HW4 installation directory (usually, C:\Program Files\HW4). The name of the corresponding file is **dgdiscvr.exe**. The Digi Device Discovery utility can be started by double clicking with the mouse on the file.

Digi Device Discovery detects only products from Digi International such as the internal Ethernet module currently used by ROTRONIC for devices with an Ethernet interface.

Connect the device to be configured to your LAN and double click with the mouse on dgdiscvr.exe to start Digi Device Discovery.



When activated, Digi Device Discovery automatically detects any ROTRONIC device present on the LAN and provides a list of all such devices.

The following example shows the initial screen for a device with TCP/IP settings that are not compatible with the LAN. Note the red warning that appears on the left side of the screen when the device is selected (highlighted).

With the device highlighted, click on “Configure network settings” to open the dialog box shown below.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 41 of 174

Configure Network Settings [X]

The network settings can be assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate network settings.

Device: ROTRONIC LAN
MAC Address: 00:40:9D:6C:EA:EE

Obtain network settings automatically
 Manually configure network settings

IP Address: 192 . 168 . 2 . 101
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway: 192 . 168 . 2 . 1

Save Cancel

When in doubt as to which setting to enter manually, select "automatically obtain network settings via DHCP" (requires a LAN with DHCP server such as a router). Using DHCP ensures that the device settings that are compatible with the LAN (subnet mask and default gateway) and that the IP address does not generate any conflict.

Click on Save, Reboot the device and click on Refresh View.

A dynamic IP address is subject to change whenever the device is powered down and then powered up. For this reason, you should now change the device configuration from dynamic IP address (DHCP) to static IP address. To do this, click again on "Configure network settings". The current settings of the device (IP address, subnet mask, etc.) appear in light gray.

Configure Network Settings [X]

The network settings can be assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate network settings.

Device: ROTRONIC LAN
MAC Address: 00:40:9D:6C:EA:EE

Obtain network settings automatically
 Manually configure network settings

IP Address: 192 . 168 . 2 . 101
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway: 192 . 168 . 2 . 1

Save Cancel

Click on "Manually configure network settings".

Change the device IP address to an address that is both currently unused on the LAN and outside of the range of dynamic IP addresses used by the DHCP server. To select a proper address, you may want to consult your network administrator.

7.3.2 Wireless TCP/IP connection

The internal Digi module WI-ME used by wireless ROTRONIC devices does not allow a wired connection to a LAN and must be configured using a wireless connection.

To allow a new wireless device to connect, the HW4 network wireless router has to be temporarily reconfigured and the wireless network security disabled. This is clearly not practical for most users and we recommend using a dedicated wireless router for the purpose of configuring a wireless ROTRONIC device.

Detailed instructions for configuring a wireless Ethernet ROTRONIC device are provided separately in document **IN-E-TCPIP-Conf_11**. A PDF version of this document can be downloaded from our web site.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 42 of 174

7.4 RS-485 slaves: address and Baud rate requirements

IMPORTANT:

- **RS-485 compatibility:** The communications protocol used by the products based on the AirChip 3000 technology is not compatible with the protocol used by the previous generation of ROTRONIC products. Do not connect legacy products and AirChip 3000 products to the same RS-485 multi-drop network.

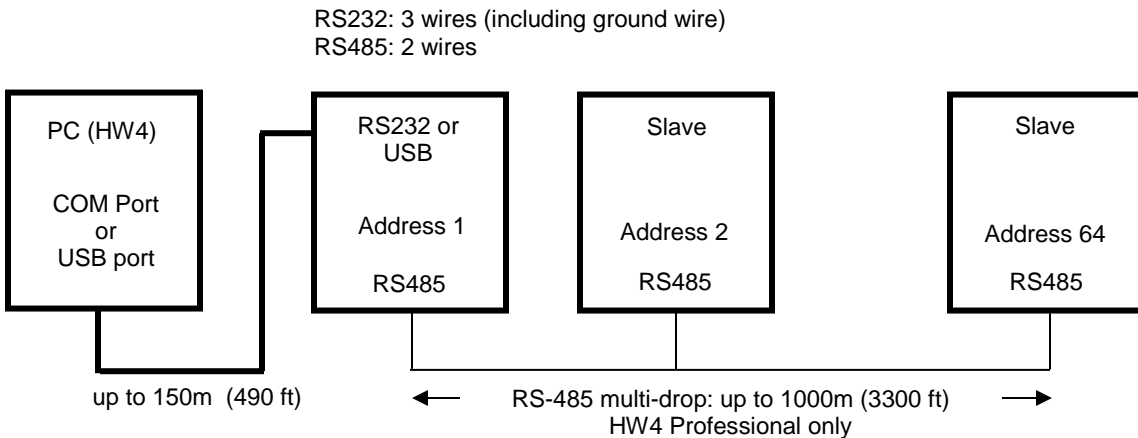
The AC3011 converter is an exception to the above rule and can be used to make a RS-485 network consisting both of legacy products and AirChip 3000 products (all devices must use the same Baud rate).

- **Baud rate:** the 19200 Baud rate used by all products based on the AirChip 3000 cannot be changed

All devices that are compatible with HW4 have an internal RS-485 address ranging from 0 to 64. The factory default for the RS-485 address is 0. Similarly, devices are configured at the factory to use a specific Baud rate for all serial communications. In the case of devices with an internal Ethernet (TCP/IP) module, serial communication includes communication between the device proper and its internal Ethernet module.

The RS-485 address is part of the communications protocol used by HW4 and is always included in the command sent to a device and in the device response. In the case of an RS-485 multi-drop, this address is used to identify each device and should be unique within the same multi-drop.

Example: slaves connected to a COM or USB master



When searching for RS-485 slaves, HW4 automatically changes the factory default RS-address of both masters and slaves as explained below:

- **Masters:** HW4 automatically changes the RS-485 address of any new device that is directly connected to the PC (master) from 0 to 1. As a result, all masters discovered by HW4 end up having the same RS-485 network address (1).
- **Slaves connected to a master:** in the situation where an RS-485 multi-drop is detected during a search, HW4 automatically changes the address of each slave with address 0 to a unique address ranging from 2 to 64. The same address range (2 to 64) is used again when there is more than one RS-485 multi-drop.

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<p style="text-align: right;">Instruction Manual</p> <p style="text-align: right;">Document Type</p> <hr/> <p style="text-align: right;">Page 43 of 174</p>

- **Slaves connected via AC3010 or AC3011 converter:** both the AC3010 and AC3011 converter allow connecting slaves without using a master device. The converter does not have a RS-485 address and does not count as a network device. During a search, HW4 automatically changes the address of each slave with address 0 to a unique address ranging from 1 to 64. The same address range (1 to 64) is used again when more than one converter is being used.

IMPORTANT:

- Avoid changing manually the factory default RS address (0) of new devices. Allow HW4 to change this address automatically.
- Change manually the RS address to 0 in the following situations:
 - A master will now be used as a slave
 - A slave is being moved from one multi-drop to another.

The change of address should be done prior to changing the physical connection (use HW4 Device Manager). If you forgot to do this, temporarily connect the device as a master to do the address change.

- Duplicate RS addresses are not permitted within the same RS-485 multi-drop (with the exception of temporary address 0). Duplicate addresses may prevent communication with the devices or give unpredictable results. It is OK to use the same RS address in different multi-drops.
- All devices within a multi-drop must use the same baud rate. Different Baud rates will prevent communication between the devices and the HW4 PC.

Master with Ethernet (TCP/IP) interface: any change to Baud rate of the device done with HW4 Device Manager should also be reflected in the configuration of the internal Digi International module used by the device to connect to the LAN.

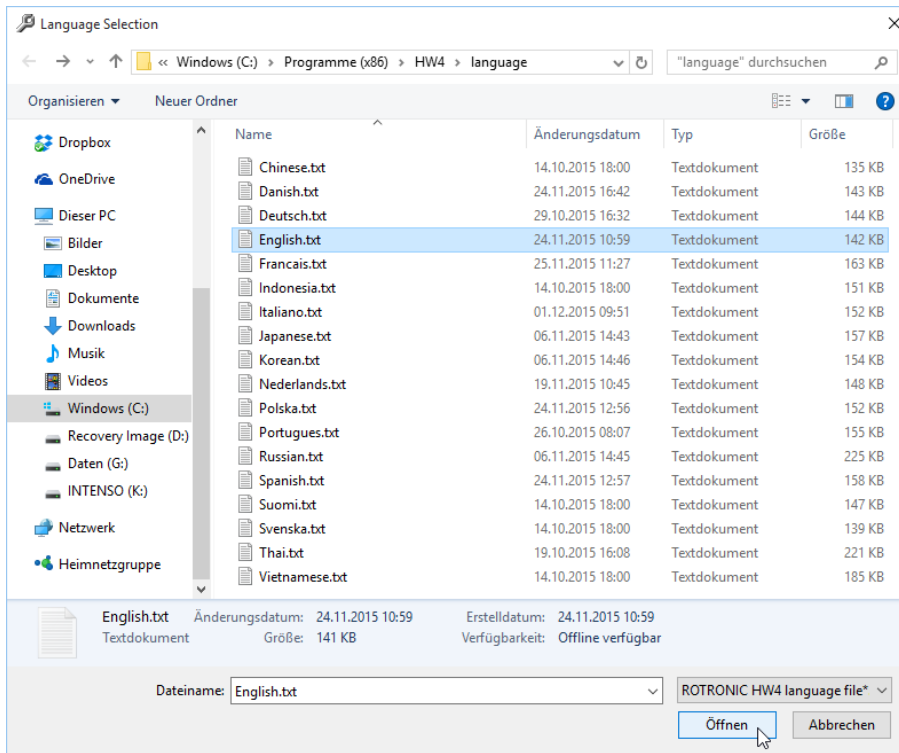
See: [Changing the baud rate of an Ethernet device](#)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 44 of 174

8 INITIAL START-UP

Click on the HW4 shortcut created on your desktop by the installation program.

8.1 Language selection



The first form to open lists the different language files available within HW4:

Use the mouse to highlight the desired language and click on Open.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 45 of 174

8.2 Product key and registration

The next form is the HW4 start-up form:



After <Start> the product license key and the registration can be done.

HW4 registration *

rotronic
Product key and user data

HW4 key: [License](#)

Please enter your name and the name of your company

First/Last name

Company **City/State/Zip** **Country**

Phone **E-Mail**

Register online

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 46 of 174

First Time Users: HW4 requires you to register and you should now click with the mouse on the Registration link. This opens the following form:

Enter the HW4 product key, which is printed on a sticker affixed to the protective cover of the HW4 CD. Fill in the required information. If the box Register on-line is checked, clicking on Continue will connect you to the ROTRONIC web site, where your registration data will be automatically entered. If you do not have an internet connection or if you have already registered your copy of HW4, uncheck the Register on-line box and click on Continue.

Registering on-line offers benefits such as free updates / patches and product information.

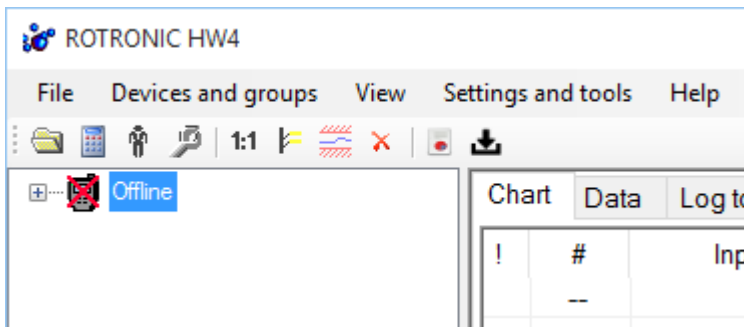
Upon completing the registration, HW4 returns to the Start-up Screen. Depending on the HW4 product key entered in the previous form, the edition of HW4 that you are using is shown on the screen (in the example below: HW4 Professional).

XX XXXXXXXX XXXXX

8.3 Device discovery after the initial start-up

A first automatic scan of connected devices will be executed.

When no device has been discovered, or when no device is connected to the HW4 PC, HW4 creates a fictitious device named "Offline" is shown within the device tree (see "**HW4 main screen overview**"). This instrument should be deleted after manually discovering the actual devices connected to the PC. The red cross on top of the device icon indicates that there is no communication with the device.



8.4 Creating the first user (HW4 Professional)

If you are using HW4 Professional, you should create at least one user with administrator rights and a password in order to comply with ERES regulatory requirements.

See: [Users and passwords](#).

Once the first user has been created, you will need to log in each time that you open HW4.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 47 of 174

To create a user you need to enter name, description and password. Click "Add" to finish creation of user.

8.5 Access to functions and screens (HW4 Professional)

In all versions of HW4 Professional, access to most functions and screen views requires the current user to have sufficient rights. Whenever a function is not accessible or a screen view is not available, please verify that you have been granted the necessary rights.

For an overview of user rights, including details for each individual right, please refer to the chapter [Users and Passwords](#).

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 48 of 174

9 SEARCHING FOR DEVICES WITH HW4

IMPORTANT:

The following instructions assume that all necessary preparations have been made prior to connecting the different devices to the HW4 PC. See [Preparing for device connection](#).

9.1 Searching for master devices

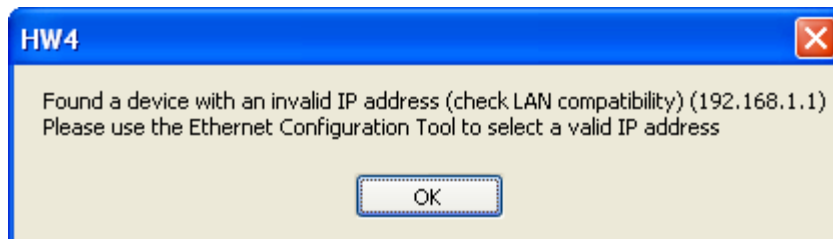
Depending on the connection method used for the master, use the following commands available in the HW4 main menu bar under [Devices and Groups](#):

- Physical COM (serial) port : Search for RS-232 masters
- Bluetooth virtual COM port : Search for RS-232 masters
- USB port : Search for USB masters 1)
- Ethernet (TCP/IP) – cable or wireless connection : Search for Ethernet masters 1)
: Search for Specific IP Address

1) Except LOG RC wireless data loggers: see separate manual: E-M-HW4v3-F2-021

Search for Ethernet masters: this command searches only for devices that are directly connected to the same local area network as the HW4 PC (both cable and wireless connection). The IP address of the device(s) does not have to be specified by the user.

When the TCP/IP settings of a device are not compatible with the local area network, HW4 displays the following message box:



Search for Specific IP Address: use this command to search for Ethernet devices that are connected to a different network (eventually via Internet). The IP address of the device must be specified by the user.

9.2 Searching for RS-485 slaves (HW4 Professional)

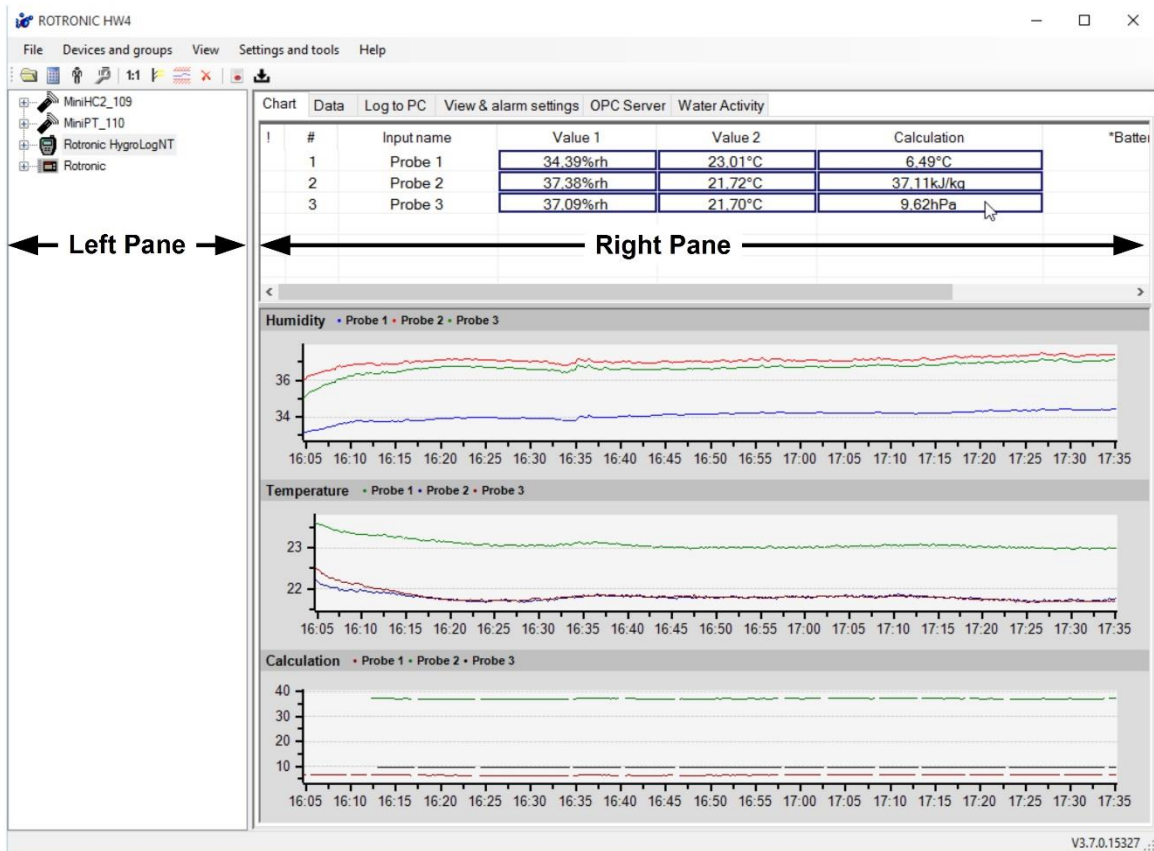
Use the **Search for RS-485 slave devices** commands located in the HW4 main menu bar under [Devices and Groups](#).

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 49 of 174

10 HW4 MAIN SCREEN

The HW4 main screen varies slightly depending on which edition of HW4 is running. The following description applies to the Professional edition which has more menu items and screens than the standard edition.

The HW4 main screen is subdivided into a left pane and a right pane. The width of each pane can be adjusted with the mouse. The height of the two sub-panes located in the right pane (table and graph) can also be adjusted with the mouse. To change the size of a pane, go over the separation line with the mouse cursor. When the cursor changes, click and hold with the mouse. Drag the separation line where you want it to be.

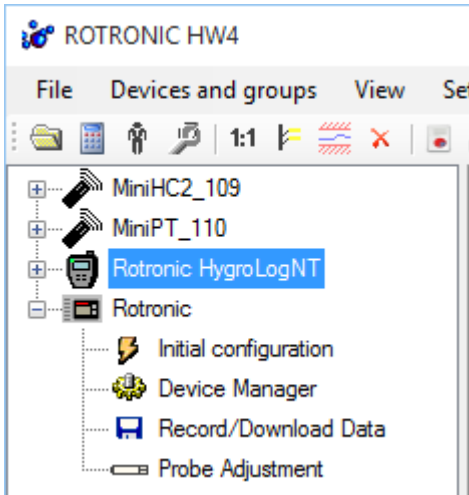


E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 50 of 174

10.1 Device Tree (left pane)

10.1.1 Tree populated with individual devices

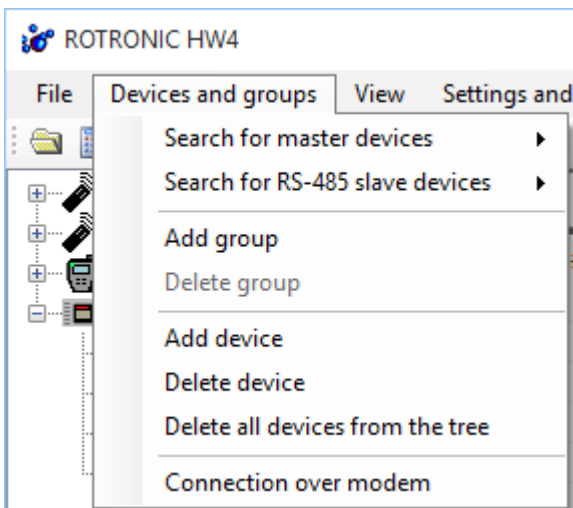
All versions of HW4 display on the left pane of the screen a tree listing the devices that have been discovered by HW4.



Each individual device is displayed in the left pane (for example: MiniHC2_109, MiniPT_110, Rotronic HygrologNT, etc.). This is the default view for all versions of HW4 and the only view available with HW4 Standard edition

Functions available for each device can be seen when the tree is expanded. These functions are specific for each type of device.

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



Right clicking with the mouse on a device opens the following menu:

Most items present in this menu are described in chapter 10: HW4 Main Menu Bar, under Device and Groups and under View.

The following menu items are present only in the case of a master device:

- Search for RS-485 Slave Devices
- Refresh the RS-485 Slave Devices

Search adds to the device tree any device connected to the RS-485 interface of the master

Refresh does not add any new devices and is used to re-establish a lost connection with slave devices already present in the tree.

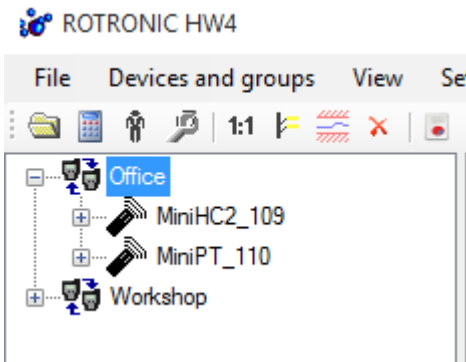
10.1.2 Tree populated with Device Group(s) – HW4 Professional

A Device Group is a logical grouping of devices (as opposed to a physical grouping) created and defined by the user. Subgroups can be created with a Group. Subgroups can also be created within a Subgroup with no limitations as to the number of levels. Both masters and slaves can be part of a group, with no restriction other than not duplicating devices. Individual devices can be moved to any existing group or removed from the Group (see “**Devices and Groups**”).

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 51 of 174

In addition to facilitating network management within HW4, using Device Groups makes it possible to simultaneously display selected data from several individual devices within a Group. The data can be viewed either as a table or as a live graph.

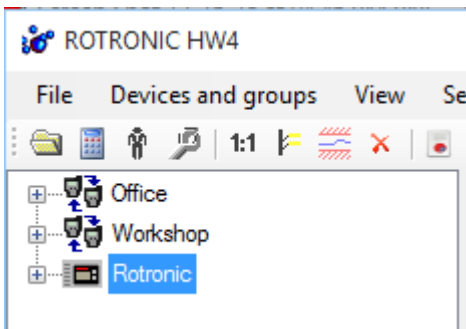
By default HW4 displays a Device Group as opposed to displaying any existing Subgroup and the individual devices within the Group. Individual devices can be displayed by expanding the Group.



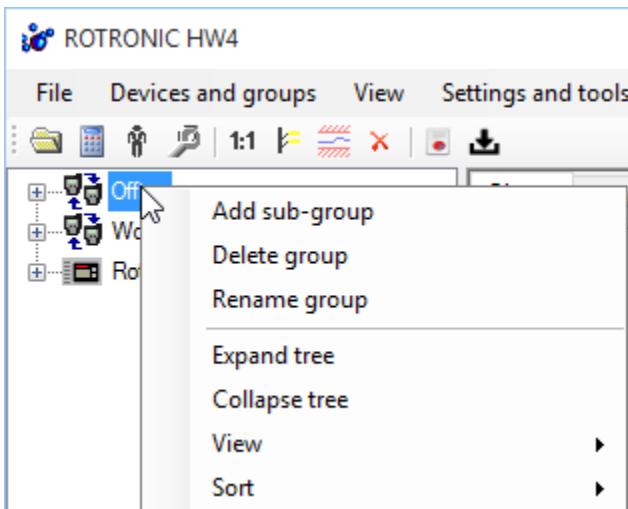
HW4 Professional edition allows the creation of Device Groups and Subgroups. When one or more Groups have been created (example Workshop, Office), and all devices have been moved to a Group, the left pane displays a tree listing only groups.

A Group can be expanded to show the Subgroups and devices within the Group and each device can be expanded to show its functions.

To select a Group, a device or a function, click on it with the left mouse button.

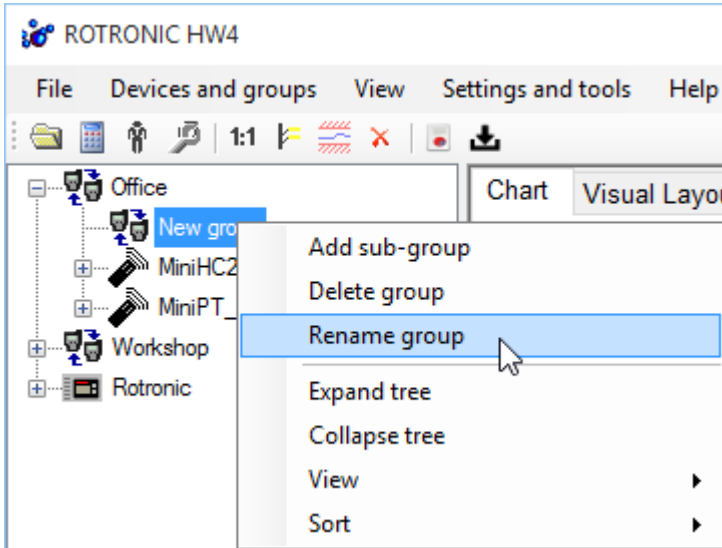


The left pane can also display one or several Device Groups (Workshop) as well as individual devices that are not part of any Group (HP23).



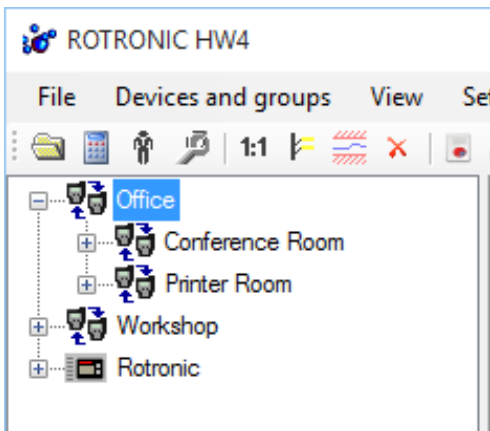
For adding a subgroup right-click on the respective group name and select “Add sub-group”.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 52 of 174



The default name of a newly created sub-group is “New group”. It may be changed by right-clicking on it and selecting “Rename group”.

The assignment of a device to a group or subgroup can be performed by drag and drop.



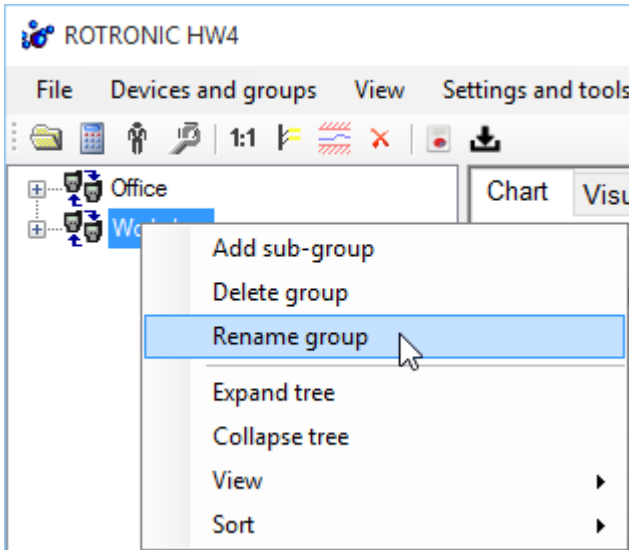
Example of a group “Office” with two subgroups “Conference Room” and “Printer Room”.

Note: after being detected, devices appear individually in the tree regardless of the manner in which they are connected to the PC (master or slave).

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 53 of 174

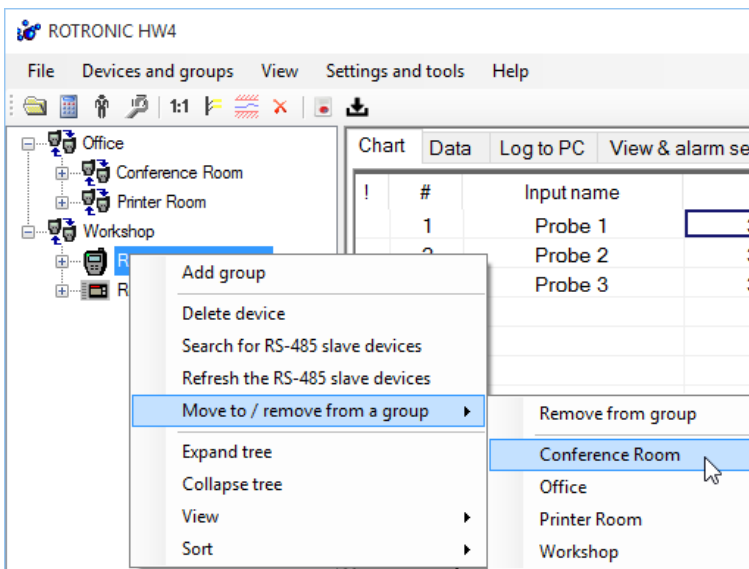
10.1.3 Instrument group: renaming and changing the contents

The following menu can be opened by right clicking on a group:



Rename Group: after creating a group, the group can be renamed in the same manner as a file can be renamed in Windows.

► Add a device to a group:

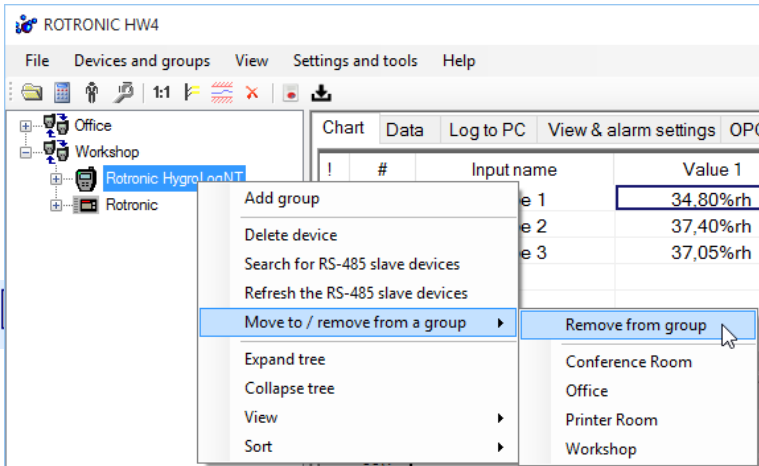


After creating a group, individual devices can be moved to the group by selecting the device with the mouse and by right clicking to open the menu shown to the left.

The available groups (such as "Office" and "Workshop" are listed in the menu

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 54 of 174

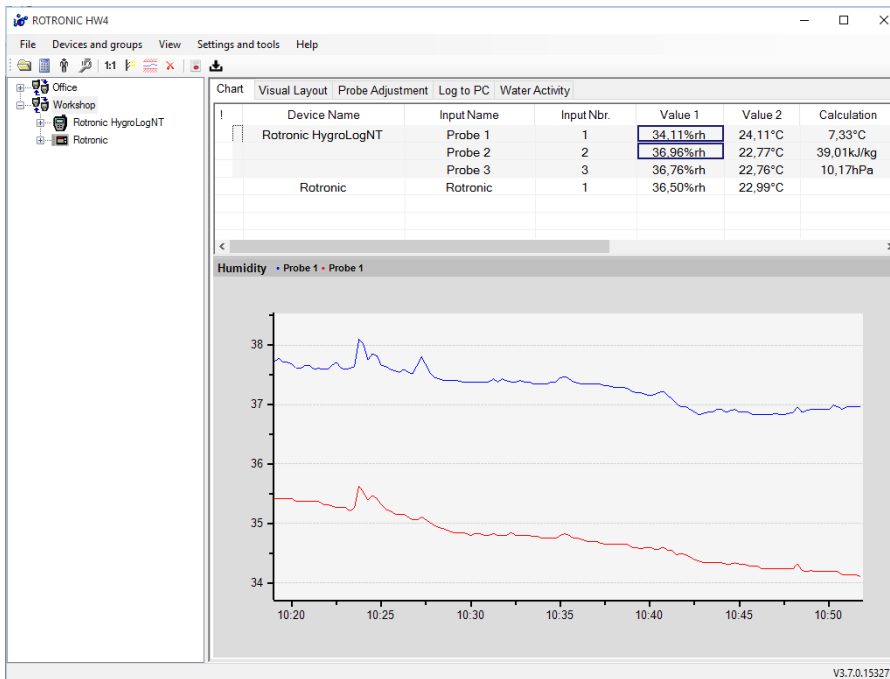
► **Remove a device from a group:**



Expand the group to display all devices within the group. Right-click on the device with the mouse, place the mouse cursor over “Move to / remove from a group” and then in the opening submenu over “Remove from group”.

10.2 Right pane in Group View mode

Note: device groups are available only HW4 Professional edition.



The right pane is in the **Group View mode** whenever a group of devices is selected in the device tree (left pane). In the Group View mode, the right pane is as illustrated below.

10.2.1 Current Values tab

The top of the right pane displays a table of the most recent value for the different parameters associated with the devices in the group selected in the device tree. The values are continuously updated according to the device polling interval set in **HW4 Global Settings > General tab**.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 55 of 174

10.2.1.1 Customizing the Current Values tab

► Data columns in the Current Values tab

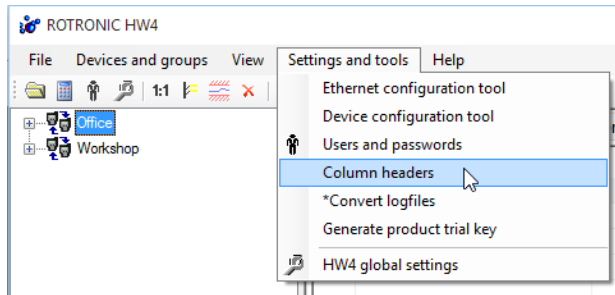
Depending both on the type of device and on the configuration of the device, HW4 can display a number of data elements in the Current Values tab. Different types of data appear in different columns of the Current Values table as explained below:

Data	Column Headers	Notes
Humidity digital	Humidity Value 1	HygroClip probe digital output
Humidity analog	Value 1	HygroClip probe analog output (channel 1)
Temperature digital	Temperature Value 2	HygroClip probe digital output
Temperature analog	N/A	Our instruments accept only single channel analog probes (channel 1 = humidity)
Calculation	Calculation	Dew point, humidity ratio, etc.
Analog probe (single channel)	Analog Input Value 1	3d party analog probe
Pressure probe	Analog Input Value 1	3d party analog pressure probe
Custom Calculation	Custom Calc. Value 1	Requires an instrument that can be configured to perform a user defined calculation such as the difference between two temperatures.
Logical input 1	L-Input 1 Value 1	Logical input used to monitor an external contact (1 = closed / 0 = open)
Logical input 2	L-Input 2 Value 2	Logical input used to monitor an external contact (1 = closed / 0 = open)
Relay 1 to Relay 4	Relays Value 1	Status of relay outputs 1 to 4 (1 = energized / 0 = de-energized)
Dewpoint	Dewpoint Value 1	...

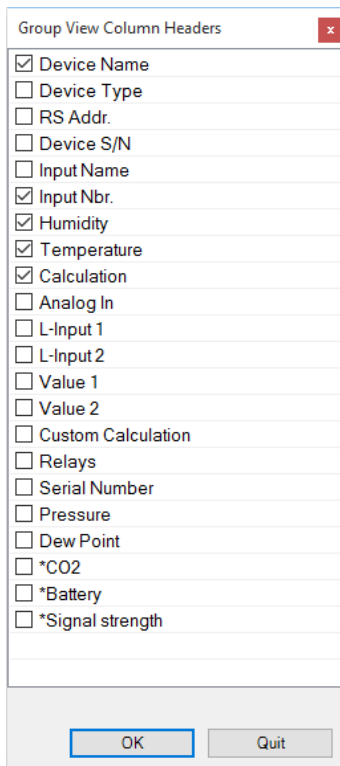
Note: the columns "Value 1" and "Value 2" are provided for users who wish to minimize the number of columns in the data table.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 56 of 174

► **Column selection in the Current Values tab**



To make HW4 display only specific columns in the Current Values tab, select a device group that is present in the device tree (for example Office in the left pane). In the HW4 main menu bar, click on **Settings and Tools** and on **Column Headers**.



HW4 opens the form on the left. Make your selection using the mouse. **The selection applies globally to all groups displayed in the Current Values tab.**

► **Order of the columns in the Current Values tab**

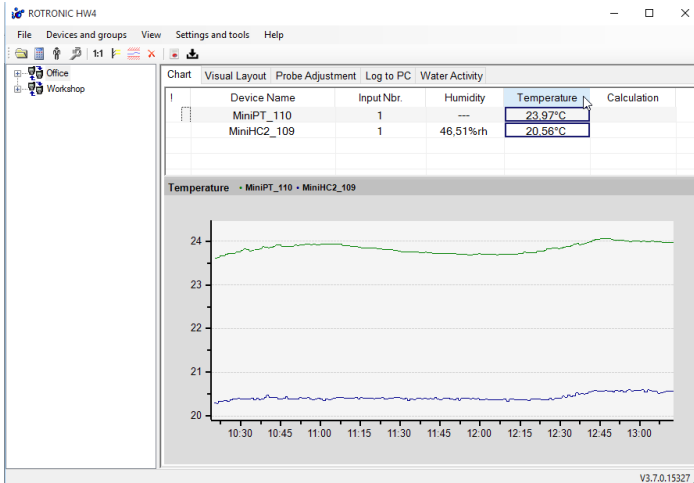
The order of the columns in the Current Values tab can be changed. To move a column to the right or to the left, left click with the mouse on the column header and drag it to its new position.

► **Row selection in the Current Values tab**

The rows displayed in the current values table depend on the selections made for each individual device. See **“Right pane in Device View mode – View Tab”**.

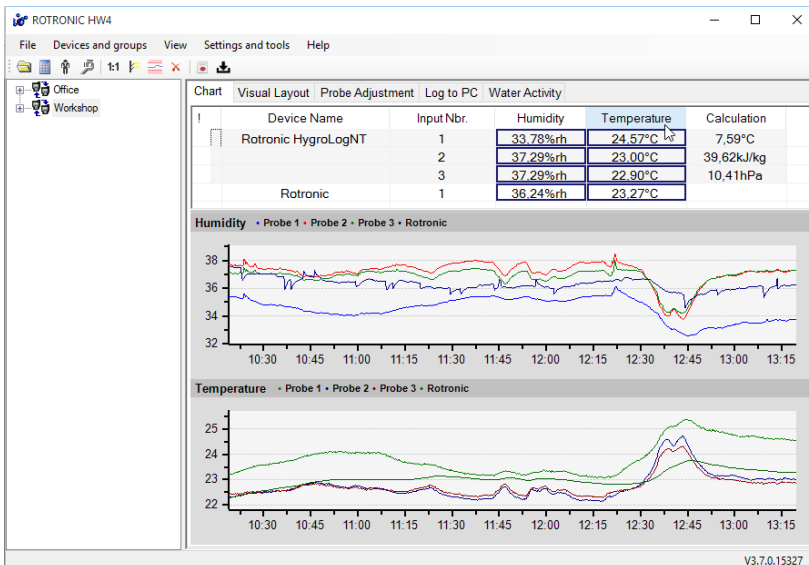
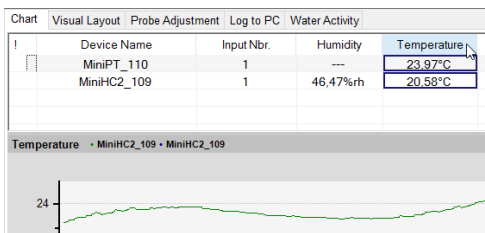
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 57 of 174

10.2.2 On-line graph



One of the reasons for creating an instrument group is the ability to display a graph showing data from different instruments within the group.

For example, to display temperature for all instruments and probes within the group "Office", click on the Temperature header in the data table.



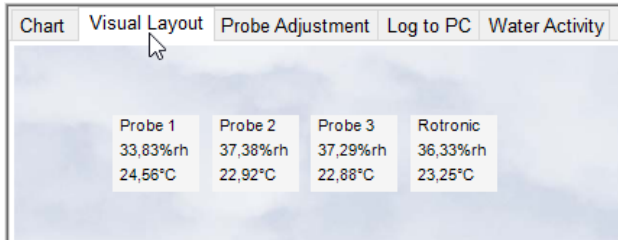
To select other data for the graph, press the CONTROL key and click on any desired parameter(s) in the data table.

The graph is constantly updated according to the time interval selected in HW4 Global Settings > General tab for the online buffer. Depending on the selection made in HW4 Global Settings > Graph Settings tab > Automatic scaling, the scale of the graph is automatically selected by HW4 or can be changed manually on the graph.

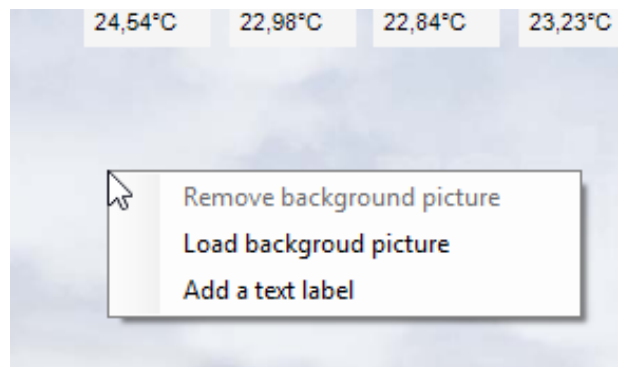
The appearance of the graph can be customized. For details see "Settings and Tools – HW4 Global Settings – Graph Settings tab".

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 58 of 174

10.2.3 Visual Layout tab



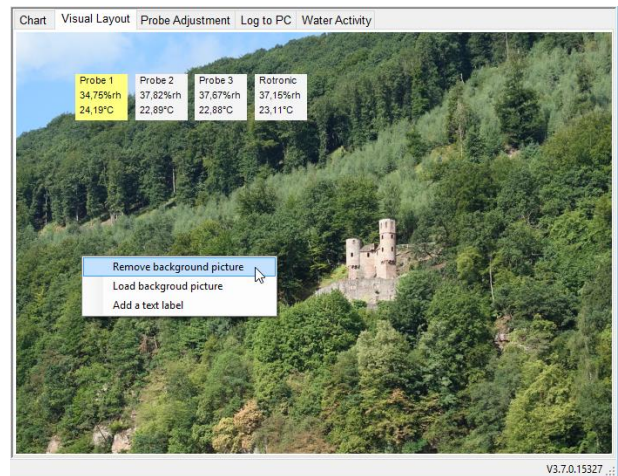
This tab is used to superimpose the devices in a group over a background picture (room, machinery or other) so as to facilitate the visual monitoring of a process. Each device within the group is represented by a data label that can be freely positioned by the user. A data label displays the values measured or calculated by the corresponding device. Device alarms such as low battery, simulator mode, etc., are not shown.



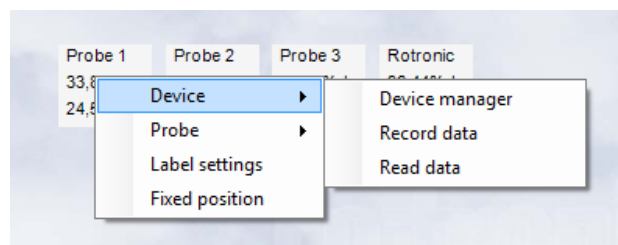
Right clicking on the background picture opens a small menu that can be used to load a different picture and /or to add a descriptive text label that can be position anywhere over the background.

Right clicking on a data label opens a small menu. The contents of this menu depend on the type of the device associated with the data label.

Load background picture allows you to specify a picture to be used as background

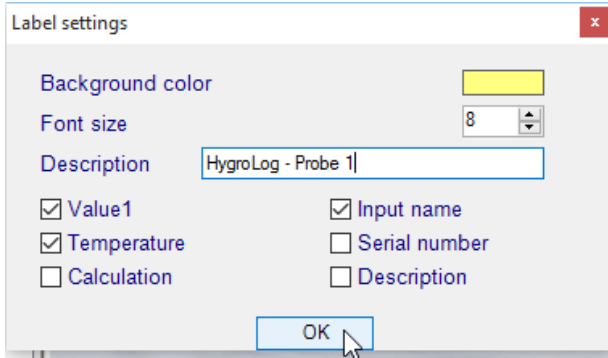


To remove a background picture right-click on it and click on "Remove background picture".



To prevent a data or text label from being moved around, select "Fixed Position"

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 59 of 174



Label Settings allows customizing the contents of a label

NOTES:

- Device labels are independent for each group / subgroup
- Background images are independent for each group / subgroup

10.2.4 Probe Adjustment tab

Chart	Visual Layout	Probe Adjustment	Log to PC	Water Activity		
<input checked="" type="checkbox"/>	Selected	Description	Serial number	Humidity	Temperature	Information
<input checked="" type="checkbox"/>		Probe 1	61257665	34,55%rh	24,32°C	
<input checked="" type="checkbox"/>		Probe 2	20006805	37,66%rh	23,01°C	
<input checked="" type="checkbox"/>		Probe 3	20006806	37,43%rh	22,99°C	
<input type="checkbox"/>		Rotronic	814120380	36,87%rh	23,21°C	

This tab allows the metrology laboratory to calibrate and adjust the probes within a group against a reference environment or against a reference probe. Any number of probes can be simultaneously selected.

IMPORTANT:

- Depending on the temperature unit selected in HW4 Global Settings > Language/Unit System tab, calibration reference values such as temperature, dew point or frost point are entered either in °C or in °F.
- Close and restart HW4 after changing the temperature unit in HW4 Global settings.
- Do not include in the selection any probe or device that does not use the same temperature unit as HW4
- When a probe is connected to another device (HF5 transmitter, HP23 indicator, etc.), make sure that the probe and device are both set to the same temperature unit. This can be verified by opening the Device Manager of the probe and the Device Manager of the transmitter or indicator.
- Do not capture temperature calibration points that are that are a mix of °C and °F
- Due to differences in both the calibration and adjustment process, probes based on the HygroClip 1 technology (legacy) cannot be selected at the same time as probes based on the HygroClip 2 technology

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 60 of 174

The contents of the screen bottom depend on the type of probe that is selected:

► **HygroClip 2 probe and other AirChip 3000 devices**

3 Probes selected (HygroClip 2)

Humidity

<u>Reference value</u>	<u>Reference type</u>	Information
Humidity <input style="width: 50px;" type="text"/> %rh	Manual entry [%rh] ▼	Capture cal. point
		Adjust

Temperature

<u>Reference value</u>	<u>Reference type</u>	Information
Temperature <input style="width: 50px;" type="text"/> °C	Manual entry [°C] ▼	Capture cal. point
		Adjust

V3.7.0.15327 ..

► **Data Loggers HL-1D / TL-1D and other legacy devices**

The selection of non-adjustable devices (humidity adjustment only available via device manager) like the data loggers HL-1D / 1T produce an appropriate warning. The input boxes are shown greyed out.

Warning: some probes could not be adjusted

Humidity

<u>Reference value</u>	<u>Reference type</u>	Information
Humidity <input style="width: 50px; background-color: #f0f0f0;" type="text"/> %rh	Manual entry [%rh] ▼	Capture cal. point
		Adjust

Temperature

<u>Reference value</u>	<u>Reference type</u>	Information
Temperature <input style="width: 50px; background-color: #f0f0f0;" type="text"/> °C	Manual entry [°C] ▼	Capture cal. point
		Adjust

V3.7.0.15327 ..

- **Reference Type:** HW4 allows calibrating either against a known reference environment (Manual Entry) or against any probe (reference probe) that is already part of the group.

In the case of a humidity calibration, the reference environment can be defined as a %RH value, a dew point value or a frost point value. When using a dew point or a frost point value be sure that the temperature measured by the probe is as accurate as possible since the temperature value will be used by HW4 to convert the dew or frost point into a relative humidity value. The %RH [RHS] option is meant to be used with the Rotronic humidity standards. Enter the nominal value of the standard as per the certificate provided with the standard. The effect of temperature on the standard is automatically compensated by HW4.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 61 of 174

- **Reference Value:** when calibrating against a reference environment (Manual Entry), use this field to specify the humidity or temperature value of the environment. When calibrating against reference probe, HW4 automatically enters in this field the humidity or temperature value measured by the reference probe.

► **HygroClip 2 Procedures:**

- 1) After selecting the probes, click on the button labeled "Information". HW4 reads the probe and writes information in the table regarding the calibration points already present in the probe or device memory
- 2) After entering the value of the reference environment or selecting the reference probe, click on the button labeled "Capture Cal. Point" to capture the calibration point to the probe or device memory.
- 3) To adjust the probe or device based on the calibration points present in the probe or device memory, click on the button labeled "Adjust"

For additional information see document **E-M-HW4v3-A2-001**

► **HygroClip 1 (legacy) Procedures:**

- 1) After selecting the probes, click on the button labeled "Information". HW4 verifies that it is communicating with the probe and writes OK in the table
- 2) After entering the value of the reference environment or selecting the reference probe, click on either the "1-Point Adjustment" button or on the "Multi-Point Adjustment" button.

For additional information see document **E-M-HW4v3-A1-001**





► **General Limitations:**

- Access to the functions available in this tab is subject to the user having the required rights
- Probes based on the HygroClip 1 technology (legacy) cannot be selected at the same time as probes based on the HygroClip 2 technology
- When configured to do so (HW4 Global Settings > Events Tab > Generate and Save Protocols), HW4 generates a report that covers all selected probes as opposed to generating a separate report for each individual probe

10.2.5 Log to PC tab

This tab allows recording to the HW4 PC the values measured or calculated by any probe or device that are within a group.

► **Top of the screen:**

Status	Description	Serial	Log	Start a new file	File name	Path
	Probe 1	61257665				
	Probe 2	20006805				
	Probe 3	20006806				
	Rotronic	814120380				

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 62 of 174

► **Bottom of the screen:**

3 Probes selected

Log interval: 00:01:00

Start a new file: Each day

Path: c:\users\user\appdata\roaming\rotronic_hw4\data

File name: LabTest | Device + probe description | Time stamp | .xls

Example: LabTest_RotronicHygroLogNT_Probe3_20151218_141957.xls

*PDF: *auto create *Receiver: _____
 *send by e-mail

Start logging Stop logging Save

V3.7.0.15327

► **Procedure:**

- Select the probes or devices. . Any number of probes or devices can be simultaneously selected. To select any single probe or device, click on the corresponding line. To select several probes or devices, press the CONTROL key and click on each corresponding line.
- Select a log interval (common to all selected probes and devices)
- To limit the size of the individual log files you may choose to have HW4 automatically start a new file at regular intervals of time
- Select a path for the log files (click on the button to the right of the path field to display drives and folders)
- Define a file name structure (3 fields are available for this) and select the file type. XLS denotes an editable text file that can be opened with MS Excel, Notepad or other. LOG denotes an encoded binary file that requires HW4 to be opened (HW4 Main Menu Bar > File > Open)
- **Click on the “Save” button**
- Click on the “Start Logging” button to start recording data

► **File size (Start a New File)**

Click on the arrow to the right of the box labeled “Start a New File” to display a pull down menu of the available log modes:

- Never : log file of unlimited size (must be closed manually) ¹
- Each day : start a new at 00:00 (midnight) each day.
- Each week : start a new file at 00:00 each Monday.
- Each month : start a new file at 00:00 on the first day of each month
- Each year : start a new file at 00:00 on the first day of each year

¹ As far as possible avoid using the unlimited size mode. With any of the other selections, HW4 automatically starts a new file after closing the current file.

A green symbol appears at the beginning of each line corresponding to a probe or device for which data is being recorded:

Status	Description	Serial	Log	Start a new file	File name	Path
✓	Probe 1	61257665	00:01:00	Each day	LabTest_RotronicHygroLogNT_Probe1_20151218_143818.log	c:\users\user\appdata\roaming\rotronic_hw4\data
✓	Probe 2	20006805	00:01:00	Each day	LabTest_RotronicHygroLogNT_Probe2_20151218_143818.log	c:\users\user\appdata\roaming\rotronic_hw4\data
✓	Probe 3	20006806	00:01:00	Each day	LabTest_RotronicHygroLogNT_Probe3_20151218_143818.log	c:\users\user\appdata\roaming\rotronic_hw4\data
⊖	Rotronic	814120380				

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 63 of 174

10.2.6 Water Activity tab

For Water Activity probes the following UI is shown.

This tab is available only with HW4 Professional with Aw-Quick / AWE function. Unless your HW4 product key enables this edition of HW4, you cannot use the water activity functions of HW4.

For instructions see [Water Activity Measurement with HW4](#) in this manual.

For Aw Therm the UI shows a sequencer:

Note: For more detailed information, please consider the Manual: **E-M-HW4v3-F2-025**

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 64 of 174

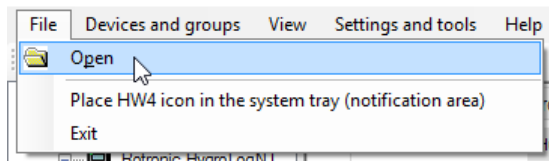
11 HW4 MAIN MENU BAR



The Main Menu Bar is located at the top of the HW4 main screen.

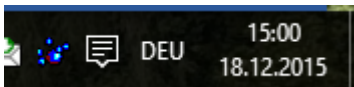
11.1 File

- **Open**



Used to open any file present on the PC such as a log file or an event file without having to open any individual instrument in the device tree (see also HygroLog NT Functions – Access Data). By default File – Open points to the default directory used by HW4 when creating files during the initial start-up (first time use): C:\Documents and Settings\Windows User\Application Data\ROTRONIC_HW4.

- **Place HW4 icon in the system tray (notification area)**



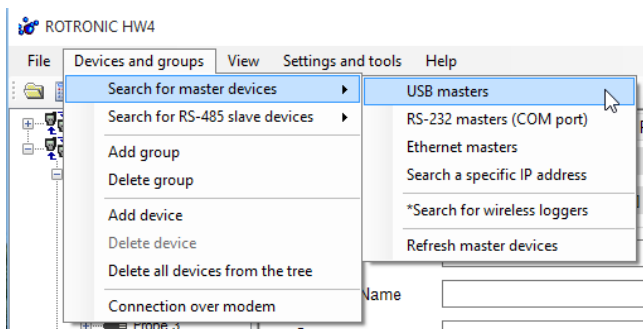
Sends / minimizes HW4 as a shortcut icon to the Windows notification area. This area is located on the taskbar, immediately to the left of the clock. HW4 keeps running.

- **Exit** exit HW4

Note: if you attempt to exit HW4 while Log to PC is active, you will get a warning from HW4.

11.2 Devices and Groups

11.2.1 Search for master devices

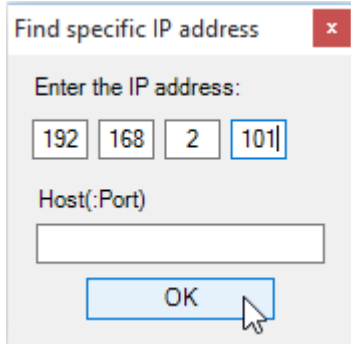


Select “Search for master devices” and click on one of the following submenu items:

- **USB Masters** – HW4 searches for devices directly connected to a USB port (does not apply to the AC3010 adapter)
- **RS-232 Masters** – HW4 searches for devices directly connected to either a physical COM port or to a Bluetooth virtual serial port.

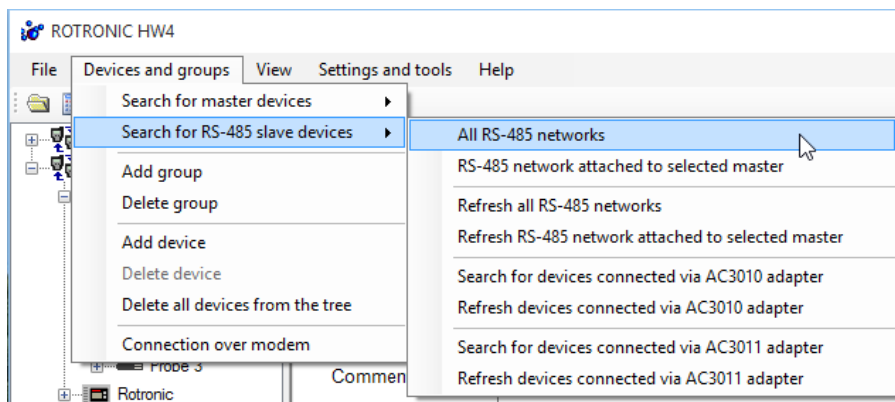
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 65 of 174

- **Ethernet Masters** – HW4 searches for devices directly connected to the same local area network as the PC (cable and / or wireless connection).
- **Search a specific IP address** – HW4 searches for a master device at a specific IP address specified by the user. In addition a host name can be entered when device is accessible via host.



- **Search for wireless loggers** – HW4 searches for LOG RC wireless data loggers communicating with the HW4 PC by means of either a USB wireless adapter or a LAN wireless adapter. See separate manual: E-M-HW4v3-F2-021.
- **Refresh Master devices** – HW4 refreshes all current known master devices in the device tree.

11.2.2 Add RS-485 slave devices to the device tree (HW4 Professional)



Select “Search for RS-485 slave devices” and click on one of the following submenu items:

- **All RS-485 networks** – HW4 searches all master devices already present in the device tree for RS-485 slaves. HW4 will automatically change any device with the address “0” to the next available address (1 for the master and 2 to 64 for the slaves)
- **RS-485 network attached to selected master** – to select the master device, left click on it in the device tree. HW4 searches for RS-485 slaves only for the selected master device.
- **Refresh all RS-485 networks** – to refresh all current known RS-485 networks in the device tree.
- **Refresh RS-485 networks attached to selected master** – to refresh network of selected master in the device tree.
- **Search for devices connected via AC3010 adapter** – the AC3010 cable allows connecting up to 64 RS-485 slave devices to a single USB port of the HW4 PC, without requiring a master device. Because there is no master, all devices connected in this manner are seen by HW4 as slaves. To detect the slave

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 66 of 174

devices, HW4 interrogates all USB ports that are not currently used by a master device. HW4 will automatically change any device with the address "0" to the next available address (1 to 64).

- **Refresh devices connected via AC3010 adapter** – to refresh all current known RS-485 networks in the device tree, which are connected via AC3010.
- **Search for devices connected via AC3011 adapter** – the AC3011 converter allows connecting up to 64 RS-485 slave devices to the HW4 PC via a single Ethernet port, without requiring a master device. Because there is no master, all devices connected in this manner are seen by HW4 as slaves.

As a first step, connect the AC3011 to the HW4 PC or to the LAN and use the Ethernet Configuration Tool provided with HW4 to make the TCP/IP settings of the AC3011 converter compatible with the LAN to which the HW4 PC is connected. Click on the following link for instructions:

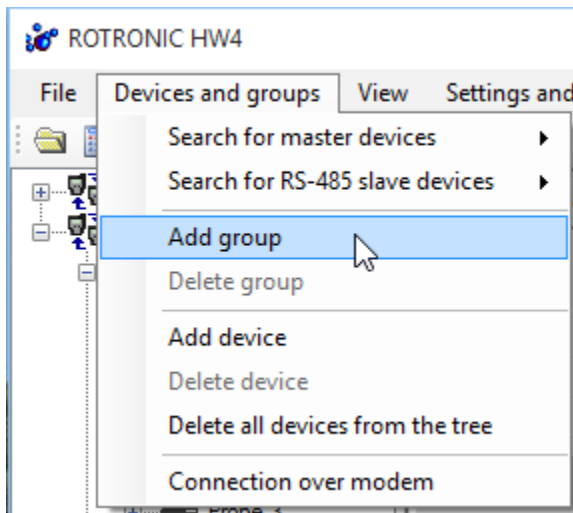
[Ethernet \(TCP/IP\) connection.](#)

Be sure to make a note of the IP address used by the AC3011

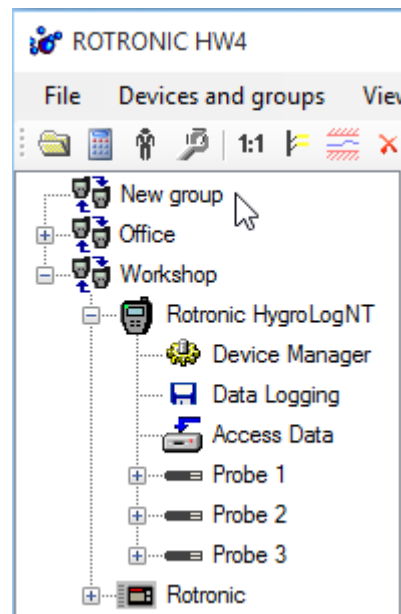
Enter the IP address of the AC3011 when so asked by HW4. HW4 will search all RS-485 addresses associated with this IP address. HW4 will automatically change any device with the address "0" to the next available address (1 to 64).

- **Refresh devices connected via AC3011 adapter** – to refresh all current known RS-485 networks in the device tree, which are connected via AC3011.

11.2.3 Add group



Clicking on "Add group" generates a new group named "New group" in the group and device tree in the left pane.



According to your needs the new group you may rename the new group and add subgroups / devices to it as previously described.

Note: Prior to delete a group you have to delete every subgroup associated with it.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 67 of 174

11.2.4 Manual device addition

Manually adding devices to the device tree can save time in some situations. Select Add Device to open the following form:

All information required to fill-in the form must be known beforehand.

Click with the mouse on the arrow located to the right of a box to display a drop down menu of available choices. Note that if the device is not connected or if the wrong information is entered, HW4 will put a red cross over the device icon in the device tree.

11.2.5 Remove devices from the device tree

- **Delete device** – deletes the selected device from the left pane tree (this command is grayed out when no device is selected). Use this menu item after device has been disconnected
- **Delete all devices from the tree** – globally deletes all devices from the left pane tree. This function should be used with caution!

11.2.6 Connection over Modem

HW4 allows a single connection over a modem connected to one of the PC COM ports. In this manner, a device connected by RS-232 to the COM port of a remote modem can communicate with HW4. Additional remote devices can be connected as well, using an RS-485 multi-drop.

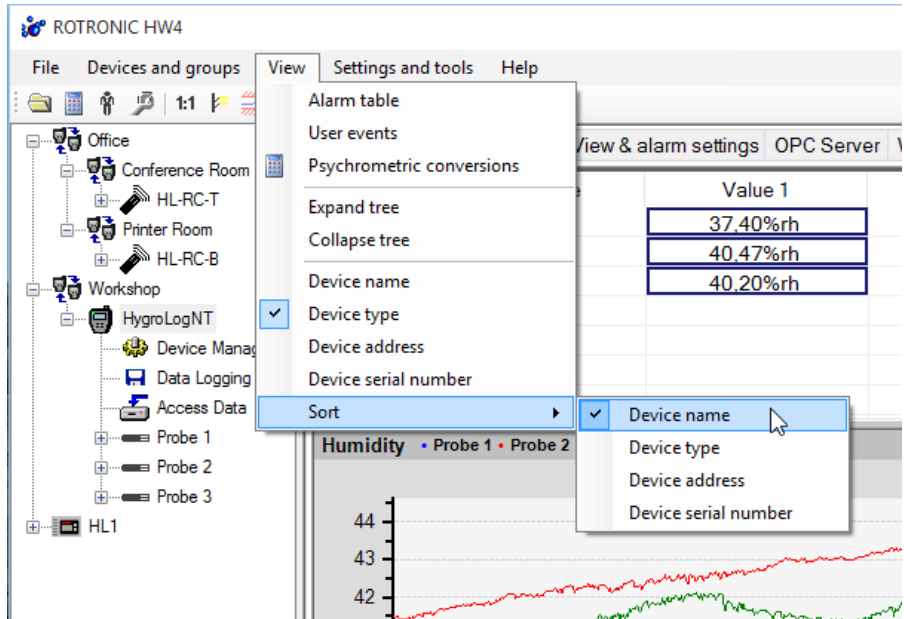
Select the COM port to which the modem is connected and enter the remote phone number. The local modem can be configured after clicking on the Settings button. These settings should be:

Baud Rate : 57,600
Data bits : 8
Stop bit : 1
Parity : none

Be sure to configure the remote modem in the same manner.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
Document title	Document Type
	Page 68 of 174

11.3 View



- **Alarm Table**¹ – displays the alarm table
- **User Events**¹ – displays the contents of the user event file for the current session
- **Psychrometric Conversions** – opens the Psychrometric Conversions Tool
- **Expand Tree** – expands all items in the tree (left pane)
- **Collapse Tree** – collapse all items in the tree (left pane)
- **Device Name** – show the device name in the tree (left pane)

- **Device Type** – show the device type in the tree (left pane)
- **Device Address** – show the device port / IP address and RS-485 address in the tree (left pane)
- **Device Serial Number** – show the device serial number in the tree (left pane)
- **Sort** – Devices in tree are sorted according to device name, type, address or serial number.

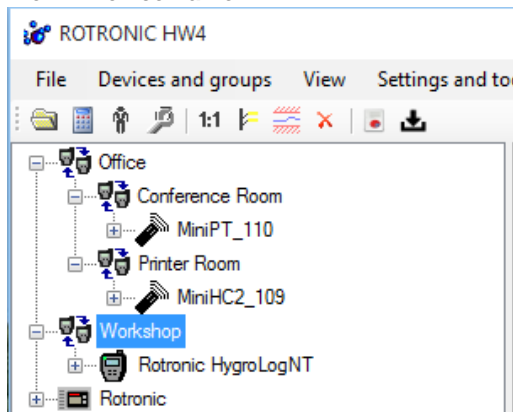
¹ available only with HW4 Professional edition

For details, see the following

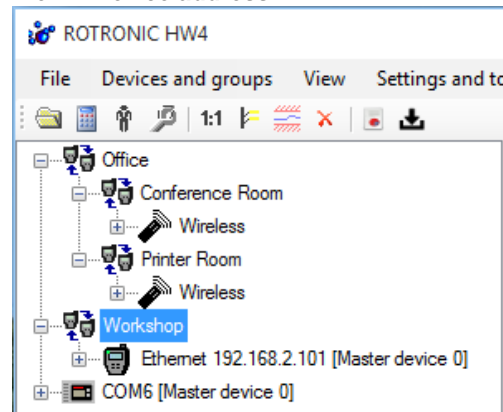
- [Alarm Table](#)
- [User Events](#)
- [Psychrometric Conversions](#)

Examples:

View – Device name



View – Device address



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 69 of 174

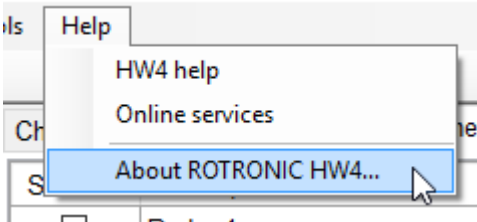
11.4 Settings and Tools

For details click press the ctrl-key on the following links:

- [Ethernet Configuration Tool](#)
- [Device Configuration Tool](#)
- [Users and Passwords](#)
- [Column Headers](#) – selects the columns to be displayed in the current values table (right pane)
- [HW4 Global Settings](#)

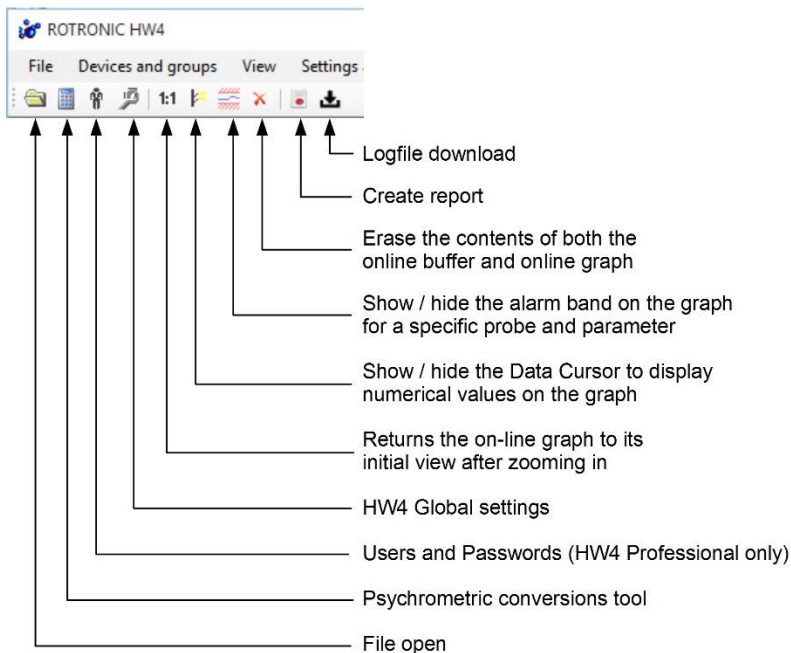
¹ available only with HW4 Professional

11.5 Help



- **HW4 help:** Opens HW4 Help
- **Online services:** When an internet connection is available, this menu item accesses the ROTRONIC web site where technical support, updates and product information are available.
- **About HW4:** Displays the version number and ID number of HW4

11.6 Shortcut buttons

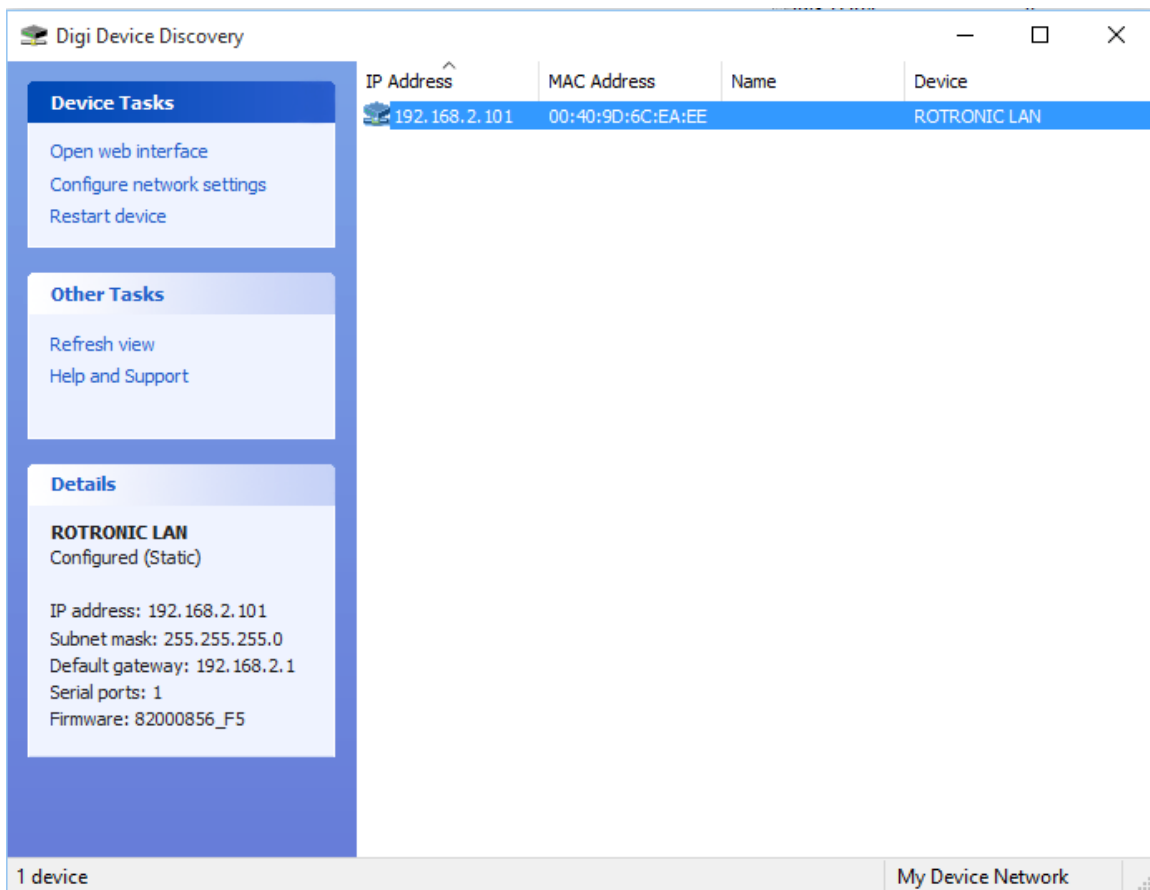


E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 70 of 174

12 ETHERNET CONFIGURATION TOOL

Warning: use of this tool requires basic knowledge of your LAN. If necessary, consult your network administrator.

HW4 comes with an Ethernet device discovery and configuration tool (Digi Device Discovery). When activated, the configuration tool automatically detects any ROTRONIC device present on the LAN (both cable and wireless connections) and provides a list of all such devices. The following example shows the initial screen with just one device.



For detailed instructions see [Ethernet \(TCP/IP\) connection](#)

E-M-HW4v3-Main_20 <small>Document code</small>	Rotronic AG Bassersdorf, Switzerland <small>Unit</small>
General instructions and common functions <small>Document title</small>	Instruction Manual <small>Document Type</small>
	Page 71 of 174

13 DEVICE CONFIGURATION TOOL

The Device Configuration Tool applies to devices that are not based on the HygroClip technology such as the HF1 transmitter, the CP11 indicator, CL11 humidity / temperature logger, CF1 humidity / / CO₂ logger etc. **Such devices do not appear in the HW4 Device Tree.**

The Device Configuration Tool gives access to functions such as device configuration and other device dependent functions such as adjustment, data recording, etc.

For a description of this Tool and user instructions please see the following separate document:

E-M-HW4v3-DCT-001

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 72 of 174

14 USERS AND PASSWORDS (HW4 Professional)

HW4 Professional allows the creation of several user accounts each with a unique user name. Each user must have a password but passwords do not have to be unique. At any time only one user can be logged on to an HW4 session.

14.1 *Minimum user rights*

All HW4 users have automatically the following minimum rights, which essentially allow the user to view information and data without being able to change anything important:

- Start / Exit HW4
- Log off from HW4 without exiting
- HW4 main menu bar – Send (minimize) HW4 to the Windows notification area
- Select which information is displayed next to the devices in the tree: name, serial number, etc.
- Expand / collapse the device tree.
- Access to Device Manager, Data Logging and Probe Adjustment – functionality limited to viewing data and other information.
- View data in the Current Values tab (both in Device View or Group View mode)
- View data in the On-line Buffer tab.
- Access Data (HygroLog NT function) : limited to opening files located on the PC and viewing the file contents
- HW4 Settings and Tools – HW4 Global Settings – General tab: clear both the online buffer and online graph
- Users and Passwords: functionality is limited to changing own password
- HW4 Settings and Tools – Users and Passwords: functionality is limited to changing own password
- HW4 Settings and Tools – View user events
- HW4 Settings and Tools – Psychrometric conversions
- HW4 Settings and Tools – View Alarm table – the table can be viewed but alarms cannot be acknowledged

The following is not available to users with minimum rights

- Device tree: modification of the content of device groups
- Device tree – Device Manager: any change to the configuration of a device.
- Device tree – Data Logging: any kind of programming of a device log function.
- Device tree – Access Data: opening, copying, moving or deleting files present on the logger. Copying, moving or deleting files present on the PC.
- Device tree – Probe Adjustment – ADJUST button
- HW4 main menu bar – File – Open
- HW4 main menu bar – Devices and Groups menu: the entire menu is disabled
- HW4 main menu bar – View menu: the Column Headers menu item is disabled both in Device View or Group View mode.
- HW4 main menu bar – HW4 Settings and Tools menu – HW4 Global Settings: the functionality of all tabs is disabled
- HW4 main menu bar: Settings and Tools – Ethernet configuration tool
- Right pane of the HW4 main screen in Device View mode: any change to the Log to PC tab, View tab and OPC Server tab. These tabs can be selected for viewing but have no other functionality
- Right pane of the HW4 main screen in Group View mode – Layout View Tab, Probe Adjustment and Log to PC tabs: these tabs can be selected for viewing but have no other functionality

Note: when no user has been created or when no user is logged in, HW4 gives only minimum rights to whoever is using the PC.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 73 of 174

14.2 Additional user rights

Any user can be given a combination of the following additional rights:

User Right	Definition
Manage user accounts	Create, modify and delete user accounts
Add / Remove devices	Access to HW4 main menu – Devices and Groups – (add / remove devices and groups to or from the device tree). Access to HW4 Settings and Tools – Ethernet Configuration Tool
HW4 global settings and view settings	Access to HW4 Global Settings . Ability to change the following: Device Tree, View Tab and Column Headers (Group or Device View).
Log-to-PC function	Start and stop Log to PC operations
Change OPC settings	Enable, disable the OPC tags for individual devices (OPC version of HW4 required)
Device configuration / Log function	Access to Device Manager (configure individual devices). Access to Data Logging
Adjust probes	Access to the Probe Adjustment function.
Acknowledge alarms	Acknowledgement of alarms . The following two rights are required for defining the conditions that trigger an alarm: HW4 Global Settings and Device Configuration / Log function.
Read / Copy / Sign files	HW4 Main menu – File – Open (enables all operations on files located on the PC) HygroLog NT – Access Data: Open and copy / or just copy files from the HygroLog NT to the PC. Sign log files and protocols See also notes (1) and (2) below.
Delete files	Delete files (HygroLog NT or PC) See also notes (1) and (2) below.
Close HW4	This right can be removed to limit the number of users that are allowed to close HW4.

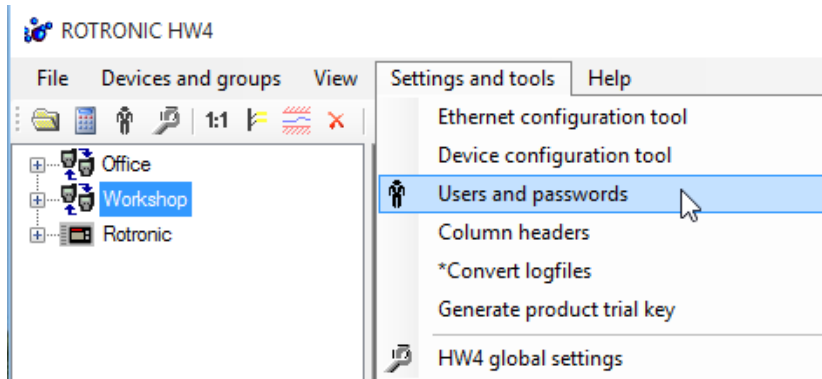
(1) HW4 cannot fully protect files located on the PC, since it is always possible to use Windows to open, delete or move any file unless adequate security is organized within Windows, based on the Windows user login and Windows directory access rights.

(2) **Moving files** from a device to the PC disk requires both the Read / Copy and Delete rights.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 74 of 174

14.3 Creating and logging-on the first user

From the HW4 main menu, click on the following menu item:



Because no user has been created yet, HW4 automatically opens an empty user form:

HW4

User name:

User description:

Password valid until:

Password:

Confirm password:

*ActiveDirectory Login:

User rights

Manage user accounts

Add / remove devices

HW4 global settings and view settings

Log-to-PC function

Change OPC settings

Device configuration / log function

Adjust probes

Acknowledge alarms

Read / copy / sign files

Delete files

Close HW4

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 75 of 174

Enter the name of the user, the user password and click on the box next to each additional right that the user will have. Be sure to make a note of the password. The user form may now look as follows:

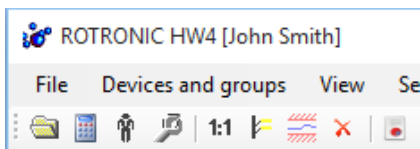
Click on the Add button to complete the process.

IMPORTANT: the first user created in HW4 should as a minimum have the right to manage user accounts. Creating a new user does not result in HW4 automatically logging on this user. To log on the first user, select again Users and Passwords:

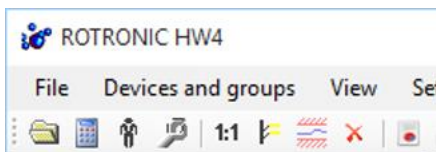
HW4 automatically opens the User log on box.

Enter the name of the newly created user and the password for this user. Click on OK to log on the user.

HW4 acknowledges this by displaying the name of the current user above the main menu bar:



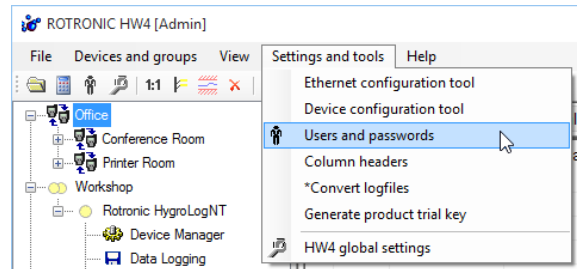
Note: when no user is logged in, there is no user name above the main menu bar. HW4 gives only minimum rights to whoever is using the PC.



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
Document title	Document Type
	Page 76 of 174

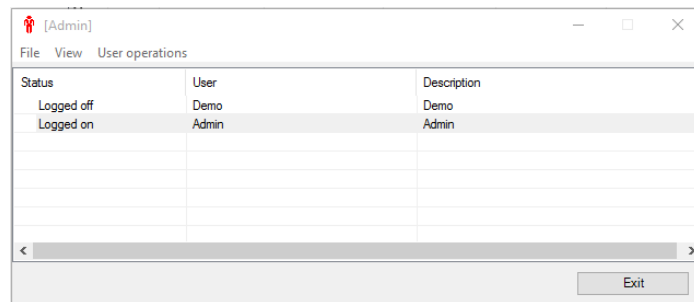
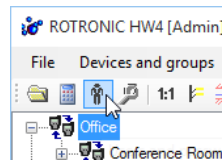
14.4 Copy and create a new user

The creation of a new user can be performed by clicking “Users and passwords” as shown on the left.

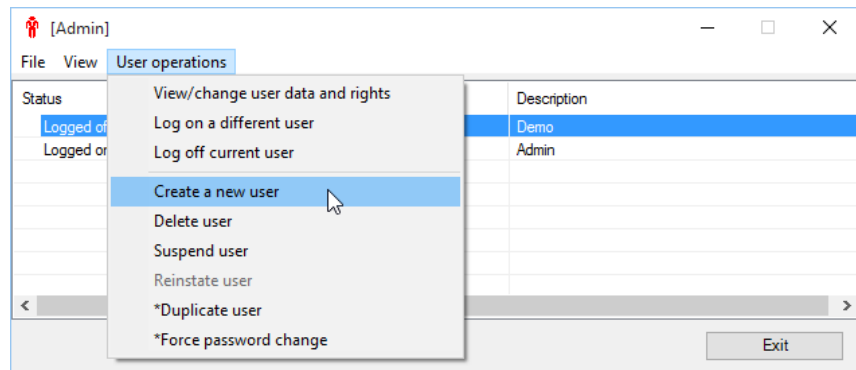


The user table form opens.

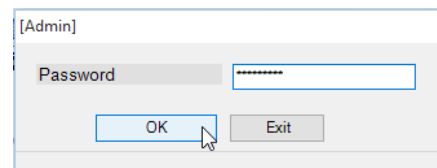
A faster way to achieve this is to click on the person's icon of the main HW4 task bar



In the user administration form click on “User operation” followed by “Create a new user”.



Input the required password and a form for the setting of the new user's data appears (User table form).



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 77 of 174

Insert the “User name” with a maximum length of 15 characters, followed by the “User description”, “Password” and the intended “User rights”.

Klicking on “Add” shows the user table form with the newly created user.

Status	User	Description
Administrator	D. Robertson	Trainee
Logged off	Demo	Demo
Logged on	Admin	Admin

Another way to create a new user is to duplicate an already existent user (password required). In this example a user named “Admin” with full user rights is duplicated.

Status	User	Description
Administrator	D. Robertson	Trainee
Logged off	Demo	Demo
Logged on	Admin	Admin

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 78 of 174

Change "User name", User description" and "Password" and click "Duplicate".

If required highlight the duplicated user and click on "View / change user data and rights" to open the user's data and rights form.

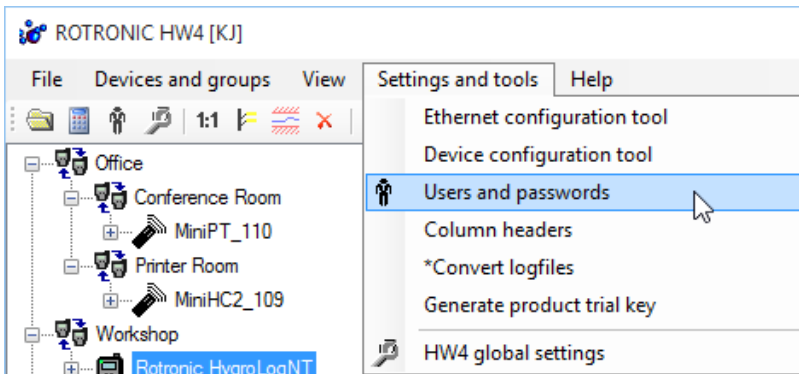
Status	Description
Administra	Supervisor
Administra	Technician
Administra	Trainee

Assign the desired "User rights" by activating the appropriate checkboxes left to the different user rights in the user table form. Confirm with a click on "Change".

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 79 of 174

14.5 User table form

The user table form is available only when at least one user exists in HW4. To open the table, click on User and Passwords:

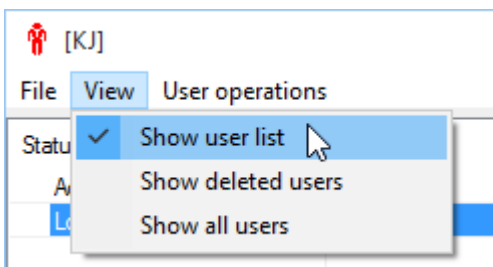


HW4 opens the user table form. When the current user has the right to manage user accounts, the table shows a list of all users currently known to HW4. When the current user does not have this right, only the current user is shown:

Status	User	Description
Administrator	Bill Smith	Technician
Logged on	KJ	Supervisor

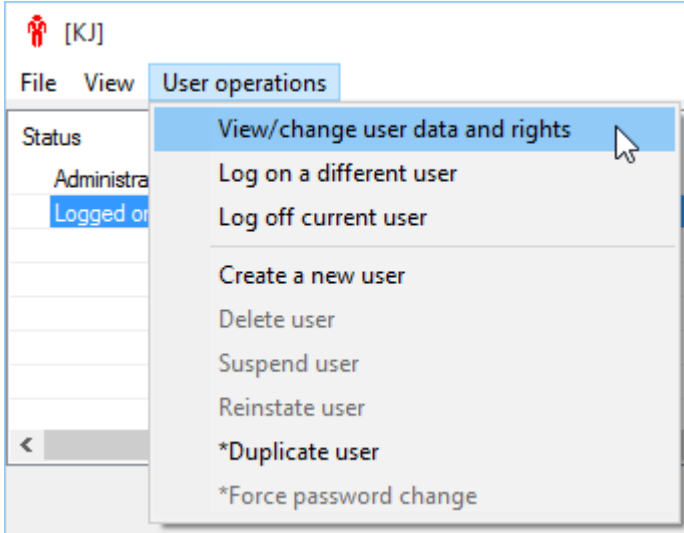
14.6 Menu bar

► **View:** use the View menu on the form to change the contents of the form by selecting one of the options shown below:



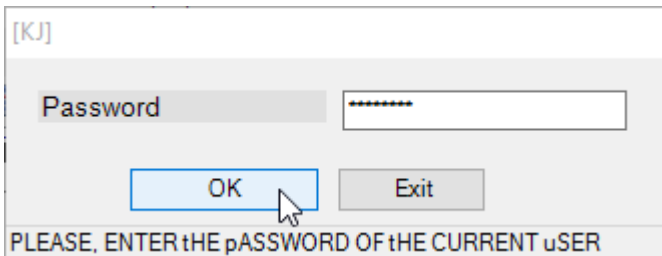
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 80 of 174

► **User operations:** this menu item gives access to the following:



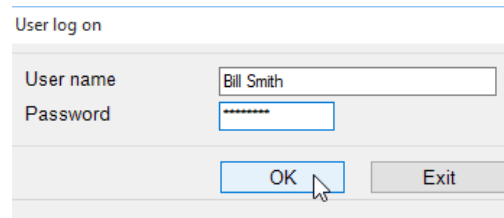
- View / change user data and rights
- Log on a different user
- Log off current user
- Create a new user
- Delete user
- Suspend user
- Reinstate User
- Duplicate user
- Force password change

Any of these selections will require the current user to re-enter his / her password:



► **View / change user data and rights:** full access to this function requires the current user to have the right to manage user accounts. For other users, the function is limited to being able to change the current user password.

► **Log on a different user:** selecting this item opens the user log-on form. By default, the form shows the name of the user that is currently logged-on. To change the user, use the mouse to highlight the user name and type in the name of the user to be logged-on. Enter the password for that user. Click on the OK button. The current user is logged off and the new user is logged on.

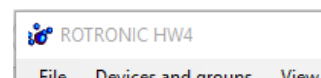


The newly logged on user appears in the top HW4 line.



Note: clicking on the Exit button logs off the current user but does not log on the new user.

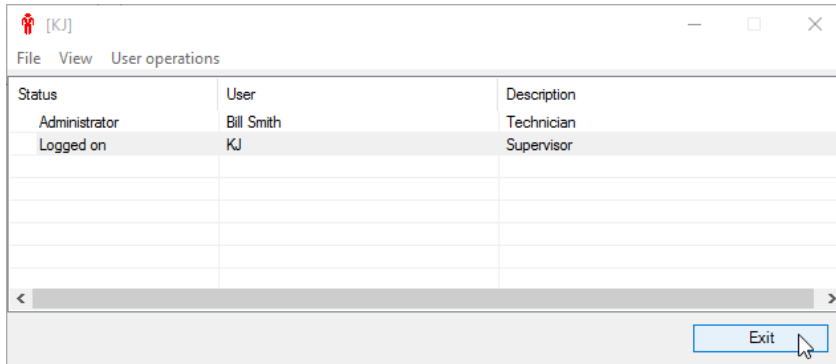
► **Log off current user:** selecting this item logs off the current user, without logging on any specific user. When using HW4 Professional, selecting this menu item without logging-on a user may prevent access to most of the HW4 functions and screen views. To return HW4 to the desired level of functionality, log-on as a user with sufficient rights. The logged-off user disappears in the top HW4 line



► **Create a new user and Delete user:** any of these selections require the current user to have the "manage user accounts" right. Creating a new user is done in the same manner as creating the first user.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 81 of 174

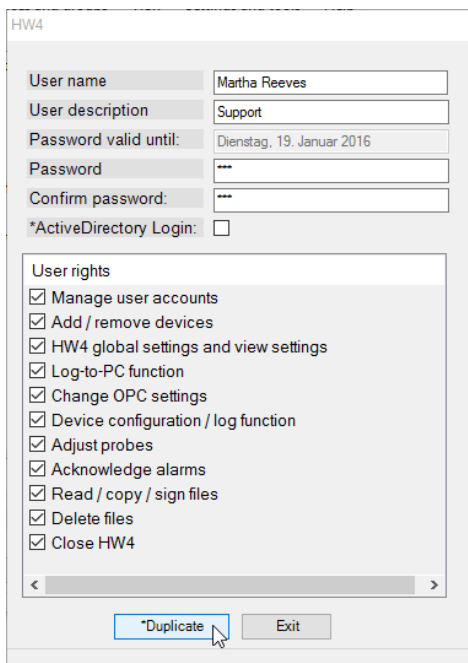
When changing or deleting a user, use the mouse to select the user from the list provided by the user table form:



IMPORTANT: HW4 keeps track of all users that have been created, even users that have been subsequently deleted. **Please note that the name of a user that has been deleted cannot be used again (use "Suspend User" when you want to be able to use the user name again).**

► **Suspend user and Reinstate user:** any of these selections require the current user to have the "manage user accounts" right.

► **Duplicate user:** Generates a new user with identical rights as the current user.



► **Force password change:** User must change the password at the next login.

14.7 User login security

- Attempts to login with the wrong password are now being recorded in the user event table.
- HW4 startup will be aborted after 3 attempts with the wrong password

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 82 of 174

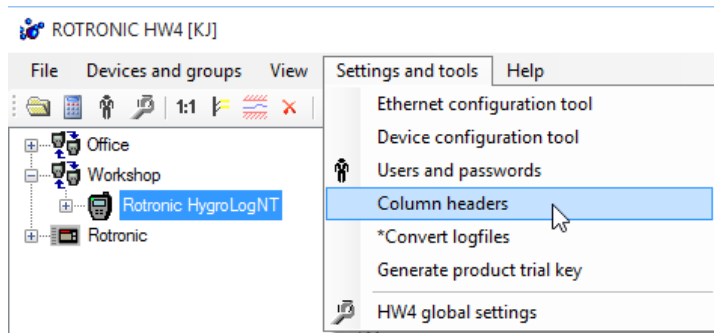
15 COLUMN HEADERS

Column Headers is used to customize the Current Values Tab both in the Device View Mode and in the Group View Mode.

To make HW4 display only specific columns in the Current Values tab:

- **In Device View Mode:** select any individual device present in the device tree (for example Rotronic HygroLogNT in the left pane). In the HW4 main menu bar, click on Settings and Tools and on Column Headers.

HW4 opens the following form. Make your selection using the mouse. **The selection applies globally to any other device when displayed in the Current Values tab.**



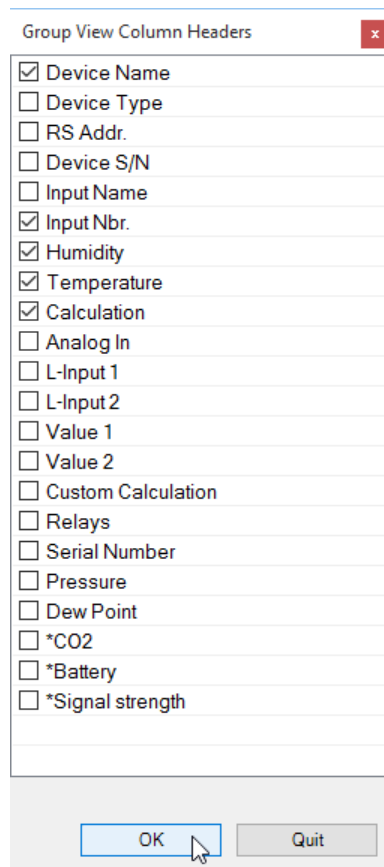
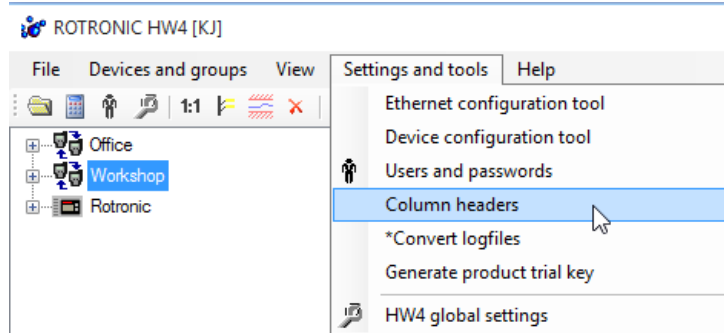
Device View Column Headers ✕

<input checked="" type="checkbox"/> Input Number
<input checked="" type="checkbox"/> Input Name
<input type="checkbox"/> Value 1
<input type="checkbox"/> Value 2
<input checked="" type="checkbox"/> Calculation
<input checked="" type="checkbox"/> Humidity
<input checked="" type="checkbox"/> Temperature
<input checked="" type="checkbox"/> Analog Input
<input type="checkbox"/> L-Input 1
<input type="checkbox"/> L-Input 2
<input type="checkbox"/> Relays
<input type="checkbox"/> Serial Number
<input type="checkbox"/> Custom Calculation
<input type="checkbox"/> Type
<input type="checkbox"/> Pressure
<input type="checkbox"/> Dew Point
<input type="checkbox"/> *CO2
<input type="checkbox"/> *Battery
<input type="checkbox"/> *Signal strength

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 83 of 174

- **In Group View Mode:** select a device group that is present in the device tree (for example RIC LAN in the left pane). In the HW4 main menu bar, click on Settings and Tools and on Column Headers.

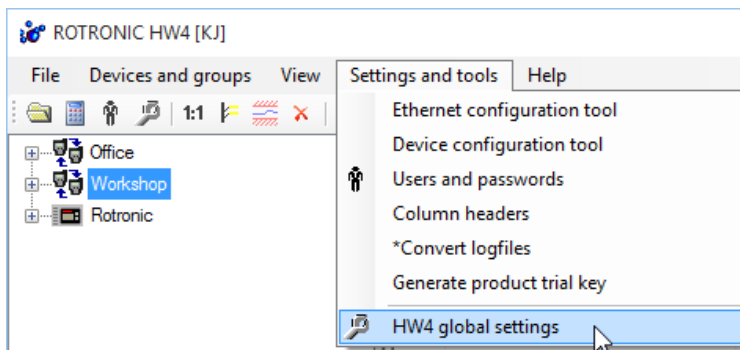
HW4 opens the following form. Make your selection using the mouse. **The selection applies globally to any group when displayed in the Current Values tab.**



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 84 of 174

16 HW4 GLOBAL SETTINGS

This menu item opens the HW4 Global Settings Form.



16.1 View Tab

HW4 global settings form

View | General | Language/Unit system | File locations | Graph settings | Alarm Settings | Events

Start-up form

Bypass

General

Online graph

HW4 background pictures

Start-up Tab

Current Values Online Buffer

Enable trend indicators

10 Device View font size [10..50]

10 Group View font size [10..50]

After starting HW4, send as a shortcut icon to the Windows notification area

OK Cancel Help

Start-up Form:

- Bypass: display or bypass the HW4 start-up form (log-in with password is still required)

General:

- On-line graph: shows or hide the graph in the Current Values tab
- HW4 background pictures: select or deselect to modify the appearance of several forms used in Device Manager, HW4 Explorer, etc.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 85 of 174

Start-up Tab:

- Current Values / On-line Buffer: select the desired default tab for the right pane of the HW4 main screen
- Trend Indicators: HW4 can display to the right of each current value an indicator that shows if the value is stable (equal symbol), increasing (+ symbol) or decreasing (- symbol). The status of this indicator is read by HW4 directly from the device/instrument being monitored.

Note: this function works only for instrument models that send the status of the trend indicator ¹ to HW4 and is not available in Group View mode.

¹ Instruments such as the HygroFlex and HygroLab send the status of the trend indicator only for the two parameters that are being shown on the local LC display.

- Font Size in the Current Values data table (Device view and Group View): the default value is value 10. Use a value of 20 or larger to make it easier to read the PC monitor from a distance. Use the mouse to resize each column of the data table as required.

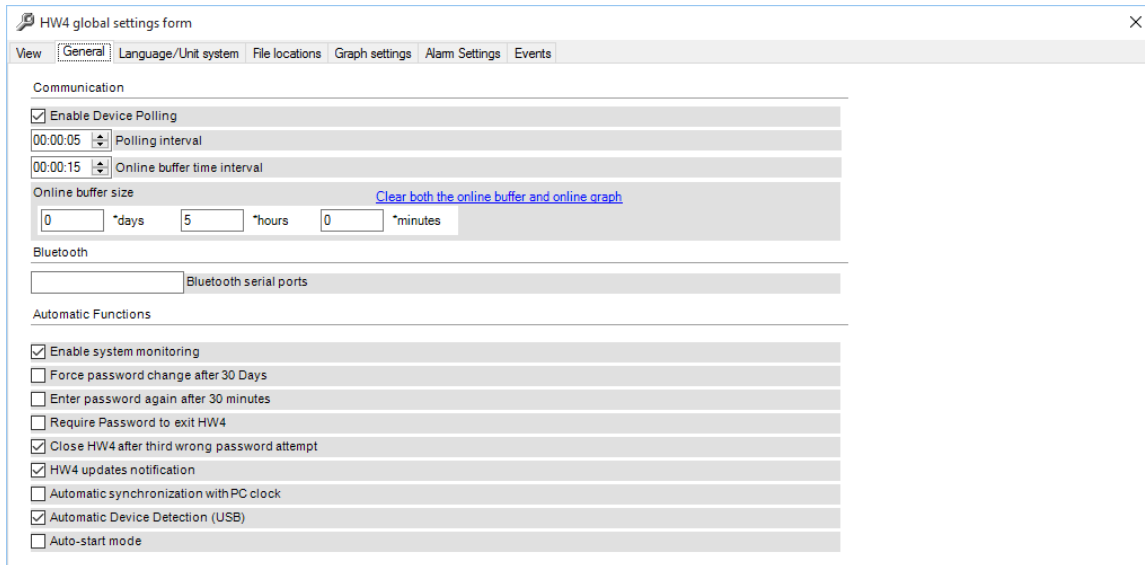
Chart	Data	Log to PC	View & alarm settings	OPC Server	Water Activity
!	#	Input name	Calculation	Humidity	Temperature
	1	Probe 1	7,54°C	36,37%rh	23,28°C
	2	Probe 2	38,87kJ/kg	38,96%rh	22,27°C
	3	Probe 3	10,40hPa	38,60%rh	22,31°C

Chart	Data	Log to PC	View & alarm settings	OPC Server	Water Activity
!	#	Input name	Calculation	Humidity	Temperature
	1	Probe 1	7,56°C	36,37%rh	23,30°C
	2	Probe 2	38,91kJ/kg	38,96%rh	22,29°C
	3	Probe 3	10,40hPa	38,60%rh	22,32°C

- After starting HW4, send as a shortcut to the Windows notification area: The Windows notification area is located on the taskbar, immediately to the left of the clock. HW4 can now be sent (minimized) as a shortcut icon to the Windows notification area while it is still keeps running. The alarm table will still appear on the PC monitor when HW4 is running in this mode.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 86 of 174

16.2 General Tab



Communication:

- **Enable Device Polling:** Put a check mark in this box to enable HW4 to establish the initial (start-up) communication with the devices present in the device tree and to read / update data from these devices at regular intervals of time (polling interval). The data read by HW4 is used to populate the right pane of the HW4 main screen (current values table, on-line buffer and on-line graph).

If you are going to use HW4 only to the purpose of configuring or programming instruments and are not interested in any measurement data, you may want to temporarily uncheck this box by clicking on it with the mouse. HW4 will no longer read and update the data from the devices in the tree and the right pane of the HW4 main screen will be blank. We recommend restoring the check mark prior to closing HW4 so as to allow HW4 to communicate at least once with the devices in the device tree during the next start-up.

- **Polling interval:** enter here the time interval to be used by HW4 when polling the devices connected to the HW4 PC. The minimum value of 5 seconds is also the HW4 default.

Note: the other adjustable time intervals used by HW4 (on-line buffer / graph update and log-to-PC) should be a whole multiple of the polling interval and should be at least equal to the polling interval. When enabled, OPC tags are updated as per the polling interval.

- **On-line buffer time interval:** enter here the time interval to be used by HW4 when writing data to the on-line buffer. The minimum value is 5 seconds. The on-line graph is updated using this time interval.
- **On-line buffer size:** specify here the number of lines for the on-line buffer. The size of the on-line buffer also determines the amount of data shown in the on-line graph.
- **Clear both the online buffer and online graph:** click on this link to clear both the buffer and the graph. After clicking on the link, you can exit HW4 Global Settings by clicking on the Cancel button (HW4 will not generate a protocol).

When adjusting a probe, clear the online buffer when the probe appears to have reached equilibrium. This forces the automatic scale of the graph to the highest resolution.

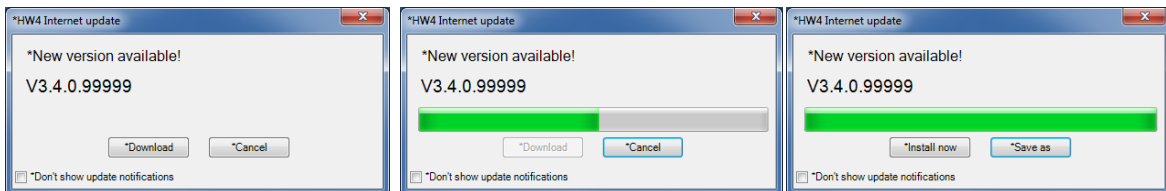
Bluetooth serial ports:

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 87 of 174

- The Bluetooth serial ports text box is used to declare the virtual serial port(s) used by Bluetooth enabled devices. Only the number of the serial port should be entered in the box (example: enter the number 8 for COM8). When several Bluetooth devices are used, enter each Bluetooth serial port number, separating each number with a semi-column. Do not use a space in between numbers (example: 8;10).

Automatic Functions:

- **Enable system monitoring:** check this box to have HW4 keep a record of any software problem that may occur. Keeping this type of record is an ERES regulatory requirement. HW4 event files have the extension ERR and are located in the subfolder EVENT of the HW4 user folder. When support is required from ROTRONIC, troubleshooting the problem is greatly facilitated when the corresponding HW4 event file is available.
- **Force password change:** this feature is only available with HW4 Professional. Enable this feature to force users to change their password on a regular basis.
- **Enter password again after 30 minutes:** this feature is only available with HW4 Professional. Enable this feature to force users to enter their password again after the time indicated. This is an ERES regulatory requirement which provides additional protection in the event that HW4 is running and left unattended for a period of time.
- **Require password to exit HW4:** this feature is only available with HW4 Professional. Enable this feature to force users to enter their password when trying to exit HW4. The right to exit HW4 can be restricted to a few users but any user can still use Windows Task Manager to close the application.
- **Close HW4 after third wrong password attempt:** this feature is only available with HW4 Professional. Enable this feature to automatically close HW4 when the wrong password is entered three times in a row.
- **HW4 updates notification:** check this box to be automatically notified of new updates. This feature works only if the PC has access to the Internet.

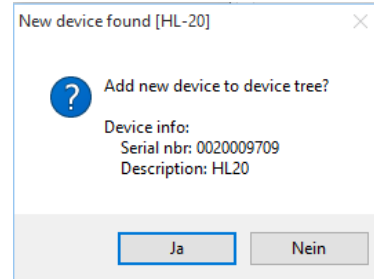


- **Automatic synchronization with PC clock:** Enable this feature to allow HW4 to automatically synchronize any device internal clock with the HW4 PC clock. Synchronization takes place daily at 2:00 am and each time that HW4 is started. In order to be synchronized, the clock of the device must differ from the PC clock by at least 1 minute.

Do not use this function when the PC and some of the polled devices are located in different time zones. See also: [Device Protection](#)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 88 of 174

- **Automatic device detection (USB):** Enable this feature to have HW4 automatically detect a new device when it is connected to a USB port of the PC. After detecting the device, HW4 allows the user to add the device to the device tree. When a device connected by means of a USB service cable is replaced with another device, HW4 detects the new device and asks the user if he wants to add the device to the device tree. The device that was replaced should be manually deleted from the device tree.



- **Autostart mode:** the auto-start mode allows HW4 to start without requiring a user to log in. HW4 logs-in the fictitious user "autostart". This user does not have to be created in HW4 and is given only the minimum HW4 rights. The auto-start mode can be used to allow a client application that connects to the HW4 OPC-server (OPC tags) to automatically start HW4.

16.3 Language/Unit System Tab

The selections and values entered in this tab affect only the language used in HW4 menus and the unit system and fixed pressure value used by the Psychrometric Conversion Tool. This tab has no effect on the instruments and devices in the tree. When HW4 displays or records data from any instrument, both the unit system and any fixed pressure value are determined by the configuration of the instrument.

- **Language selection:** click on the underlined link to change the language used in the HW4 menus and forms to one of the available languages. The link opens the folder where the language files are located (these files have the extension .txt as in English.txt). To change the language, simply click on the appropriate file. The selection made here has no effect on the devices in the tree.

Note: After changing the language selection, you should close and re-open HW4 to ensure a complete updating of all HW4 texts.

- **Unit System:** use the underlined links to the right of the form to globally change the unit system used within the HW4 Psychrometric Conversion Tool. The English the unit system offers two choices: In Hg or PSI for pressure. Choose a unit by clicking on the arrow to the right of each text box. Relative humidity: the symbol to be used after the % symbol (RH) should be typed in the text box.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 89 of 174

- **Constants:**

Fixed pressure value: enter here the default fixed pressure value that will be used within the HW4 Psychrometric Conversion Tool to compute calculated parameters such as wet-bulb temperature, mixing ratio, etc. The barometric pressure value can be temporarily changed from within the Tool but it reverts to the default value each time the Tool is opened.

The numerical value entered here should be consistent with the pressure unit that was selected under Unit System.

Activation energy: enter here the value to be used in the calculation of the mean kinetic temperature (MKT).

The activation energy should always be entered in kJ/mole, regardless of which unit system (metric or English) is being used. Typically, a value between 60 and 100 kJ/mole may be used for liquids and solids.

16.4 File Locations Tab

The screenshot shows the 'File Locations' tab in the 'HW4 global settings form'. The form is organized into several sections:

- Measurement data:**
 - Logger data files: c:\users\user\appdata\roaming\rotronic_hw4\data
 - Log to PC files: c:\users\user\appdata\roaming\rotronic_hw4\data_online
- Configuration data:**
 - User folder path: c:\users\user\appdata\roaming\rotronic_hw4
 - Device configuration files: c:\users\user\appdata\roaming\rotronic_hw4\sys
 - HW4 Workstation Synchronization: [Synchronisation is not enabled]
- Protocols and events:**
 - Protocols: c:\users\user\appdata\roaming\rotronic_hw4\doc
 - Device event files: c:\users\user\appdata\roaming\rotronic_hw4\event
 - Alarm Records: c:\users\user\appdata\roaming\rotronic_hw4\event
 - HW4 event files: c:\users\user\appdata\roaming\rotronic_hw4\event
 - User event files: c:\users\user\appdata\roaming\rotronic_hw4\event

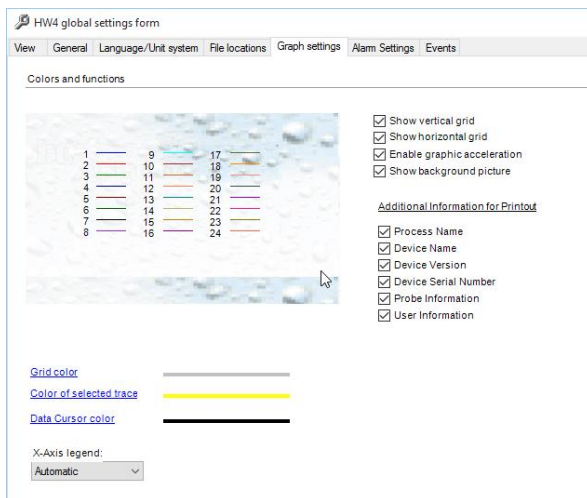
Use this tab to review or change the location of the files created by HW4. Click on the button to the right of the path field to browse for drives and folders.

- **Logger data files:** log files copied from the logger to the PC. These files have either the extension XLS (unprotected) or LOG (protected binary format)
- **Log to PC files:** log files directly recorded on the PC. These files have either the extension XLS (unprotected) or LOG (protected binary format)
- **User Folder Path:** This folder is used to hold the HW4 configuration file (HW4.ini) as well as the data, event and protocol files created by HW4. If you wish to change the path of the HW4 User Folder, see: [Relocating the HW4 User Folder](#).
- **Device configuration files:** these files have the extension DAT and are used to retain typical instrument configuration data so as to be able to quickly configure a number of instruments.
- **Protocols:** these files have the extension TXT and keep track of configuration changes to an instrument, instrument programming (such as data logging) and probe adjustments.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 90 of 174

- **Device event files:** these files have the extension EVT and are generated by the data logger to keep track of the main internal logger events.
- **Alarm records:** HW4 maintains a file named HW4Alarm.alr to hold all alarm record.
- **HW4 event files:** these files have the extension ERR and keep track of any software problem encountered by HW4.
- **User event files:** these files have the extension EVT and keep track of the main operations performed by each HW4 user (HW4 Professional only). See also [Record keeping by HW4](#)

16.5 Graph Settings Tab

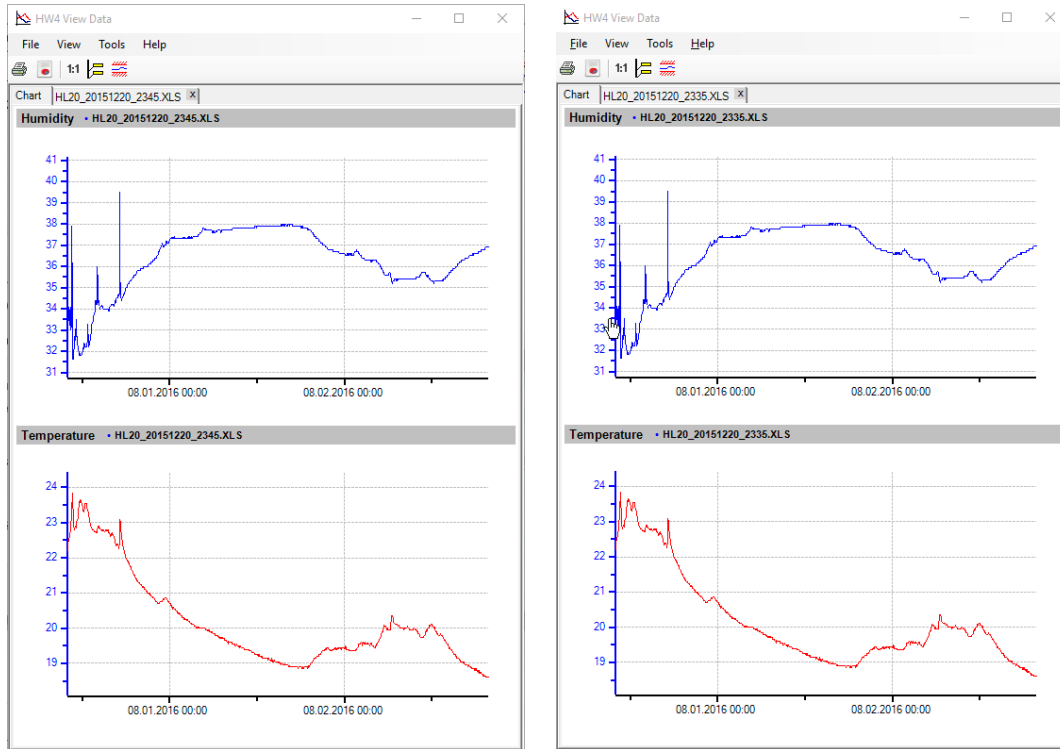


Use this tab to customize the default appearance of the graphs generated from log files. Graphs settings can also be customized for each individual log file when it is being displayed in HW4 View Data. Most of the settings in this tab do not apply to the on-line graph displayed in the Current Values tab.

- **Show vertical / horizontal grid:** enables the according background grid lines.
- **Enable graphic acceleration:** if your PC graphic card contains its own processor to boost graphical performance levels, you may activate it here.
- **Show background picture:** enables the background picture.
- **Additional Information for Printout** defines details to be integrated in the printout, such as Process Name, Device Name, Device Version, Device Serial Number, Probe Information and User Information.
- **Grid color:** The color of the grid, selected trace and data cursor can be changed after clicking with the mouse on the corresponding line
- **X-Axis legend:** Here the user may make provisions for the caption of the X-Axis. Mostly Automatic is an appropriate choice.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 91 of 174

An example of the graph resulting from the determinations in the screenshot above is shown below.



16.6 Alarm Settings Tab (HW4 Professional)

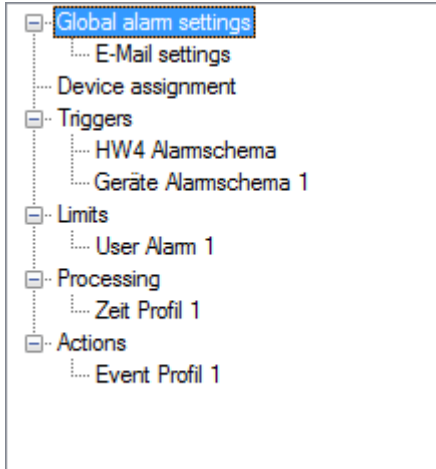
This tab is used to set HW4 to track and report conditions and events that are deemed to be abnormal, such as:

- Loss of communication with any device present in the device tree
- Measured values that are out limits or are not available (see Device Manager – Input and Optional Input)
- Device alarm: depends on the type of alarm conditions that are monitored by each specific device connected to the PC. Examples: bad sensor, bad memory card, etc.
- Unavailability of the file location (path) used by HW4 while recording data to the PC (example: disconnected network drive)
- Internal HW4 software errors / malfunctions

The HW4 alarm settings provide a high level of flexibility regarding both the definition and processing of alarm conditions. HW4 allows multiple levels of alarm and action that can be defined by the user, based on the severity of an alarm condition or on other factors.

For a general overview, see [“Alarm indication and reporting by HW4”](#) in this manual.

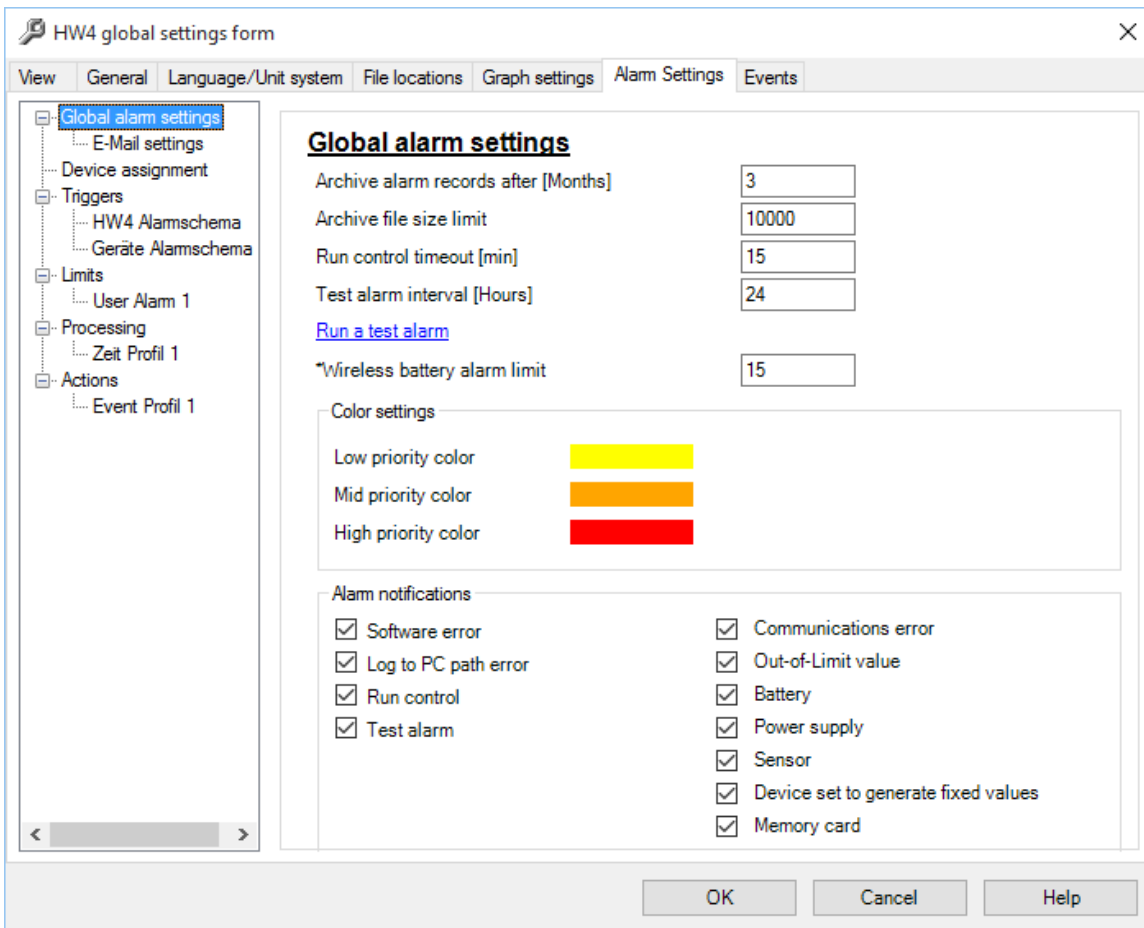
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 92 of 174



IMPORTANT:

- The different modules available within this tab can be selected from the left pane of the Alarm Settings tab
- Click on the OK button (bottom right corner of the form) to enact and save any change
- Within a module (Triggers, Limits, etc.) the order in which each entry appears can be changed with a mouse drag and drop. HW4 Alarm Schema is always the first entry in the Triggers module.

► **GLOBAL ALARM SETTINGS**



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 93 of 174

- **Archive Alarm Records after [Months]:** this setting is used to limit the size of the alarm records file (...\\ROTRONIC_HW4\\EVENT\\HW4Alarm.al2). Enter here how old an alarm record must be in order to be automatically archived. Alarm archive files use the following naming convention

...\\ROTRONIC_HW4\\EVENT\\HW4Alarm_YYYYMMDD.al2

where YYYYMMDD is the time stamp of the first alarm record present in the file.

- **Archive File Size Limit:** enter here the maximum number of alarm records that can be held in a single archive file (5,000 records typically require 1 MB). When the archive file currently in use reaches the limit, HW4 creates a new archive file.
- **Run Control Timeout [min]:** the Run Control alarm acts like a watchdog. HW4 updates a time stamp during each polling interval (HW4 time stamp) or whenever new measurement data is received from a device (device time stamp). Every minute, HW4 verifies that the time elapsed since the most recent time stamp is less than the limit specified under "Run Control Timeout"
- **Test Alarm Interval [Hours]:** enter here the interval to be used by the HW4 Test Alarm automatic function

The form provides a link to manually trigger a Test Alarm

- **Color Settings**

Based on the priority level, alarms can be color coded as defined by the user. The color code affects the following:

- Device Tree
- Current Values Table
- Alarm Band in live Graph (individual devices and groups)
- Visual Layout (available when a group is selected)
- Alarm Table
- Alarm band in offline Data View

- **Alarm Notifications**

The types of alarm that can trigger a notification at the bottom left corner of the HW4 main screen (+1 Alarm, +2 Alarm, etc.) can be selected.

- **E-mail Settings:**

HW4 global settings form

View General Language/Unit system File locations Graph settings Alarm Settings Events

Global alarm settings
 E-Mail settings
 Device assignment
 Triggers
 HW4 Alarmschema
 Geräte Alarmschema
 Limits
 User Alarm 1
 Processing
 Zeit Profil 1
 Actions
 Event Profil 1

E-Mail settings

MAPI Requires mS outlook

SMTP

Server name

User name

Password

Sender address

SSL enable

[Send a test e-mail](#)

- **MAPI:** HW4 will use Microsoft Outlook to send an email. Recent versions of Microsoft Outlook require a manual authorization each time that a third party software attempts to use Outlook to send a message. This will prevent HW4 from sending mail when the PC is unattended.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 94 of 174

- **SMTP:** HW4 will send an email directly to an outgoing-mail (SMTP) server. This can be done automatically, even when the PC is unattended. When required by the SMTP server a user name and a password can be entered.

The form provides a link to manually test the e-mail settings

► LIMITS

The Limits module is used to create, copy or delete Limit Sets that can be associated with one or several Trigger Sets which can in turn be associated with one or several devices.

A Limit Set consists of low and high limit values that apply to the humidity, temperature and calculated parameter of up to 7 probes connected to the same device. When HW4 is used with a device with logical inputs (HL-NT data logger with docking station or HygroClip Alarm – HCA), HW4 offers the option of triggering an alarm only when one of the logical input has a specified value.

Creating several Limit Sets is useful when the process being monitored requires several levels of alarm, each with its own actions and / or priority level. The available Limit Sets are listed in the left pane of the form.

• Creating a new Limit Set

The screenshot shows the 'HW4 global settings form' with the 'Limits' tab selected. The left pane shows a tree view with 'Limits' highlighted. The main area shows the 'Limits' configuration form with the following fields:

- Name:** New limit set
- Condition:**
 - Device serial no.: 0061290435
 - Logical input: Input 1
 - Logical value: 0
- Probe 1:**

	Lo-Alarm	Hi-Alarm	Hysteresis
<input type="checkbox"/> Value 1	0	100	0,5
<input type="checkbox"/> Temp.	0	100	0,5
<input type="checkbox"/> Calculation	0	100	0,5
- Probes 2 through 7 are listed with checkboxes but are not selected.

- 1) Click on the “Create” button or select an existing Limit Set from the combo box located to the right of the “Copy” button, and click on the button. The new Limit Set appears in the left pane of the form.
- 2) Click on the new Limit Set in the left pane of the form. This opens the form shown below.
- 3) Type a new name for the Limit Set in the Name field (for example: Limit Set 1)

Condition (can be used only a device that has a logical input such as the HL-NT data logger with docking station or HygroClip Alarm (HCA). HW4 offers the option of making the triggering of any alarm that is based on the limits defined in this form conditional to the value of a logical input (for example a door contact). In this example the logical input 1 of the HL-NT data logger s/n 2003091539 must have the value 0 for any alarm to be triggered based on the limits defined with this form.

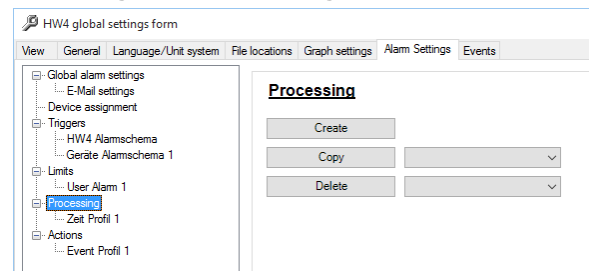
HW4 allows creating an unlimited number of Limit Sets

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 95 of 174

► PROCESSING

The Processing module is used to create, copy or delete alarm processing sets. The available processing sets are listed in the left pane of the form.

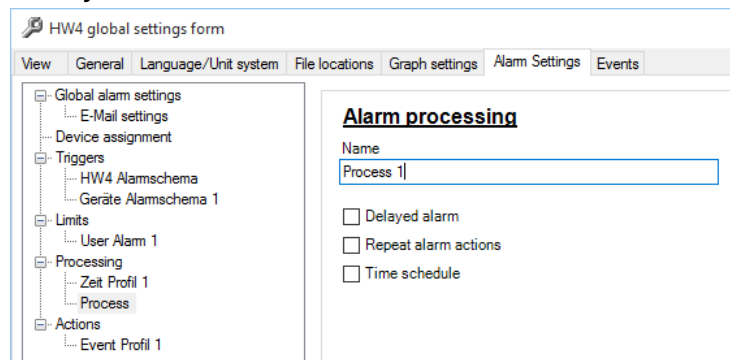
• Creating a new processing set



- 1) Click on the “Create” button or select an existing processing set from the combo box located to the right of the “Copy” button, and click on the button. The new processing set appears in the left pane of the form.
- 2) Click on the new processing set in the left pane of the form. This opens the form shown below.
- 3) Type a new name for the processing set in the Name field (for example: Process 1)

HW4 allows creating an unlimited number of processing sets which determine how an alarm condition is processed.

• Delayed Alarm: check the box to enable this feature and select one of the following options:



- a) **Time Delay:** this is the minimum amount of time during which an alarm event must persist for HW4 to process the alarm event.
- b) **Number of polling Intervals:** this is the minimum number of contiguous polling intervals which must detect an alarm event for HW4 to process the alarm event. The polling interval can be set in HW4 Global Settings > General tab.

Delayed alarm

Time delay [hh:mm:ss]

Number of polling intervals

• Repeat Alarm Actions: check the box to enable this feature and enter the following settings:

- a) **Times to repeat:** this the maximum number of times that the actions associated with the alarm will be repeated. HW4 stops repeating the actions as soon as the alarm event disappears. HW4 offers the option to stop repeating the actions as soon as the alarm is acknowledged from within the Alarm Table.
- b) **Interval:** amount of time in between repeated alarm actions

Repeat alarm actions

Stop when alarm is acknowledged

Times to repeat

Interval [hh:mm:ss]

Note: an alarm event for which actions are being repeated is entered only one time as a record in the alarm records file

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 96 of 174

- **Time Schedule:** check the box to enable this feature. Select the desired configuration settings:

Time schedule

Inverted schedule (Night)

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Sunday

Start time [hh:mm]

Stop time [hh:mm]

HW4 will not report, create an alarm record or take any other action for alarm events that occur outside of the time schedule.

► ACTIONS

The Actions module is used to create, copy or delete sets of actions to be carried out when an alarm occurs. The available Action Sets are listed in the left pane of the form.

Actions

- **Creating a new set of actions**

Action set

Name

Send e-mail

Give accoustic signal

Print report

Start application

Energize relay

- 1) Click on the "Create" button or select an existing action set from the combo box located to the right of the "Copy" button, and click on the button. The new action set appears in the left pane of the form.
- 2) Click on the new action set in the left pane of the form. This opens the form shown below.
- 3) Type a new name for the action set in the Name field (for example: Action Set 1)

HW4 allows creating an unlimited number of action sets, each with one or several actions

- **Send Email:** check the box to enable this feature. Enter the address of the mail recipients (one recipient per line, no separation character)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 97 of 174

Send e-mail

E-Mail recipient(s) address

asmith@aol.com
bsmith@aol.com

SMS mode [Test](#)

Send e-mail

E-Mail recipient(s) address

6313983455@sms.att.com

SMS mode [Test](#)

In the SMS mode the number of characters is limited to 160 and an alarm message will look as shown in the following text line:

HW4_Alarm <Alarm@HW4.com>
HW4 HC2-S Hi Alarm Probe 1 [Humidity] / 06/20/2013 13:57:29 / 60.62%RH / 60.00 / 0987654321

HW4 HC2-S Hi Alarm Probe 1 [Humidity] = Alarm Text (includes the device name)
06/20/2013 13:57:29 = Date an Time
60.62%rh = Measured Value
60.00 = Alarm Limit (threshold)
0987654321 = Probe Serial Number

- **Give Acoustic Signal:** check the box to enable this feature. Select the desired sound file

Give acoustic signal

File selection

C:\Program Files (x86)\HW4\Alarm.wav

[Test](#)

- **Print Report:** check the box to enable this feature. Select the desired printer

Print report

Printer selection

HP LaserJet P4010_P4510 Series PCL 6

[Test](#)

- **Start Application:** check the box to enable this feature. Select the desired application file (exe)

Start application

File selection

C:\Program Files (x86)\HW4\Hello.exe

[Test](#)

The selected application will start whenever an alarm event occurs that is associated with the action set.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 98 of 174

- **Energize Relay:** check the box to enable this feature.

HW4 displays a table of the relays that have been detected (this list includes the corresponding device name and serial number). Select as many relays as desired. These will be energized when an alarm occurs that is associated with the action set.

Energize Relay	
<input checked="" type="checkbox"/>	HF83 (0060453003) Relay 1
<input type="checkbox"/>	HF83 (0060453003) Relay 2
<input type="checkbox"/>	HF83 (0060453003) Relay 3
<input type="checkbox"/>	HF83 (0060453003) Relay 4

Test (on) Test (off)

NOTES:

- This function supports the following devices: HL-NT data logger and docking station with relays, HygroClip Alarm (HCA) and HF8 transmitter. The HF34 thermo-hygrostat is not supported
- With the exception of the HygroClip Alarm Box, the relay of the device should not be programmed at the device level
- The relay will be de-energized when the alarm condition ends. When several alarm conditions are associated with the same relay, the relay will be de-energized when all alarm conditions are ended.
- The relay can be de-energized manually
- The relays are identified using the serial number of the corresponding device. Consequently the alarm settings must be reworked whenever a device is replaced.

Special note regarding the HygroClip Alarm (HCA): The HygroClip Alarm (HCA) features virtual switches. To ensure proper operation of the HCA these should be programmed as follows:

OUT1 = SWITCH (1)
 OUT2 = SWITCH (2)
 OUT3 = SWITCH (3)
 OUT4 = SWITCH (4)

► TRIGGERS

Triggers

Create Copy Delete

The Triggers module is used to create, copy or delete Trigger Sets. A Trigger Set cannot be deleted as long as it is assigned to one or more devices. The available Trigger Sets are listed in the left pane of the form.

- **Creating a new trigger set**

A Trigger Set consists of one or more Triggers (or abnormal conditions) each associated with a priority level, a time schedule and an action set.

After creating the necessary Limit Sets, Processing Sets and Action Sets, you are now ready to create one or several Trigger Sets

- 1) Click on the "Create" button or select an existing trigger set from the combo box located to the right of the "Copy" button, and click on the button. The new trigger set appears in the left pane of the form.
- 2) Click on the new trigger set in the left pane of the form. This opens the form shown below.
- 3) Type a new name for the trigger set in the Name field (for example: Trigger Set 1)
- 4) Click on the "Add Trigger" button (bottom right corner of the form) to create a new line in the triggers table

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 99 of 174

Triggers	Priority	Processing	Actions
-	Medium	-	-

Triggers
-
Communications error
Out-of-Limit value
Battery
Power supply
Sensor
Device set to generate fixed values
Memory card
Run control error
*AW measurement ended
User Alarm 1

Triggers: click on the arrow to the right of the combo box to display a drop down list of HW4 pre-defined triggers as well as a list of the Limit Sets that you have previously created. Select one item from the list.

Priority: click on the arrow to the right of the combo box to display a drop down list of HW4 pre-defined priority levels. Select one item from the list.

Processing (optional): click on the arrow to the right of the combo box to display a drop down list of the Processing Sets that you have previously created. Select one item from the list.

Actions (optional): click on the arrow to the right of the combo box to display a drop down list of the Action Sets that you have previously created. Select one item from the list.

NOTE: a trigger set can have as many lines as desired. Any unwanted trigger can be deleted by clicking on it and then clicking on the "Remove Trigger" button (bottom right corner of the form)

Trigger Set 1			
Triggers	Priority	Processing	Actions
Communications error	Low	-	-
Battery	Medium	Zeit Profil 1	Event Profil 1
Out-of-Limit value	Medium	Zeit Profil 1	Event Profil 1

HW4 allows creating an unlimited number of trigger sets

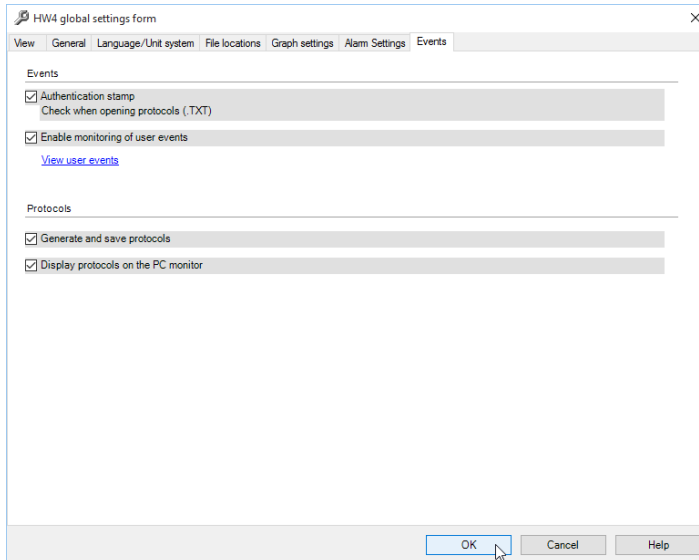
► DEVICE ASSIGNMENT

Device assignment			
Device (serial number)	No trigger set	Geräte Alarmschema 1	Trigger Set 1
Rotronic HygroLogNT (0061290435)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rotronic (814120380)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MiniHC2_109 (12653062)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MiniPT_110 (12779806)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HL20 (0020009709)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This module is used to assign each individual device present in the HW4 device tree to one of the available Alarm Trigger Sets or to no trigger set at all. See further down for the definition of an Alarm Trigger Set.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 100 of 174

16.7 Events Tab (HW4 Professional)



- Authentication stamp:** HW4 Professional automatically generates an authentication stamp at the end of protocols and this stamp is cross referenced in the user event files. Check this box to have HW4 validate the authentication stamp when opening a protocol (file with the extension TXT): instrument configuration, instrument programming and probe adjustment. HW4 uses the authentication stamp to verify that the protocol file has not been altered.
- Enable monitoring of user events:** check this box to have HW4 generate and maintain a user event file keeping track of the main operations performed by any user. This is an ERES regulatory requirement.

- View user events:** click on this link to view the contents of the user events file.

- Generate and Save Protocols:** check this box to have HW4 automatically **generate and save to disk** a protocol file recording the details of the following operations: device configuration, log function programming (except log-to-PC) and probe adjustment.

HW4 generates protocols in simple text format (Editor / Microsoft Notepad – file extension TXT).

- Display Protocols on the PC Monitor:** This selection causes HW4 to automatically display the protocol on the PC monitor. This option cannot be selected without selecting **Generate and Save Protocols**.

Note: for a complete overview, see [“Record keeping”](#) in this manual.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 101 of 174

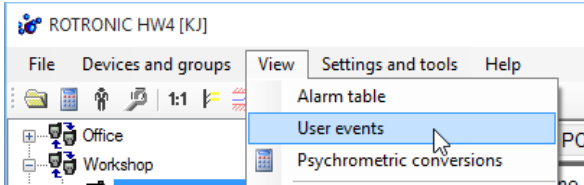
17 USER EVENTS (HW4 Professional)

When HW4 is enabled to do so (HW4 Global Settings – Events Tab), a user event file is created and maintained. For more information, see “**Record keeping by HW4**” in this manual.

The following are examples of user events:

- User login / logout
- Changes to the HW4 Global Settings
- Instrument configuration
- Log function operations, etc.

Proceed as follows to view the user event file for the current session of HW4:

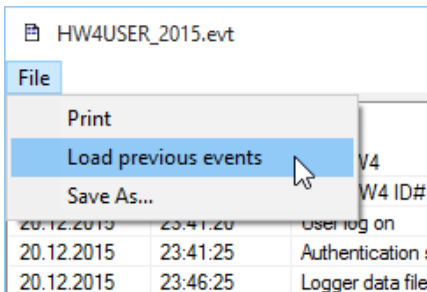


HW4 opens the user event form. By default, HW4 displays only the events of the current session:

Date	Time	Event	Description
20.12.2015	23:41:15	Exit HW4	01 33818108
20.12.2015	23:41:15	Start HW4 ID#	01 33818108 V3.7.0.15327
20.12.2015	23:41:20	User log on	KJ

17.1 Menu bar

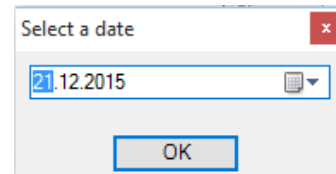
17.1.1 Load previous user events



To view every user event recorded by HW4 since a specific date, proceed as follows:

In the menu bar of the user events form, click on File and then click on Load previous user events.

HW4 displays a dialog box:



Click on the arrow to the right of the date field to open a calendar.

Select the oldest date from which you want to see all user events on record and click on the OK button. HW4 loads in the user event form all user events on record since the selected date.

Note: the next time that the user event form is opened, HW4 will display again only the events of the current session.

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<div style="text-align: right;"> Instruction Manual Document Type </div> <div style="text-align: right;"> Page 102 of 174 </div>

17.1.2 Print

This command prints the current contents of the user event form (current session only or every event starting from a specific date).

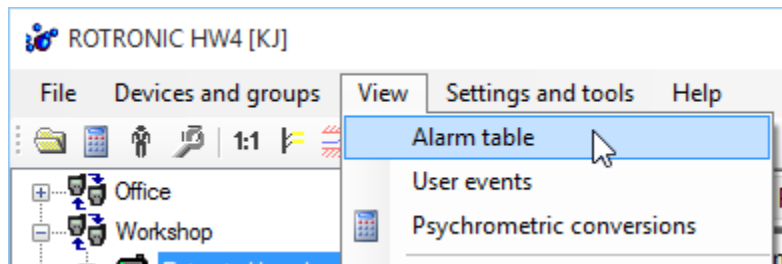
17.1.3 Save As

The contents of the user event form (current session only or every event starting from a specific date) can be saved to a file with the extension XLS.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 103 of 174

18 ALARM TABLE (HW4 Professional)

For an overview of the alarm function in HW4 see [Alarm indication and reporting](#).



The HW4 alarm table displays the contents of the alarm records file and can be shown on the PC monitor at any time from the HW4 main menu bar:



When one or several alarm conditions occur, this is reported on the bottom left corner of the HW4 main screen.

Click on the bold red text to open the Alarm table. After opening the Alarm Table the text disappears

	< Start Time	Device name	Alarm Description	S/N	Input Nbr	Value	Trigger
!	6/20/2013 1:07 PM	HF8	Value out-of-limits	0061062288	1	23.66°C	20.00
!	6/20/2013 1:02 PM	HM4	Value out-of-limits	0061093819	1	23.24°C	25.00
!	6/20/2013 1:01 PM	HF8	Value out-of-limits	0061062298	1	46.20%RH	40.00

The contents of the Alarm Table can be customized by any HW4 user with sufficient rights. Alarm conditions that are presently in effect are shown with an exclamation mark of a color corresponding to the alarm priority level. The exclamation mark is automatically removed when the alarm condition no longer exists.

Any text, keyword or combination of keywords can be used to display only those alarm records that contain the text or keyword in one of the visible table column: When using more than one keyword, separate each keyword with a blank space. If a keyword must include a blank space, place the keyword between two quote symbols ("Word 1 Word2").

	< Start Time	Device name	Alarm Description	S/N	Input Nbr	Value	Trigger
!	6/20/2013 1:07 PM	HF8	Value out-of-limits	0061062288	1	23.66°C	20.00
!	6/20/2013 1:01 PM	HF8	Value out-of-limits	0061062288	1	46.20%RH	40.00

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 104 of 174

18.1 Alarm acknowledgement

Acknowledging an alarm requires the current user to have the right to do so.

To acknowledge an alarm, double click on the alarm line in the table. The following dialog box opens:

Acknowledge alarm

Alarm

Name: Software Fehler
Status: Ended
Priority: Low
Acknowledged: No
Start time: 22.08.2015 15:25
End time: 22.08.2015 15:25
*Duration: 0h00m00s

Device

Device: HW4 software
Name:
Address:
Serial number: 33818108

Input

Number:
Name:
Serial number:
Value:
Trigger:
*Minimum:
*Maximum:

Enter acknowledgement text here...

OK Print Exit

An alarm can be acknowledged several times. Prior acknowledgments can be seen in the top text field

Enter a new acknowledgement text in the bottom text field. Click on the OK button when done.

Acknowledged alarms are shown in the table with a check mark as illustrated below:

Alarm table

File View Options

From: 26.12.2015 To: 02.01.2016

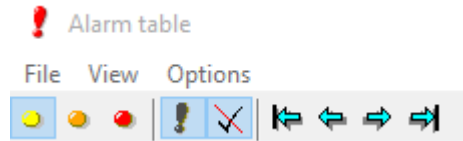
Filter:

	< Start time	Show only non-acknowledged alarms	Alarm description	Acknowledgement text	Serial no.	Input nbr
!	02.01.2016 10:52		Rotronic HygroLogNT User Alarm 1 [Value 1]		0061290435	2
✓	02.01.2016 10:29		Rotronic HygroLogNT User Alarm 1 [Temperat...	[02.01.2016 15:17 / ...	0061290435	2
!	02.01.2016 10:29		Rotronic HygroLogNT User Alarm 1 [Temperat...		0061290435	1
!	02.01.2016 10:29		Rotronic HygroLogNT User Alarm 1 [Value 1]		0061290435	1

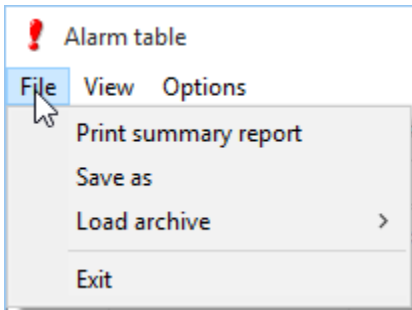
Acknowledging an alarm or clicking on the EXIT button does not reset the alarm. The acknowledged check mark simply means that a qualified user knows about the alarm and may have entered a comment. An alarm that is current (active) remains visualized in the main HW4 screen (using the color red in the group / device tree and in the current values table).

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 105 of 174

18.2 Alarm table menu bar a



18.2.1 File



Print Summary Report: prints the current contents of the alarm table as a report

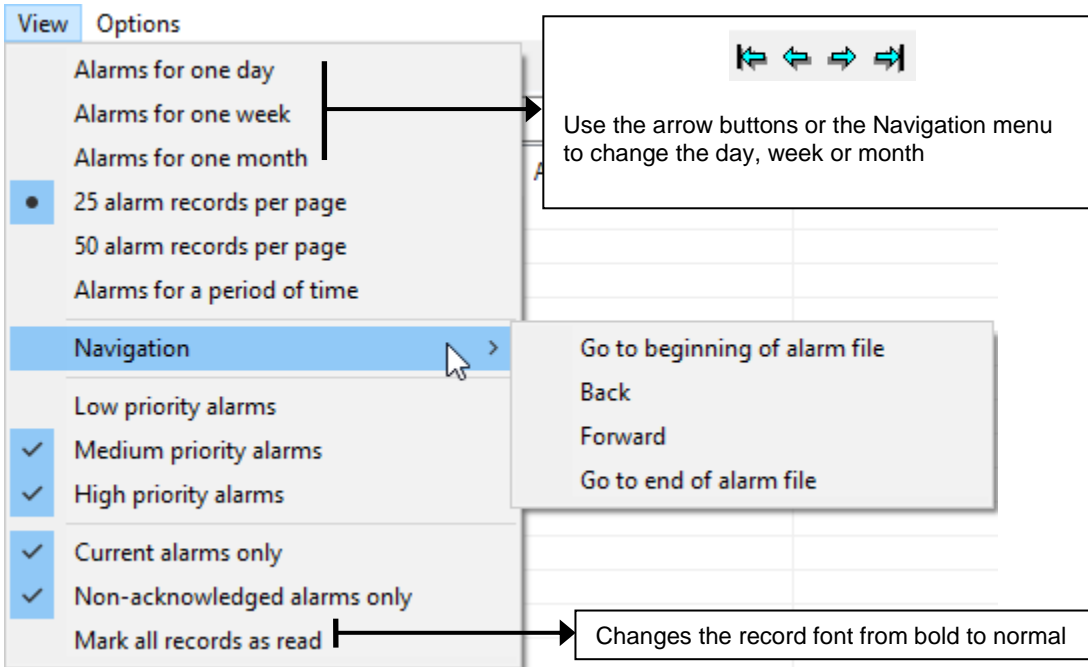
Save As: saves the current contents of the alarm table in the Microsoft Excel format

Load Archive: select an Alarm Records archive file to be loaded to the Alarm table

Exit: closes the alarm table

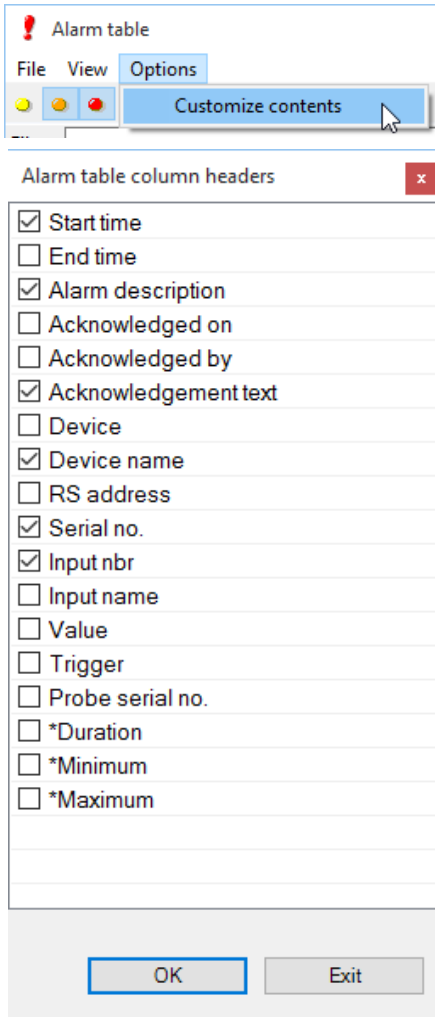
18.2.2 View

Use **View** to change display the alarm records selectively:



E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 106 of 174

18.2.3 Options



• **Customize contents:** the information appearing both in the alarm table and in the alarm report can be customized. Clicking on “Customize contents” opens the following form:

The selected items appear as columns in the alarm table and as lines in the alarm summary report.

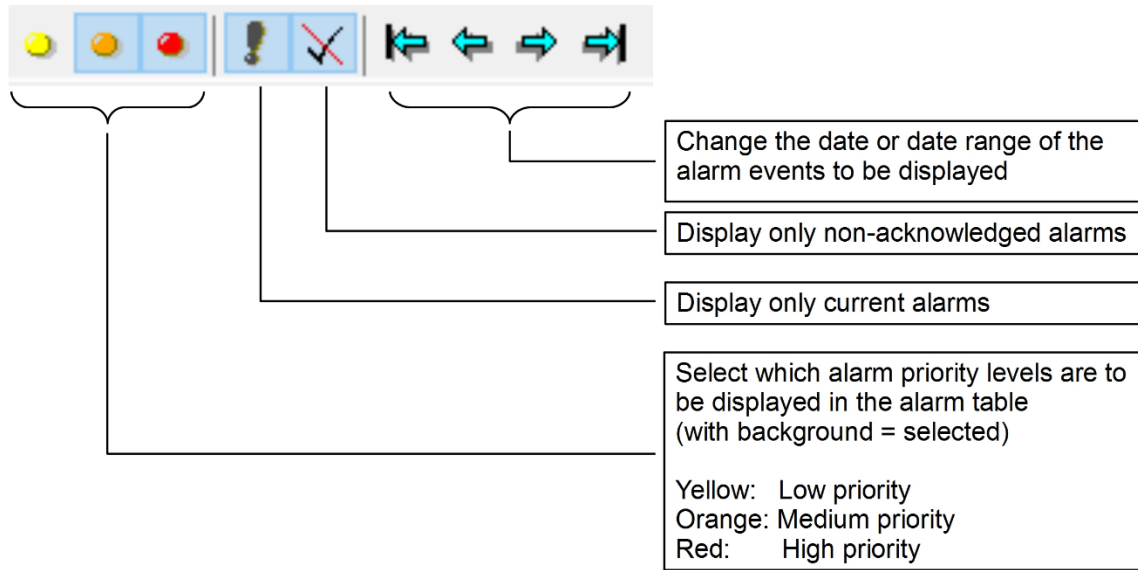
The order of the columns within the alarm table can be changed by clicking and dragging them with the mouse.

When the value that triggers an alarm is a calculated parameter such as dew point, the symbol for that parameter appears in front of the numerical value in both the alarm table and alarm report.

Example: Fp: -16.58°C

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<p style="text-align: right;">Instruction Manual</p> <p style="text-align: right;">Document Type</p> <hr/> <p style="text-align: right;">Page 107 of 174</p>

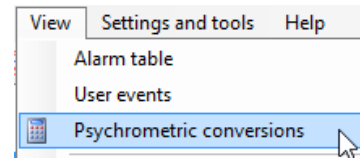
18.2.4 Alarm table buttons



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 108 of 174

19 PSYCHROMETRIC CONVERSIONS

This menu item opens a form that can be used to convert humidity parameters. To change the parameter to be converted, click on Input Parameter and choose from the list.



Psychrometric Conversions

File Input parameter Help

Humidity	H	35,00	%rh
Temperature	T	23,00	°C
Pressure	P	1013,25	hPa

Humidity	H	35,00	%rh
Temperature	T	23,00	°C
Pressure	P	1013,25	hPa
Elevation (ref. sea level)		0,00	m
Wet-bulb temperature	Tw	13,98	°C
Psychr. difference	T-Tw	9,02	°C
Dew point	Dp	6,73	°C
Frost point	Fp	N/A	°C
Vapor concentration (moist)	Dv	7,19	g/m ³
Specific humidity (moist)	Q	6,06	g/kg
Mixing ratio by Wt. (dry)	R	6,09	g/kg
Vapor partial pressure	E	9,83	hPa
Vapor saturation pressure	Ew	28,08	hPa
Saturation vapor concentration	Dvs	20,54	g/m ³
Enthalpy	H	38,60	kJ/kg
Volume Mixing Ratio (dry)		9795,44	ppm

Calculation WMO World Meteorological Organization

Status: OK

- Click on the blue arrow to compute
- Click on the diskette symbol to transfer the results to the default Windows text editor (such as Notepad) and eventually save the data to a text file.
- Click on File > Save Calculations to save the results to a text file named Calculate.txt that is saved in the folder ROTRONIC_HW4\DOC (see [Location of the HW4 User Folder](#)). Generate and save Protocols" must be enabled in HW4 Global Settings > Events tab. The contents of Calculate.txt are changed each time that a new calculation is saved.

Note: to change the unit system, go to the HW4 main screen. In the menu bar, click on Settings and Tools and on HW4 Global Settings. In the HW4 Global Settings form, select the tab "Language / Unit System".

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 109 of 174

20 DEVICE PROTECTION

This function is used to protect a device ¹ against malicious users. This is particularly useful when the device is exposed to the Internet. When a device is protected, the following functions are disabled:

- All Device Manager functions
- Log function programming
- Probe adjustment
- Deletion of files from the device memory card

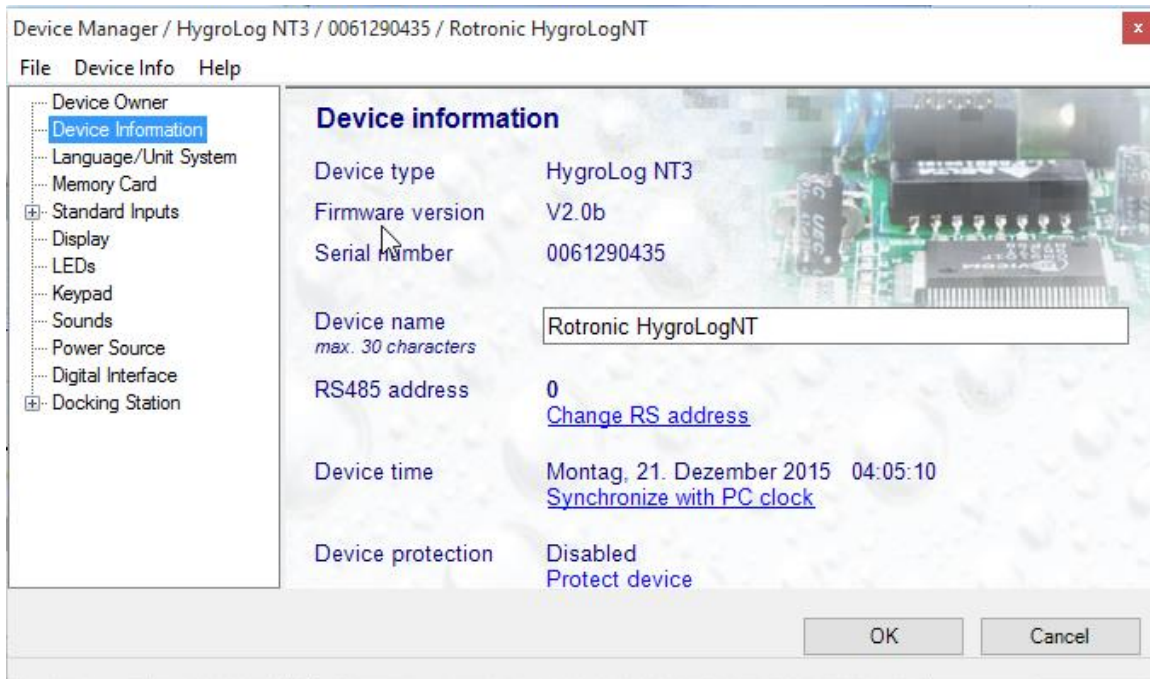
¹ Availability of this function depends on the firmware version of the device.

Warning: The following HW4 automatic functions are also disabled for the protected device:

- Automatic address change when adding new devices to a RS-485 multi-drop network
- Automatic synchronization with the HW4 PC clock

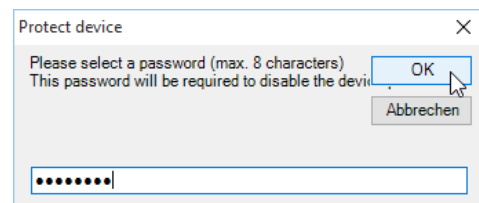
The procedure used to protect or unprotect a device is described, using the HygroClip DI as an example:

Select the device in the device tree and open Device Manager > Device Information:

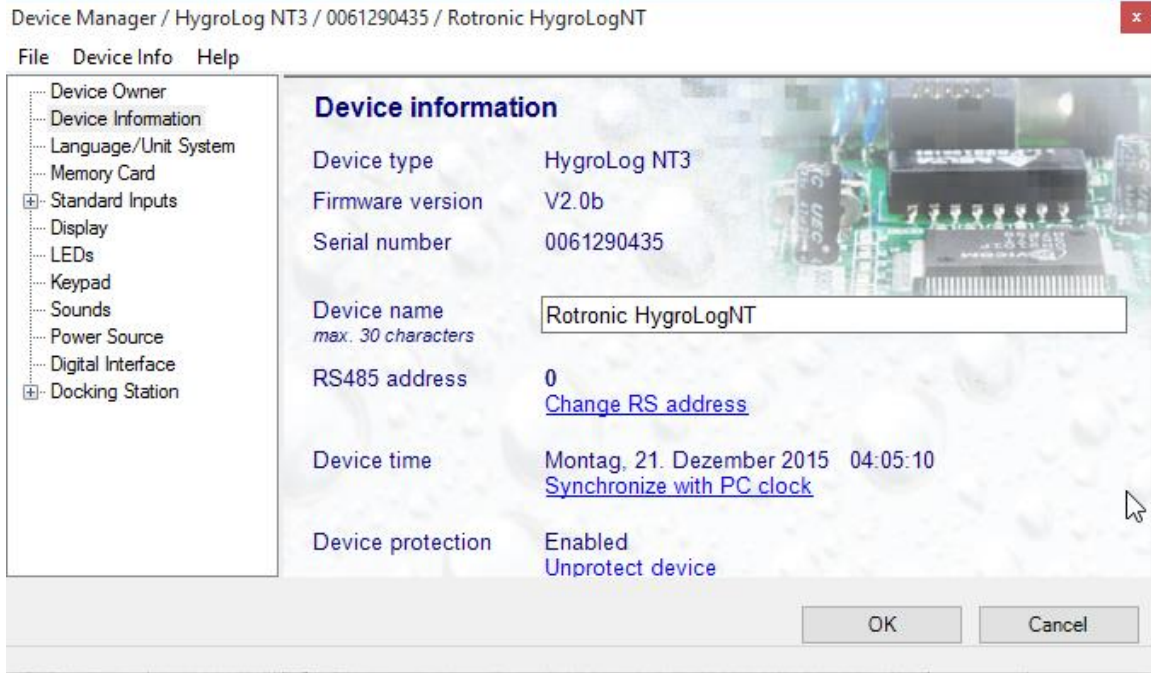


To protect the device, click on the underlined link. HW4 opens the following form where a password can be entered (maximum 8 characters):

Enter the password and click on the OK button. HW4 confirms that the device is now protected:

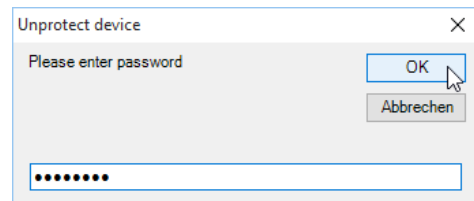


E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 110 of 174



To unprotect the device and enable all functions, click on the underlined link. HW4 opens the password form:

Enter the password and click on the OK button. HW4 confirms that the device is now unprotected.



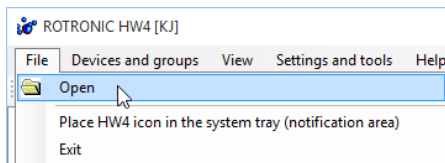
FORGOT THE PASSWORD? – should you forget the password, remove power from the device (HygroLog NT: remove the battery). After restoring power to the device, you have about one minute to use the default password **iresume!** (include the exclamation marks). After one minute the default password is no longer accepted.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 111 of 174

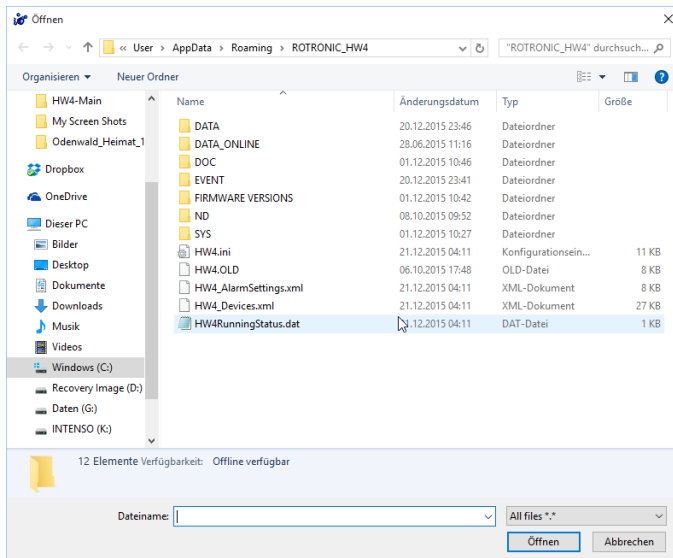
21 ACCESSING LOG FILES, PROTOCOLS AND EVENT FILES

All files generated by HW4 can be accessed from the HW4 main menu bar provided that they reside on the PC.

1. Select **File** and **Open**:



2. HW4 opens the following form



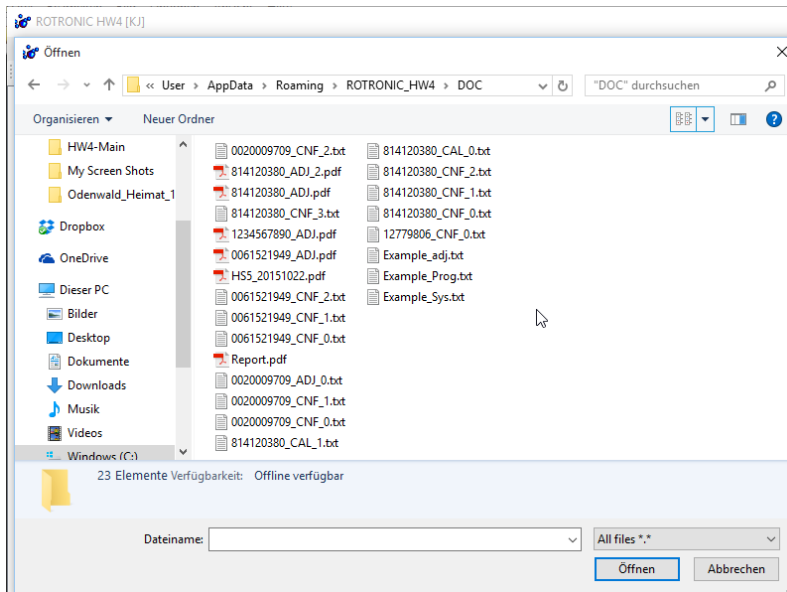
By default, the menu item File – Open (HW4 main menu bar) points to the HW4 User Folder ROTRONIC_HW4 (see [Location of the HW4 User Folder](#)). When the location of the files has been changed from the default location, you will have to manually look in the proper folder.

3. Select the folder where the type of file that you want to open is located:

- **DATA:** log files that have been copied or transferred (moved) from the data logger to the PC.
- **DATA_ONLINE:** log files directly created on the PC (Log to PC).
- **DOC:** protocol files (device configuration, logger programming and probe adjustment).
- **EVENT:** user event files as well as HW4 event files.
- **FIRMWARE VERSIONS:** folder where different versions of the devices firmware should stored.
- **ND:** includes internal drivers for wireless devices
- **SYS:** frequently used device configuration files for future use with Device Manager

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 112 of 174

Example: Protocol files folder



4. Select the proper file extension for the type of file you want to open, or select All files *.*. If you do not see any file, check the folder and file extension selections.

5. Select a file with the mouse and click on the “Open” button.

Depending on the type of file, HW4 uses different file viewers.

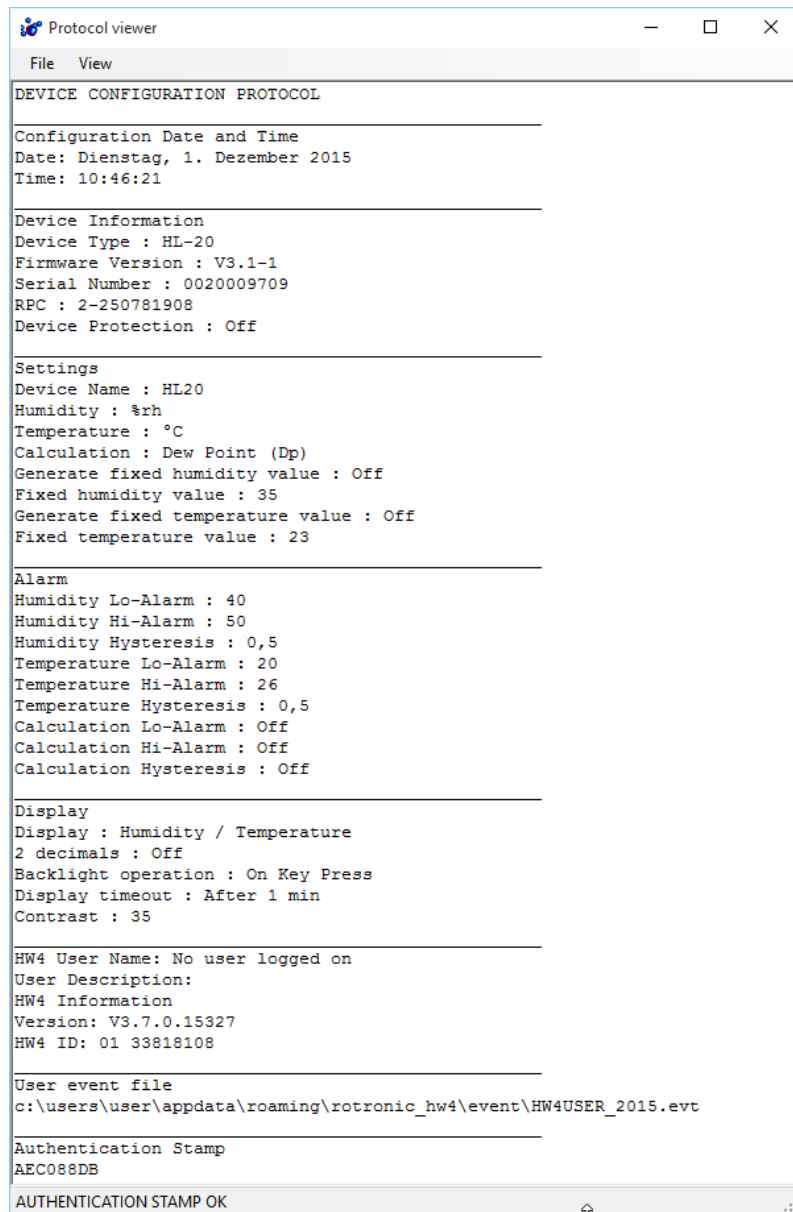
Log files : see [View / Sign a Log File](#)

Protocols : see [View / Sign a Protocol](#)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 113 of 174

22 VIEW / SIGN A PROTOCOL

HW4 uses the following viewer to display protocols on the monitor screen.



Example:

HW4 always checks the authentication stamp of a protocol when opening the file. The result of this verification appears on the bottom left corner of the form used to display the file contents.

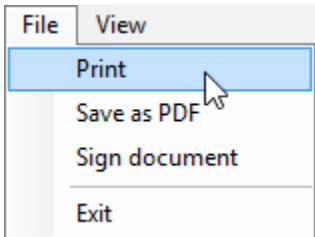
If the protocol is unadulterated the message is "AUTHENTICATION STAMP OK".

Otherwise will be reported:

"WARNING: THIS IS NOT AN ORIGINAL HW\$ FILE"

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 114 of 174

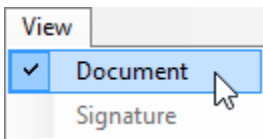
22.1 Protocol viewer menu bar



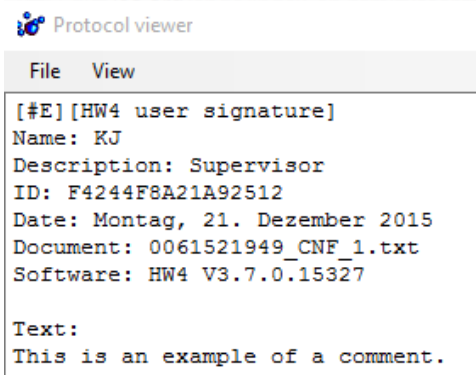
File

- **Print:** opens the Windows printer form and prints the protocol on the specified printer.
- **Save as PDF:** Converts the protocol text file to a PDF file (PDF: Portable Document Format).
- **Sign document:** use this menu item to add your HW4 user name and a comment text to the protocol. For authentication purposes you will need to enter your password.
- **Exit:** closes the viewer.

View



- **Document:** displays the entire document in the viewer.
- **Signature:** displays only the signature area of the document.



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 115 of 174

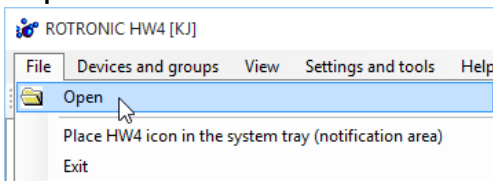
23 VIEW / SIGN A LOG FILE

View Data is the graphic module of HW4.

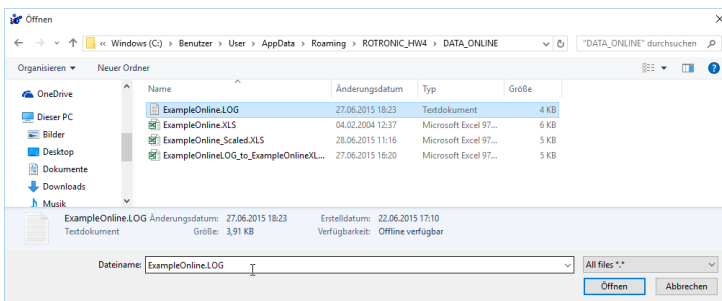
23.1 Opening a log file in HW4 View Data

A log file that is located on the PC can be opened in View Data from the File menu in the HW4 main menu bar.

• Open:

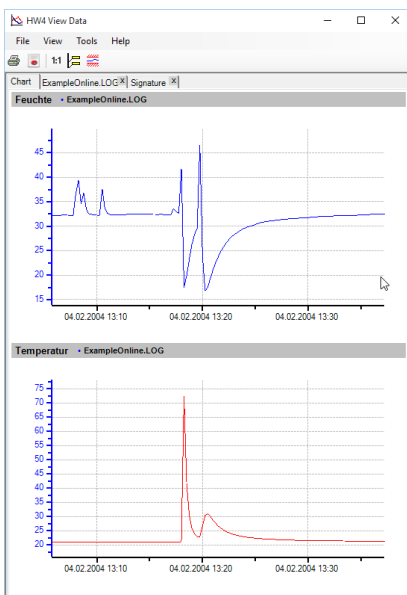


HW4 opens the following form



Select the folder where the file is located (DATA or DATA_ONLINE) as well as the type of log file (file with .LOG or .XLS extension). If you do not see the file, check the folder and file extension selections. Click on the "Open" button.

HW4 immediately opens the file in View Data:



Click with the mouse on the tab with the file name to view the data in a table. The selected LOG-File will be opened:

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 116 of 174

Click with the mouse on the Chart tab to view the data in a graph again.

```


[#U]Benutzer
ROTRONIC AG
Peter Muster
Grindelstrasse 6
8603
Bassersdorf
++41 1 838 11 11
hw4@rotronic.ch
Swiss

[#I]Geräte Name
Rotronic HygroLogNTx

```

Number	Date	Time	Feuchte	Temperatur
1	04.02.2004	13:05:45	32.25	20.83
2	04.02.2004	13:06:00	32.22	20.86
3	04.02.2004	13:06:15	32.22	20.86
4	04.02.2004	13:06:30	32.23	20.86
5	04.02.2004	13:06:45	32.26	20.86
6	04.02.2004	13:07:00	32.27	20.86

- Send HW4 to the Windows notification area

This menu item places the HW4 icon  into the Windows notification area in the lower right corner of the Windows desktop.



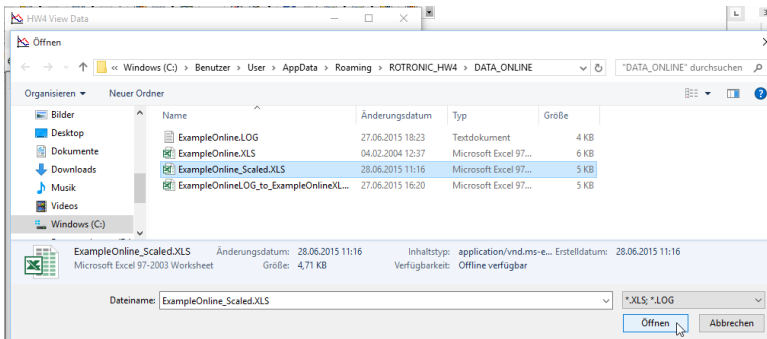
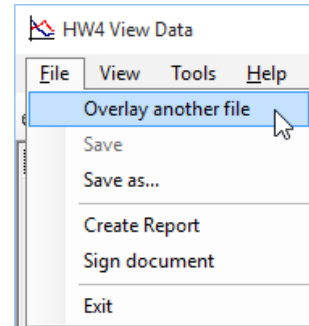
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
Document title	Document Type
	Page 117 of 174

23.2 View Data menu bar

23.2.1 File

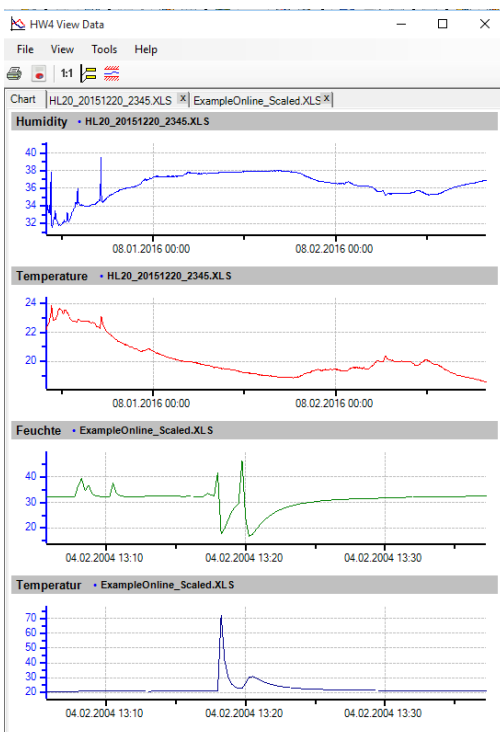
- Overlay another file:** this menu item is available only with HW4 Professional and allows bringing several log files into a single graph (the maximum number of files depends on the size of the files). Note that the files to be overlaid must be present on the PC (if necessary, begin by copying the desired files from the logger to the PC). The files being overlaid can be a mixture of the LOG and XLS format.

Note: Files recorded with the HygroLog NT can be started all at the exact same time. By contrast, this is not possible when recording several inputs on the PC as illustrated in the picture below.



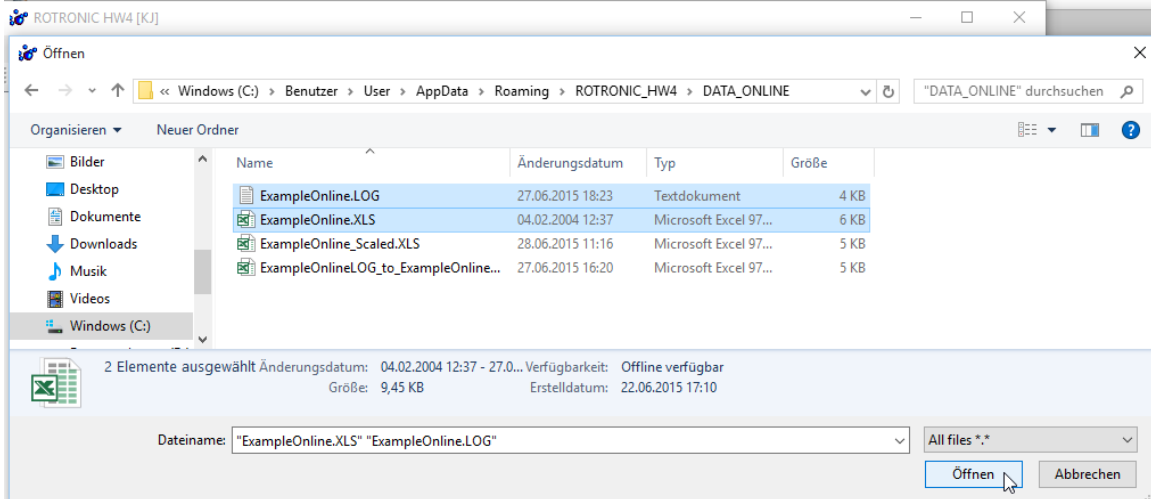
Choose the file to be overlaid.

Open the overlay file. View Data will combine correspondent data in one graphical window each.

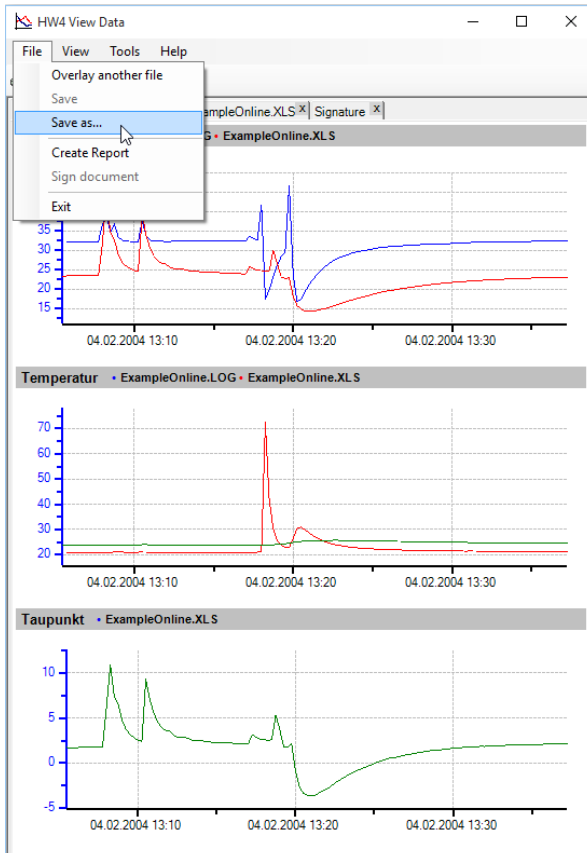


E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 118 of 174

The same result can be achieved by opening the two files to be overlaid at the same time. To mark them for combined opening keep the Shift key pressed while clicking on them.



- **Save As:** saves a copy of the file to any location on the computer. The file is always saved in the .XLS format. This command can be used to do the following:



- Convert a binary log file (LOG) to the text format (XLS) and save the converted file to disk, under a new name (the original LOG file is still available)
- Save a write protected file under a new name after adding notes, text boxes, etc.
- Save the results of overlaying several files under a new file name. The new file separately retains the file header and data of each original file.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 119 of 174

- **Create Report:** this menu item allows the creation of a report in the pdf file format.

Create report

*Load settings *Save settings

Mode <input checked="" type="radio"/> Single report Creates a single report page for each opened file <input type="radio"/> Combined report Creates a single report page from all opened files	Options Title: Report1 <input type="checkbox"/> Show chart legend <input type="checkbox"/> *Show labels <input type="checkbox"/> *insert logo *Logo path:
Scale <input type="radio"/> Use all available data <input checked="" type="radio"/> Use only data visible in graph	Save Path: c:\users\user\appdata\roaming\rotronic_hw4\doc\F <input checked="" type="checkbox"/> open when generated <input type="checkbox"/> *send by e-mail
Alarm limits Feuchte [%rh] High limit: 0 <input type="checkbox"/> activate Temperatur [°C] Low limit: 0 <input type="checkbox"/> activate Taupunkt [°C]	*Receiver 1 *Receiver 2 *Receiver 3 *Receiver 4 *Receiver 5

Create

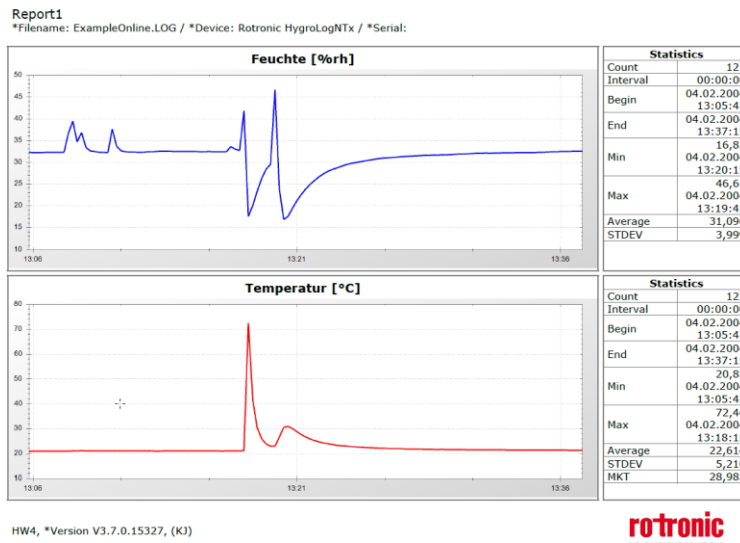
When several log files are opened, the user can choose between generating a separate report for each file or to generate a single report for all opened files.

The user can select to include in the report all of the log file data or only the data that is visible in the graph.

Alarm limits can defined and displayed in the graph section of the report.

To change the location where the report will be saved, left click on the "Path" box.

Report example:



- **Sign document:** use this menu item to add your HW4 user name and a comment text to the log file. For authentication purposes you will need to enter your password.

Sign the document

Document name: ExampleOnline.LOG

Software: HW4 V3.7.0.15327

Date: Montag, 21. Dezember 2015

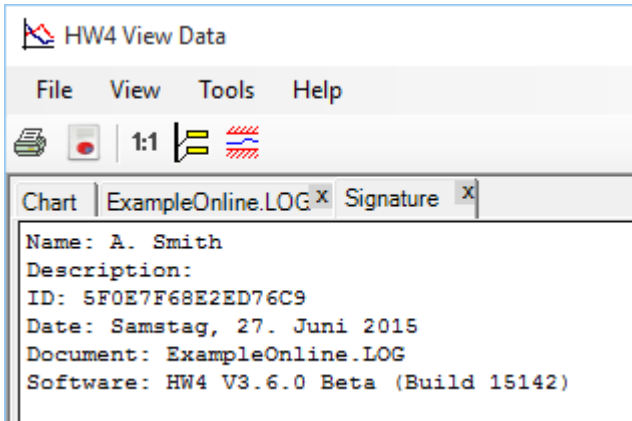
HW4 user name: KJ

Password: *****

Text
Text example

Sign Cancel

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 120 of 174

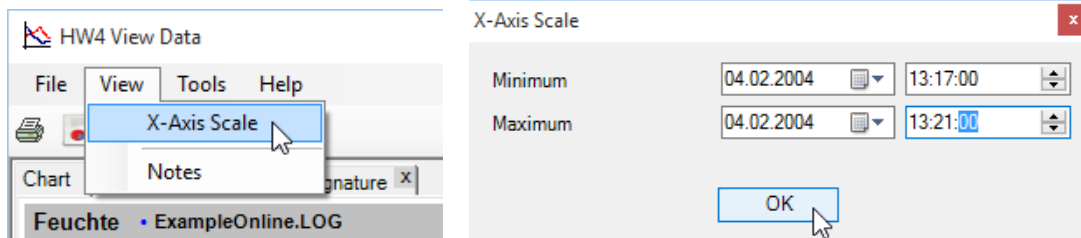


Signing a log files creates an additional Signature tab in View Data:

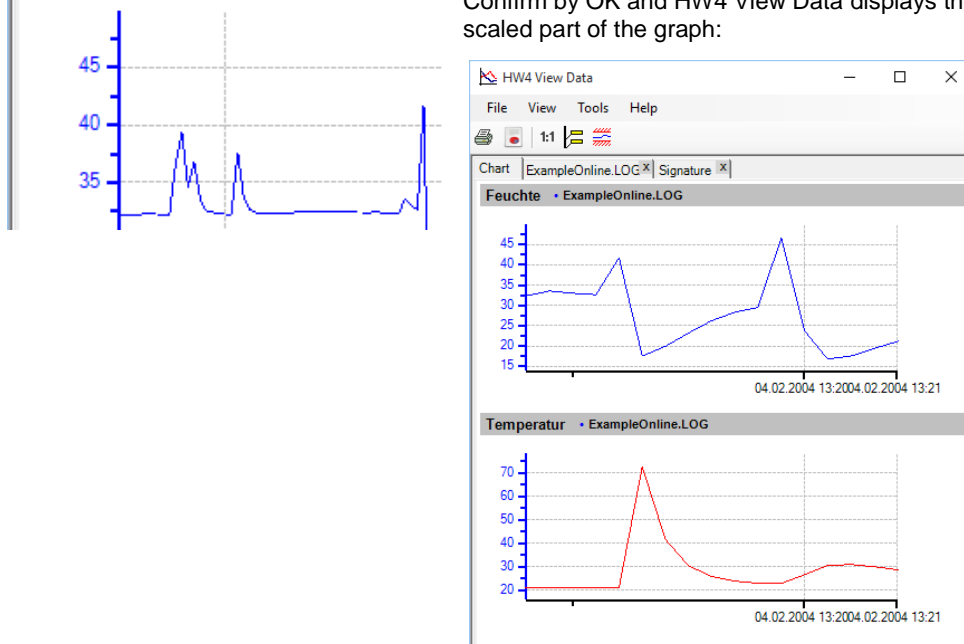
- **Exit:** exits HW4 View Data

23.2.2 View

- **X-Axis Scale:** select a certain clipping of the time axis and thus extract the according part of the graph.

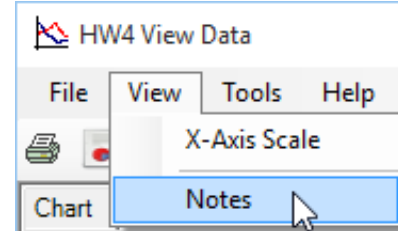
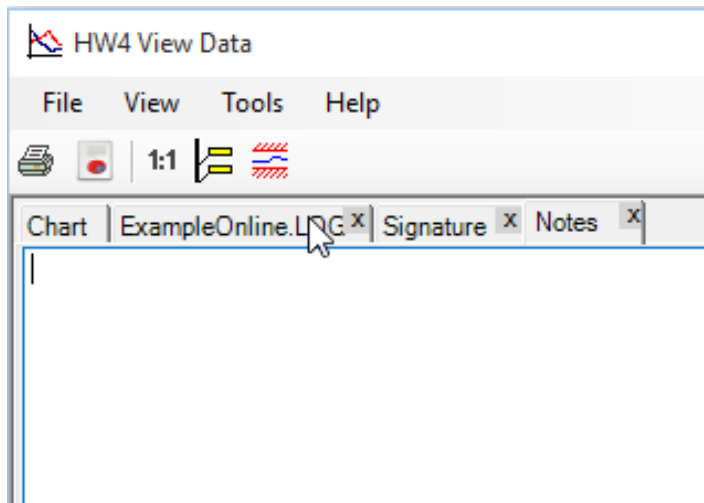


Confirm by OK and HW4 View Data displays the time axis scaled part of the graph:

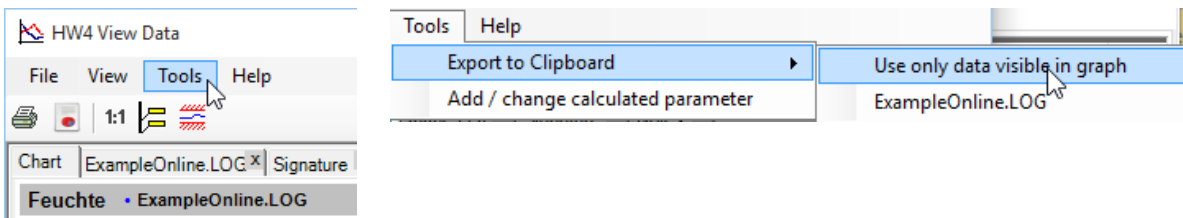


E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type Page 121 of 174

- **Notes:** Adds an additional Notes tab, which allows extensive notes to be associated with the log file. To retain these notes, a write protected file should be saved under a new name.

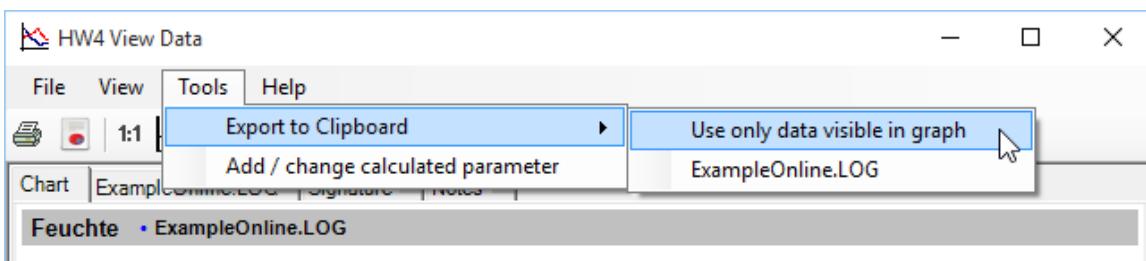


23.2.3 Tools



- **Export to Clipboard:** saves the selected data to the PC's clipboard. From here they can be inserted (for example by Ctrl-C) in many other applications.

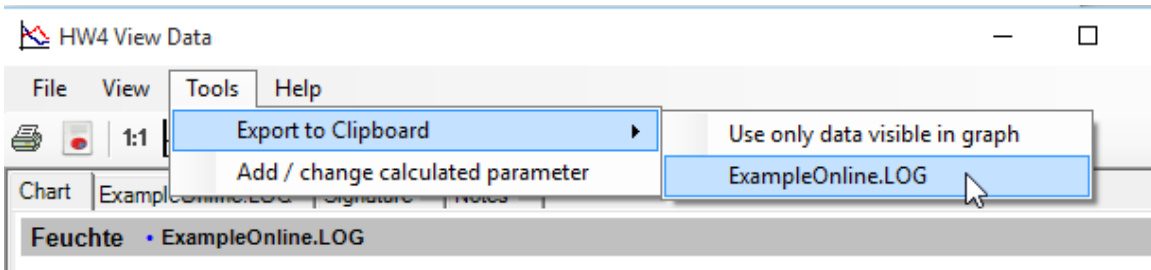
- - **Use only data visible in graph:**



Only data associated with the displayed graph, i.e. a subset of all data in the LOG-File are copied to the Clipboard memory.

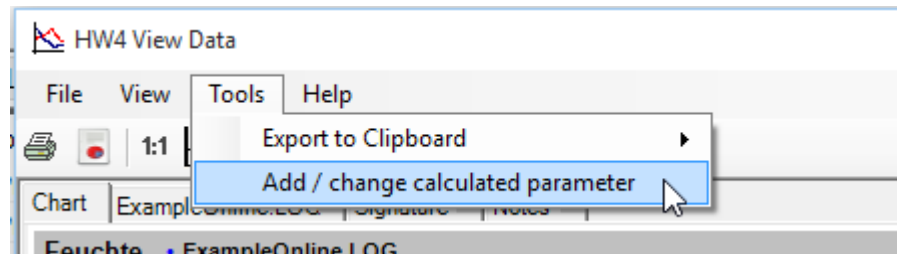
E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 122 of 174

- - ExampleOnline.LOG:



All data in the LOG-File are copied to the Clipboard memory.

• **Add/Change Calculated Parameters:**



The menu item “Add / Change calculated parameter” opens the following form:

Select calculated parameter

- Dew point
- Frost point
- Wet-bulb temperature
- Enthalpy
- Vapor concentration (moist)
- Specific humidity (moist)
- Mixing ratio by Wt. (dry)
- Saturation vapor concentration
- Vapor partial pressure
- Vapor saturation pressure

Fixed pressure hPa

HW4 can add a calculated parameter to a log file that does not have any. The parameter is calculated for each data record based on the relative humidity and temperature values.

HW4 can also replace the existing calculated parameter with a different parameter.

Use the form shown on the left to select the desired calculated parameter.

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.

23.2.4 Help

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 123 of 174

- **HW4 Help:** opens HW4 Help.
- **About HW4:** displays the version number and ID number of HW4.

23.3 HW4 View Data Toolbar

Print

Enable / disable view of alarm limits.
(function is only available when alarm limits in the device have been set.)

Show or hide the Data Cursor to display numerical values in the graph

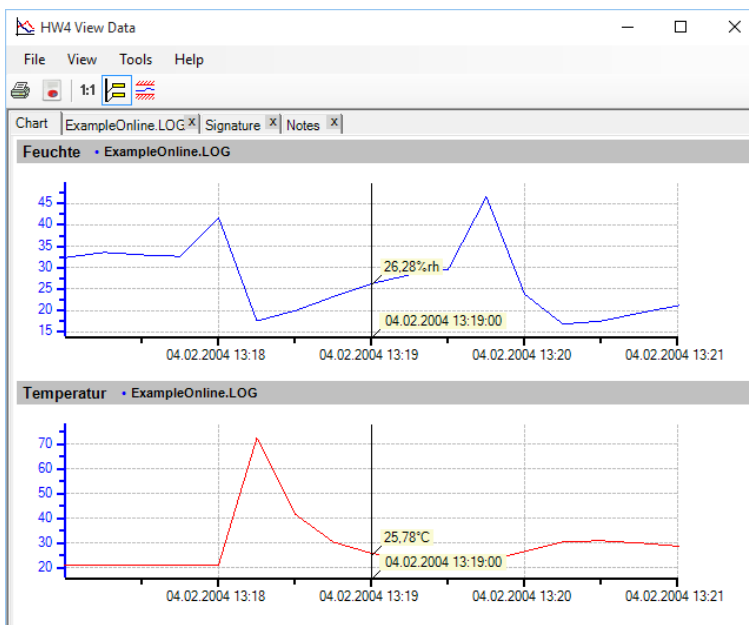
Draw with the mouse a rectangular area of the graph. The graph displays only the selected area.

Opens the Create report form.

23.4 Chart Tab

23.4.1 Using the Data Cursor

In the toolbar, left click on the Data Cursor button. The Data Cursor appears as a vertical bar on the graph. Labels appear next to the data cursor to display numerical values.



Moving the data cursor within the graph:

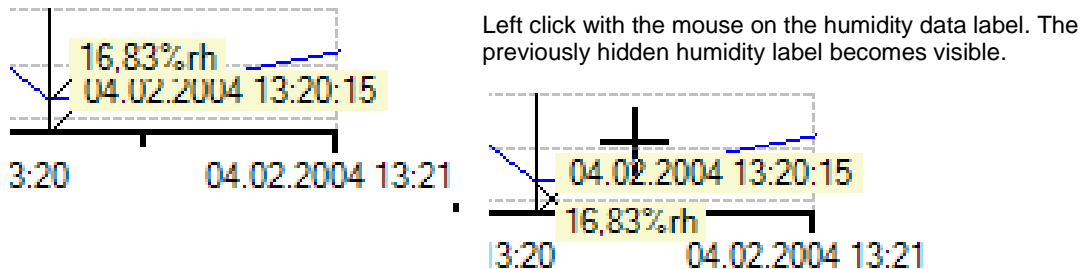
- Bring the mouse cursor over either the left or the right border of the chart. The Data Cursor moves towards the border with each mouse click.
- Bring the mouse cursor over any location in the chart. The Data Cursor jumps to that location with a mouse click.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 124 of 174

23.4.2 Displaying hidden data labels

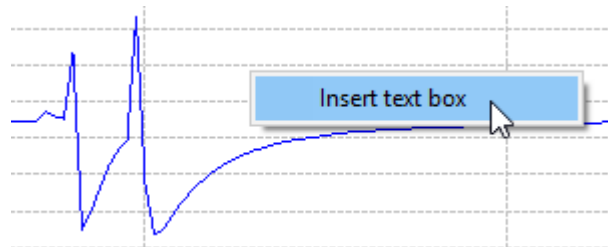
When two traces on the chart are close one to the other, it may happen that the data labels attached to the Data Cursor are on top one of the other. Left clicking with the mouse on any visible label makes the label move 90° clockwise and can be used to uncover a hidden label.

Example: One humidity data label is hidden behind the other humidity data label.

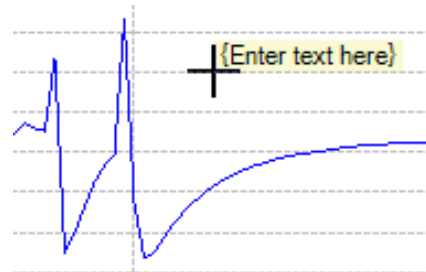


23.4.3 Insert Text Box

To place a textbox in the chart window position the cross shaped cursor with the mouse anywhere in the chart and right click. You will be prompted to insert a text box.



Left clicking on the request shows a yellow underlayed text {Enter text here}.

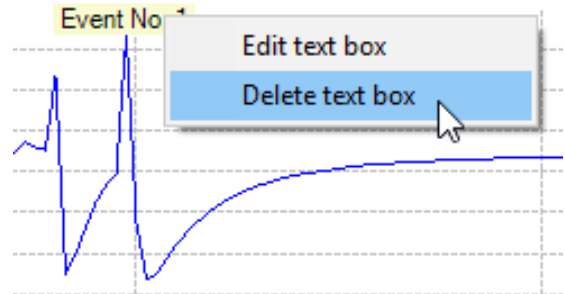


You may move it to the desired position within the chart and input your text (in this example "Event No. 1").



E-M-HW4v3-Main_20 <small>Document code</small>	Rotronic AG Bassersdorf, Switzerland <small>Unit</small>
General instructions and common functions <small>Document title</small>	<div style="text-align: right;"> Instruction Manual <small>Document Type</small> </div> <hr/> <div style="text-align: right;"> Page 125 of 174 </div>

To edit or delete a text box right click on it and select "Edit text box" or "Delete text box".



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 126 of 174

24 ALARM INDICATION & REPORTING – Overview

When a device detects an alarm condition, all versions of HW4 can give a visual notification on the PC monitor. Device alarm conditions are defined when configuring the device with Device Manager or by using HW4 Global Settings > Alarm Settings..

24.1 Device tree

The icon representing an individual device reporting an alarm condition is replaced by a color dot in the device tree (first HC2 probe in the example below). The color of the dot depends on the priority level of the alarm. Priority levels and the corresponding color code can be defined by the user (HW4 Global Settings > Alarm Settings). When the device is part of a group or subgroup, the icon representing the device group or subgroup is also replaced with a double color dot. When several devices report an alarm condition, the color of the double dot corresponds to the highest priority level of the alarms generated by the devices within the group or subgroup (see example below where red denotes a priority level higher than yellow).

Any new alarm that occurs during the current HW4 session is indicated by an alarm counter that appears at the bottom of the Device Tree. The alarm counter is displayed until the user opens the alarm table regardless of whether the alarm condition is still active or not.

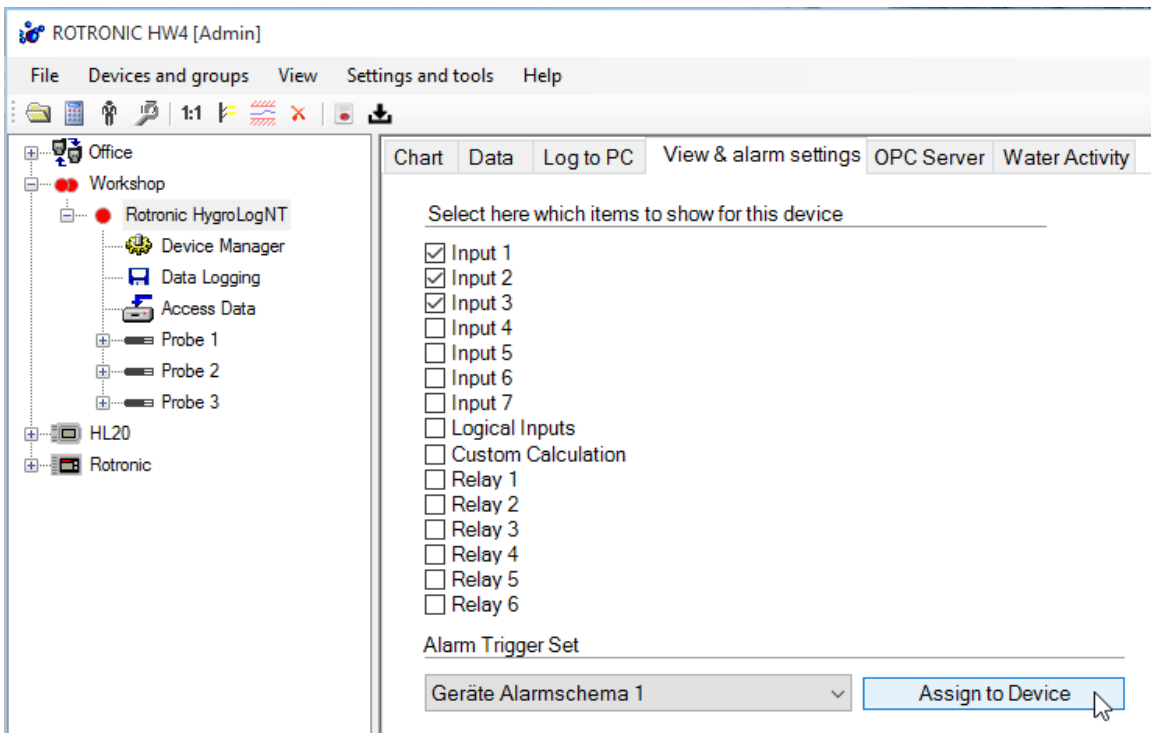
24.2 Right Pane – Current Values Tab

Both in Device View and in Group View, values that are out of limits appear over a background color. The color depends on the priority level of the alarm and on the color assigned to that level by the user (HW4 Global Settings > Alarm Settings).

Chart	Data	Log to PC	View & alarm settings	OPC Server	Water Activity
!	#	Input name	Calculation	Humidity	Temperature
	1	Probe 1	---	53,71%rh	22,62°C
	2	Probe 2	63,73kJ/kg	80,80%rh	24,31°C

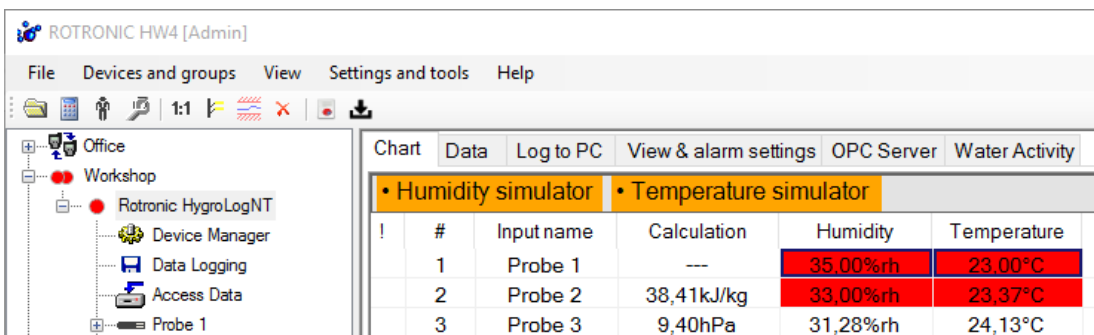
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 127 of 174

Note: "out-of-limit" values can be defined for each individual device and / or input using Device Manager. However, no alarm will appear in HW4 until "Out-of-Limit Value" has been added by the user as a trigger to the trigger set currently assigned to the device currently selected in the Device Tree (see below).



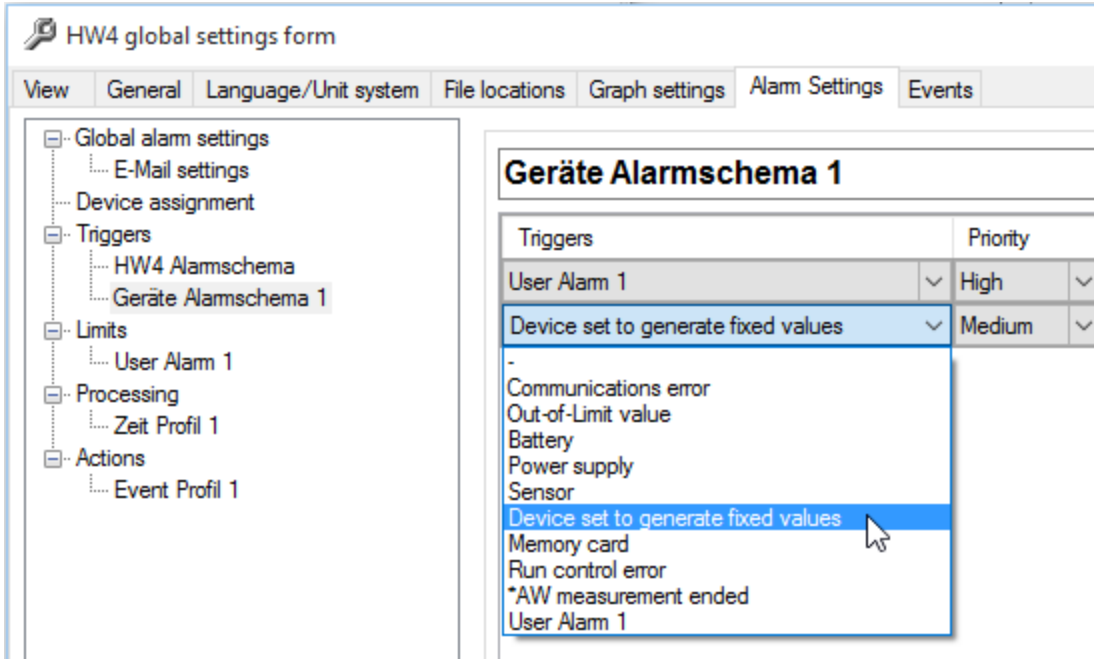
Different sets of out-of-limit values can also be globally defined using HW4 Global Settings > Alarm Settings > Limits. Any number of these global limits can be associated with a specific alarm trigger set which in turn can be assigned to an individual device.

Other types of alarms are also shown on the screen as illustrated below for a probe set to operate as a humidity and temperature simulator:



In the above example, no alarm will appear in HW4 until "Device set to generate fixed values" has been added by the user as a trigger to the trigger set currently assigned to the device as shown in the following screen shot.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 128 of 174

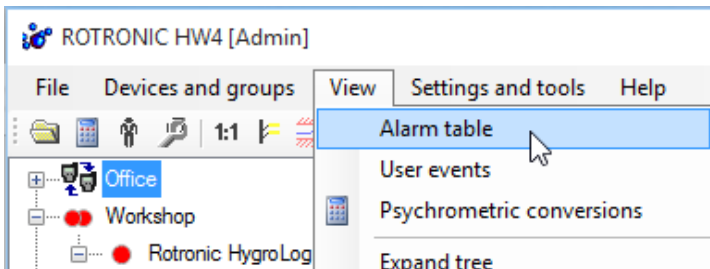


24.3 Alarm recording and reporting (HW4 Professional)

HW4 Professional maintains a file consisting of alarm records with detailed information. Old records are automatically transferred to an alarm archive file created by HW4.

24.3.1 Alarm Table

Alarm records, both current and past, can be viewed on the PC monitor with the Alarm Table. The alarm table can be opened at any time by clicking on “View” in the HW4 main menu bar and selecting “Alarm table”.



Note: alarm conditions that occur simultaneously are reported as separate lines in the alarm table. For example, when both the value of temperature and the value of humidity measured by the same probe correspond to an alarm condition, the alarm table displays two separate lines, one for temperature and the other for humidity.

The alarm table offers a choice of several filters when viewing alarm records.

For details, see [Alarm Table](#)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 129 of 174

24.3.2 Alarm summary report

An alarm summary report can be printed by selecting “File” and “Print summary report” from the Alarm table menu bar. This report reproduces the current contents of the alarm table. The contents of the report depend on the selections made as to which information (columns), priority level and dates to display in the Alarm Table.

The screenshot shows the 'Alarm table' window with a menu bar containing 'File', 'View', and 'Options'. The 'File' menu is open, showing options: 'Print summary report', 'Save as', 'Load archive', and 'Exit'. The 'Print summary report' option is highlighted. Below the menu, there are input fields for 'From: 015' and 'To: 02.01.2016'. A table of alarm data is visible below these fields.

	Alarm name	Alarm description	Acknowledgement text	Serial no.	Input nbr
	Rotronic HygroLogNT	User Alarm 1 [Value 1]		0061290435	1
	Rotronic HygroLogNT	User Alarm 1 [Temperat...		0061290435	1
✓	Rotronic HygroLogNT	User Alarm 1 [Temperat...	[02.01.2016 15:17 / ...	0061290435	2
	Rotronic HygroLogNT	User Alarm 1 [Value 1]		0061290435	2

24.4 Additional alarm data

24.4.1 Log files

Measurement data, and other information such as the status of logical inputs, can be recorded on the PC and / or locally on a data logger. HW4 offers the possibility of automatically starting a new log file every hour, every day, etc. Within Device Manager, alarm conditions can be defined for any measured or calculated parameter or logical input.

A log file (PC or data logger) can be displayed by HW4 in the form of either a chart or a table. In both cases, values that correspond to an alarm condition can be made clearly visible on the PC screen:

- When data is viewed as a graph, any alarm band that may be associated with an individual parameter can be displayed directly on the graph (limited to one parameter at a time).
- When data is viewed as table, values that are out of limits appear over a red background (however, the red background cannot be printed).

24.4.2 HygroLog NT / HL-NT Logger event file

The HygroLog NT maintains a file that records the date, time and description of all logger events, including any alarm condition that may have been defined when configuring the logger with Device Manager. This file is split between the internal memory of the logger (up to 170 events) and the flash memory card (unlimited number of events). All past logger events are available to HW4 as long as the flash memory card is not removed from the logger.

HW4 offers the possibility of displaying and printing this file.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 130 of 174

24.4.3 HygroClip Alarm (legacy) event memory and event viewer

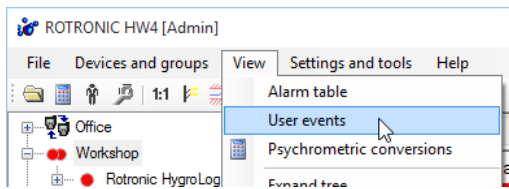
24.4.4 HygroClip Alarm (legacy) event memory and event viewer

The HygroClip Alarm (HCA) features an internal memory that can retain up to 680 events. When the memory is full, the oldest event is erased whenever a new event is recorded. The following events are automatically recorded by the HCA:

- Logical input alarm
- End of logical input alarm
- Relay output alarm
- End of relay output alarm
- Device power up
- Watchdog overflow
- Configuration written to device
- Date/Time prior to being changed
- Date/Time after being changed
- RS-485 address changed
- Event memory erased

Accessing the events memory requires the HCA to be connected via RS-485 and a master device to a PC with the HW4 software. Using HW4, the Event Viewer is accessed or the event memory is cleared from the HCA device manager.

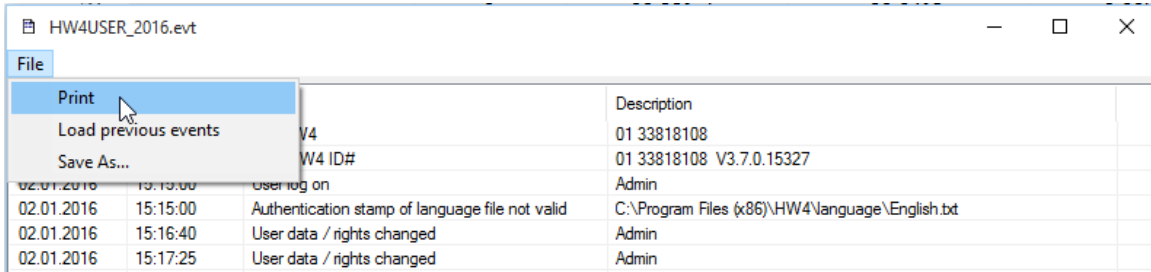
Event Viewer: the Event Viewer displays the most current events.



HW4USER_2016.evt			
File			
Date	Time	Event	Description
02.01.2016	15:14:55	Exit HW4	01 33818108
02.01.2016	15:14:55	Start HW4 ID#	01 33818108 V3.7.0.15327
02.01.2016	15:15:00	User log on	Admin
02.01.2016	15:15:00	Authentication stamp of language file not valid	C:\Program Files (x86)\HW4\language\English.txt
02.01.2016	15:16:40	User data / rights changed	Admin
02.01.2016	15:17:25	User data / rights changed	Admin

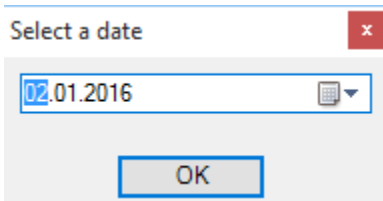
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 131 of 174

File: the file item is located on the Event Viewer menu bar:

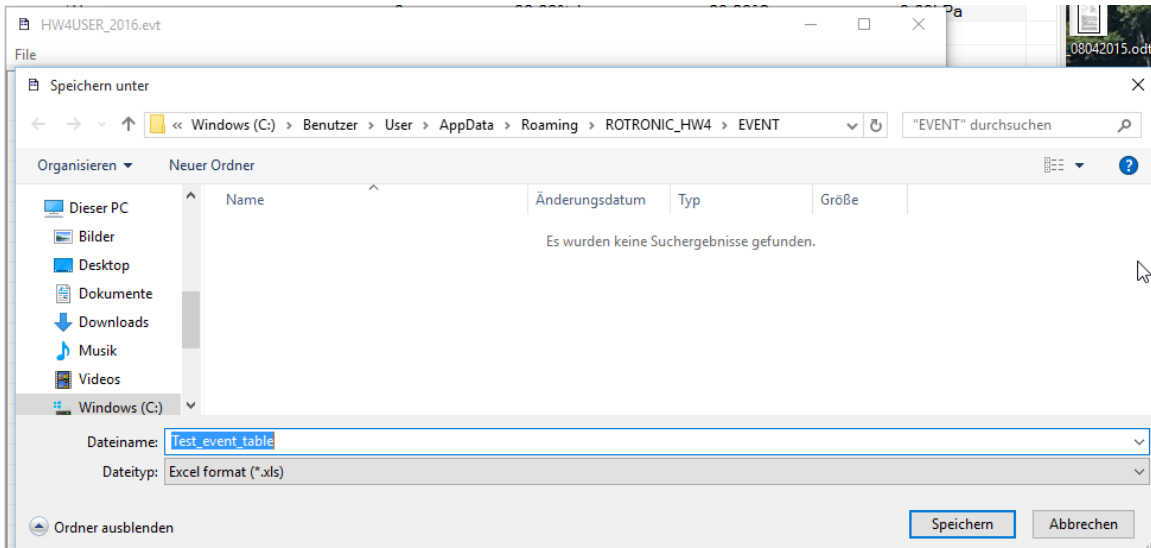


Print: prints the current contents of the event viewer to a printer or to a file.

Load previous events: opens a date selection box and allows loading in the viewer events from a previous day (this operation can be repeated several times).



Save as: Opens the in the HW4 global settings form predefined file location for saving the event table under an user assigned file name.



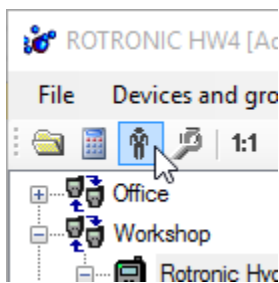
E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 132 of 174

25 ERES REGULATORY COMPLIANCE (HW4 Professional)

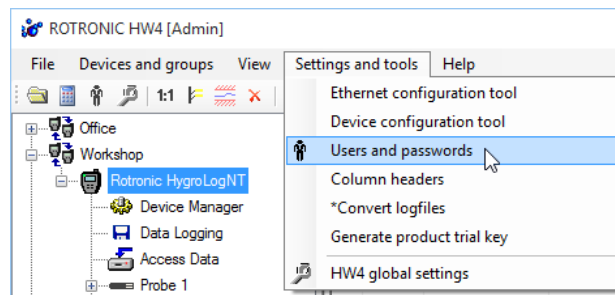
25.1 Required settings and selections

The following settings and selections are required in order to comply with FDA / GAMP regulatory requirements regarding electronic records, electronic signatures (ERES) and the tracking of software problems.

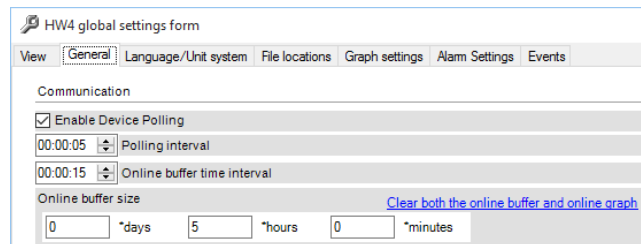
- **Main Screen Menu Bar – Users and Passwords:** create at least one user with administrative rights.



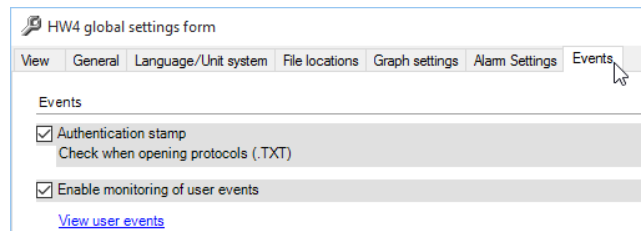
or



- **HW4 Global Settings – General Tab:** Enable system monitoring (tracking of software problems). Clicking on the blue underlined link [Clear both the online buffer and online graph](#) starts a new recording sequence.

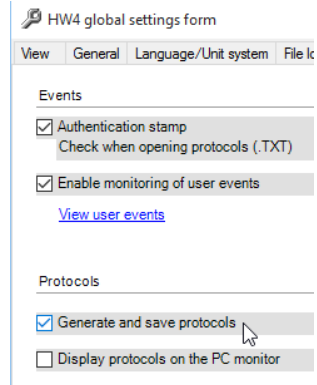


- **HW4 Global Settings – Events Tab:** Enable authentication stamps and enable the monitoring of user events.



E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 133 of 174

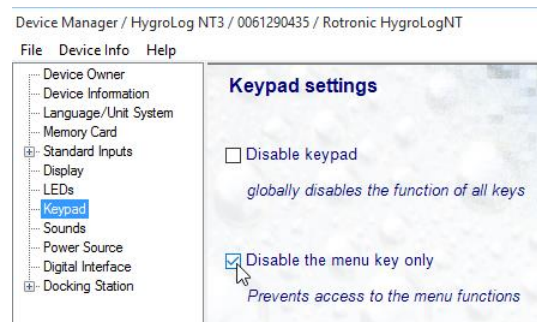
- **HW4 Global Settings – Events Tab:** enable protocols (see Record keeping by HW4)



- **Device Manager – Device Information:** Set device name, change address settings

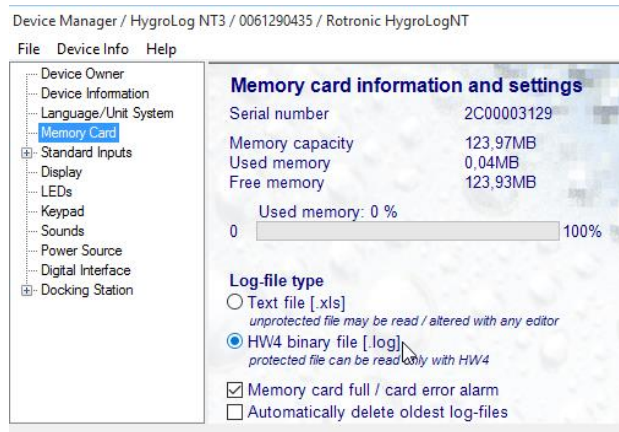


- **Device Manager – Keypad Form:** disable the MENU key of the HygroLog NT to prevent unauthorized or undocumented operations.



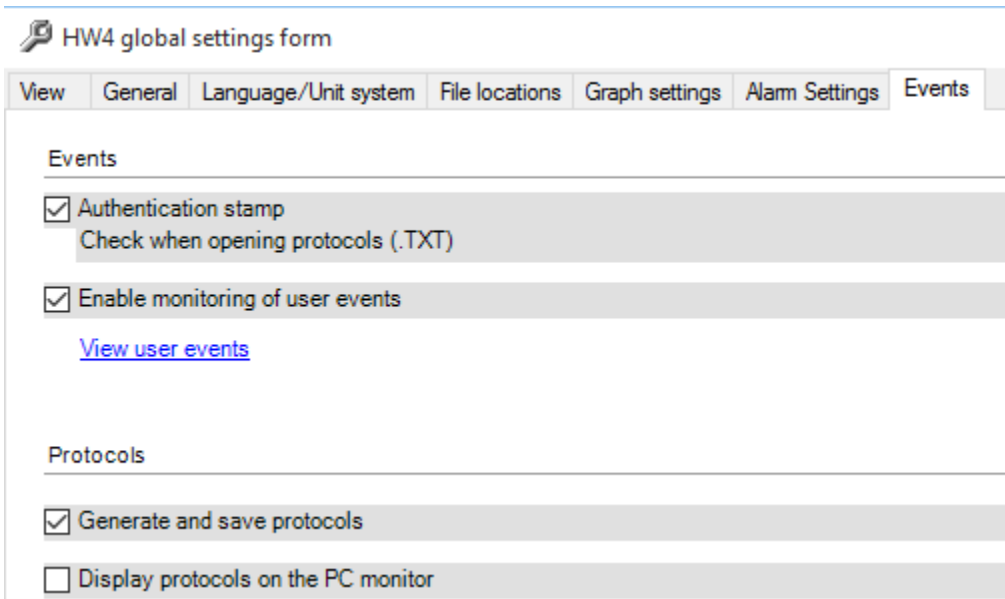
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 134 of 174

- **Log file type:** select the file extension LOG for the log files (measurement data) recorded either with HW4 on the PC or with the HygroLog NT. For the HygroLog NT, the file type is selected from Device Manager – Memory Card. For the files recorded by HW4 to the PC, the selection is done in the Log to PC tab on the Main Screen at the time the file name is entered.



25.2 Electronic records

In compliance with regulatory requirements regarding electronic records, electronic signatures (ERES) and the tracking of software problems, HW4 maintains a number of event files and protocols. To effectively comply with ERES regulatory requirements, both types of record must be enabled in **HW4 Global Settings**. Details on the event files and protocols are provided in the “**Record keeping**” section of this manual.



E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 135 of 174

25.3 Log File Format

Both HW4 (direct data logging to the PC) and the HygroLog NT offer the choice of two different types of file format to record the measured data. Both file types have two main sections: the file header and the measurement data.

- **Binary Files (LOG):** the header section of this type of file can be read with a regular text editor. As opposed to this, the data section is in binary format and cannot be read with a text editor or imported into a program such as Microsoft Excel. Both the header and data sections are protected against alterations. If the file contents are somehow modified, HW4 will display an error message when trying to open the file.

For maximum protection of the recorded data and to comply with ERES regulatory requirements, use the LOG file type.

- **Text Files (XLS):** these files are entirely in text format and can be read with a regular text editor. This type of file is easily imported into Microsoft Excel. Like all the other files created by HW4, files with the XLS extension are saved with the "Read Only" attribute. This attribute provides a protection against inadvertent file operations such as file delete, file move and saving the file under the same name and location (eventually after altering the file contents). Since it is possible to remove the "Read Only" attribute, this attribute does not provide protection against intentional alterations. **HW4 does not detect alterations to a file with the XLS extension.**

As an additional protection, HW4 keeps track of the date and time when a log file is created or copied to the PC. This information is kept in the protected user event file and can be compared with the file creation / file modification date and time recorded by Windows.

Note: the HygroLog NT automatically gives each log file a name comprised of the last 4 digits of the logger serial number, followed by the input number and a sequential run number.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 136 of 174

26 RECORD KEEPING – Overview (HW4 Professional)

In compliance with FDA / GAMP regulatory requirements regarding electronic records, electronic signatures (ERES) and the tracking of software problems, HW4 maintains the following records when enabled to do so in HW4 Global Settings:

26.1 Event Files

Both HW4 and the HygroLog NT maintain a number of files to keep track of major events. With the exception of the HW4 event file (extension ERR), these files are protected. Altering the contents of these files will cause any line that has been modified to appear on a red background when the file is opened with HW4. By default event files are located in the folder **ROTRONIC_HW4EVENT** (see [Location of the HW4 User Folder](#)).

Name	Size Auto	Modified
..		24.11.2015 17:26:53
HW4RunningStatus.dat	59 Byte(s)	25.12.2015 11:22:12
HW4_Devices.xml	27 kB	25.12.2015 11:22:12
HW4_AlarmSettings.xml	12 kB	25.12.2015 11:22:12
HW4.OLD	8 kB	06.10.2015 16:48:31
HW4.ini	11 kB	25.12.2015 11:22:12
SYS		01.12.2015 10:27:44
ND		08.10.2015 08:52:26
FIRMWARE VERSIONS		01.12.2015 10:42:25
EVENT		25.12.2015 10:52:09
DOC		01.12.2015 10:46:21
DATA_ONLINE		28.06.2015 10:16:02
DATA		20.12.2015 23:46:28

26.1.1 HW4 events

A text file with the extension ERR is generated whenever HW4 encounters a software execution problem. The HW4 Event files are not directly useful to the HW4 user. These files are meant to be sent

Name	Size Auto	Modified	Type	Attr...
..		25.12.2015 10:52:09	Dateiordner	
HW4USER_2015.evt	64 kB	25.12.2015 11:14:51	Klassische Ereignisanzeige	A
HW4Alarm.al2	231 kB	25.12.2015 10:52:11	AL2-Datei	A
HW4Event.ERR	499 Byte(s)	25.12.2015 10:52:09	ERR-Datei	R
ErrorHW4Event2015_12_25_10_52_2.ERR	499 Byte(s)	25.12.2015 10:39:13	ERR-Datei	AR
ErrorHW4Event2015_12_25_10_39_5.ERR	499 Byte(s)	25.12.2015 09:35:26	ERR-Datei	AR
ErrorHW4Event2015_12_25_10_39_13.ERR	499 Byte(s)	25.12.2015 10:13:44	ERR-Datei	AR

to the manufacturer and hold information useful to ROTRONIC for troubleshooting software problems. The file name consists of the text ErrorHW4Event followed by the date and time.

Example: ErrorHW4Event2015_5_27_10_52_2.ERR

To enable HW4 to keep track of software problems, place a check mark in the box labeled **Enable System Monitoring**, located in **HW4 global settings – General tab**.

HW4 global settings form

View General Language/Unit system

Communication

Enable Device Polling

00:00:05 Polling interval

00:00:15 Online buffer time interval

Online buffer size

0 *days 5

Bluetooth

Bluetooth

Automatic Functions

Enable system monitoring

Force password change after 30 I

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 137 of 174

26.1.2 User events

A user event file with the extension EVT is created by HW4 as soon as the very first session begins.

The file name consists of the text HW4USER followed by the year.

Example: HW4USER_2015.EVT

Name	Size Auto	Modified	Type
..		25.12.2015 10:52:09	Dateior
HW4USER_2015.evt	64 kB	25.12.2015 11:14:51	Klassisc
HW4Alarm al2	231 kB	25.12.2015 10:52:11	AI 2-Da

To the purpose of limiting the size of individual files, HW4 starts a new user event file at the beginning of each calendar year. Data from several years can still be reviewed on the screen and printed using the user events form.

To enable HW4 to keep track of user events, place a check mark in the box labeled **Enable Monitoring of user events** located in **HW4 global settings – Events tab**.

HW4 global settings form

View General Language/Unit system File locations Graph settings Alarm Settings **Events**

Events

Authentication stamp
Check when opening protocols (.TXT)

Enable monitoring of user events

[View user events](#)

A separate record with date and time is entered in the user event file for each event listed in the table below:

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 138 of 174

User Event File Text	Event
Start HW4 ID#	HW4 ID # started
User logon	A legitimate user has logged on correctly
Log function programmed	The log function of input # has been programmed
Protocol generated	Protocol # has been generated
Authentication stamp	Checksum of protocol #
Configuration written to device	New or existing configuration written to device #
Error during probe adjustment	The probe connected to input # could not be adjusted due to an error
Probe adjusted	The probe connected to input # was adjusted
Device adjusted to PC date and time	The date and time of device # was adjusted to the PC date and time
New user created	A new user was created
Old RS address	RS-485 address of device # prior to change
New RS address	RS-485 address of device # after the change
Language file uploaded to device	A new or existing internal language file was uploaded to device #
File deleted from PC	File # was deleted from the PC
File deleted from logger	File # was deleted from the logger memory card
User data / rights changed	User data or rights changed
Exit HW4	Exit HW4
Device deleted	Device # was deleted from the device tree
User deleted	User # was deleted
Log-to-PC started	Data recording to the PC started for input #
Log-to-PC stopped	Data recording to the PC stopped for input #
Log file path and name	Log file path and name
HW4 Global Settings saved	The HW4 Global Settings were either changed or written over
Logger data file saved to PC	Logger data file # was saved on the PC

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 139 of 174

User Event File Text	Event
Logger data file downloaded	Data file # was read from the logger
Logger configuration saved to PC	The logger configuration file # was saved to the PC
Logger configuration downloaded	The configuration of logger # has been read
Logger event file saved to PC	Logger event file # has been saved on the PC
Logger event file downloaded	The event file of logger # has been read
Authentication stamp of language file not valid	The HW4 language file is not a factory original
Unauthorized user tried to log on	An unauthorized used tried to log on
User could not log on (password error)	An invalid password was entered
User log off	The current user logged off

26.1.3 Logger events

The HygroLog NT maintains an internal event file with the extension EVT. No particular configuration is required to enable this feature.

Part of the procedure to ensure conformity to ERES regulatory requirements is to disable the MENU key on the HygroLog NT keypad. The MENU key is the only one that can be used to make changes to the logger. Therefore, the events recorded by the HygroLog NT are normally the result of an interaction with the HW4 software. When the MENU key is not disabled, a limited number of events are recorded in the logger event file and no entries are made in the logger event file header. The two tables below provide a list of the events tracked by the HygroLog NT.

The logger event file is split between the internal memory of the logger (up to 170 events) and the flash memory card (practically unlimited number of events). HW4 offers the possibility of downloading, opening and printing the entire file contents. All past logger events are available to HW4 as long as the flash memory card is not removed from the logger. The serial number of the logger is used as the file name.

Example: 1111111111.EVT

The logger event file consists of a file header and a file body. The file header provides the following information:

- Most recent programming of the log function: programming date and time, user and HW4 product ID
- Most recent device configuration: date and time, user and HW4 product ID
- Most recent adjustment to the PC date and time: date and time, user and HW4 product ID

An individual record with date and time is entered in the event file body for each event listed in the table below:

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 140 of 174

Logger Event File Text	Event (interaction with HW4)
Power up	The battery was inserted or the instrument powered down and up after an internal problem
Watchdog overflow	Internal instrument error (normally should not occur)
Writing device configuration	New or existing configuration written to logger
Memory card removed	While recording data, the logger could not find the memory card. The data was written to the EEPROM and are not yet lost
Memory card full	No free memory space on the memory card
New memory card inserted	The memory card was replaced while data was being logged. The data will be split between two different memory cards. Possibly, some data has been lost.
Humidity adjusted	Humidity adjustment of the probe connected to input #
Temperature adjusted	Temperature adjustment of the probe connected to input #
Logging started	Start recording data from input #
Logging stopped manually	Data recording of input # ended before the programmed stop time
Logging ended automatically	Data recording of input # ended at the programmed stop time
Out-of-limits value detected	An out-of-limits value was newly detected on input #
Battery almost empty	Battery voltage dropped below 6.5V
Battery empty	The battery is empty and the logger has powered itself off (keeping power up could result in erroneous data or loss of data)
Beginning accumulator charge	Starting to charge the rechargeable battery
Accumulator charge ended	Rechargeable battery full
MFG command	<i>Reserved for the factory</i>
Lost data, memory card not ready	While recording data, the logger could not find the memory card. The data could not be written to the EEPROM, and was lost
HygroClip probe connected ¹	A HygroClip probe was connected to input #
HygroClip probe disconnected ¹	A HygroClip probe was removed from input # or the input can no longer communicate with the probe
External power connected	The A/C adapter was connected and is being powered
External power removed or faulty	The A/C adapter was disconnected, or failed, or is not being powered
Device time changed / adjusted	Device date and time prior and after adjustment (up to firmware v1.1d only)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 141 of 174

Logger Event File Text	Event (interaction with HW4)
Prior device time	Device date and time prior to change (firmware v1.2a and up)
New device time	Device date and time after change (firmware v1.2a and up)
RS-485 address changed	The RS-485 address was changed
EEPROM erased	<i>Reserved for the factory</i>
Docking station disconnected ²	The docking station was disconnected or there is no longer any communication with it
Docking station connected ²	A docking station was connected and communication was established
Logger language file downloaded	A different internal language file was loaded or the same file was loaded again
Log function programmed	The log function has been programmed for input #
Event file deleted	<i>Reserved for the factory</i>

¹ connection / removal of analog probes is not recorded

² only when the docking station has internal electronics

Logger Event File Text	Event (triggered from the Keypad)
Humidity adjusted	Humidity adjustment of the probe connected to input #
Temperature adjusted	Temperature adjustment of the probe connected to input #
Logging started	Start recording data from input #
Logging stopped manually	Data recording of input # ended before the programmed stop time
Prior device time	Device date and time prior to change (firmware v1.2a and up)
New device time	Device date and time after change (firmware v1.2a and up)
Log function programmed	The log function has been programmed for input #

26.2 Alarm Records and Alarm Archive Files

HW4 Professional maintains a protected binary file consisting of both current and historical alarm records (extension AL2). Altering the contents of this file will cause any line that has been modified to appear on a red background when the file is opened with HW4.

The name of the alarm records file is **HW4Alarm.al2**

By default this file is located in the folder **ROTRONIC_HW4\EVENT** (see [Location of the HW4 User Folder](#)).

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 142 of 174

HW4 automatically creates alarm archive files to the purpose of limiting the size of the alarm records file. Alarm records are moved to an archive based on the record age (a user defined setting).

Alarm archive files use the following naming convention: **HW4Alarm_YYYYMMDD.al2**

where YYYYMMDD is the time stamp of the first alarm record present in the file

By default alarm archive files are located in the folder **ROTRONIC_HW4EVENT** (see [Location of the HW4 User Folder](#)).

Backward compatibility with previous versions of HW4:

When HW4 version 3.0.0 is started for the first time, any text file with the name HW4_Alarm.alr (legacy) that is found in the EVT folder is automatically converted to the new binary format (.al2). Alarm records that are older than 3 months are moved to an alarm archive file. Old alarm records files cannot be manually converted. These files can be opened and viewed in the Alarm table in the same way as newer alarm record files.

26.3 Protocols

Protocols are text files (extension .txt or .doc) that can be generated, opened and printed from within HW4. By default, protocols are located in the directory **C:\Documents and Settings\your Windows login name\Application Data\ROTRONIC_HW4DOC**

Protocols are enabled by placing a check mark either in the box labeled “**Enable Protocols**” or in the box “**Display Protocols**” both located in **HW4 Global Settings – Events tab**. When protocols are enabled, HW4 automatically creates the following types of file:

- **HW4 configuration protocol:** a file is created whenever the HW4 Global Settings are changed.
- **Instrument configuration protocol:** a file is created whenever the Device Manager function of HW4 is used to configure a device / instrument
- **Log function programming protocol:** a file is created whenever the Data Logging function of HW4 is used to program a data logger

Note: HW4 does not create a protocol when data is being logged directly to the PC. However, a record is entered in the user event file whenever log-to-PC is started or stopped. This record includes the date, time, location and name of the log file.

- **Probe adjustment protocol:** a file is created whenever the Probe Adjustment function of HW4 is used to adjust a probe connected to an instrument

In addition to a detailed description of each event, protocol files include the following information:

- Date and time
- HW4 current user
- HW4 version and ID number (product key)

To prevent tampering, HW4 Professional adds an authentication stamp at the end of each protocol. To have HW4 automatically validate the authentication stamp whenever a protocol file is opened from within HW4, place a check mark in the box labeled “**Authentication stamp**” box located in **HW4 Global Settings – Events tab**. When the tracking of user events is enabled:

- Whether protocols are enabled or not, HW4 enters a record of the event in the user event file.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 143 of 174

- When protocols are enabled, HW4 enters an additional record in the user event file for cross-reference purposes. This record includes the location and name of the corresponding protocol file. Similarly, the protocol text file includes a reference to the user event file (location and file name).

26.3.1 Protocol file names

o HW4 configuration protocols

The file name for this type of protocol consists of the text HW4_Extras, followed by a sequential number generated by HW4. Example of an HW4 configuration protocol file name: HW4_Extras_0.txt.

```

HW4 CONFIGURATION PROTOCOL
-----
Configuration Date and Time
Date: Samstag, 2. Januar 2016
Time:16:18:19
-----
General
Enable Device Polling: on
Online buffer time interval: 00:00:15
Polling interval: 00:00:05
Enable system monitoring: on
Force password change after 30 Days: off
Enter password again after 30 minutes: off
Automatic synchronization with PC clock: off
Auto-start mode: off
-----
Language/Unit system
Language Selection: English
-----
File locations
Logger data files: c:\users\user\appdata\roaming\rotronic_hw4\data
Log to PC files: c:\users\user\appdata\roaming\rotronic_hw4\data_online
Device configuration files: c:\users\user\appdata\roaming\rotronic_hw4
Protocols: c:\users\user\appdata\roaming\rotronic_hw4\doc
Device event files: c:\users\user\appdata\roaming\rotronic_hw4\event
Alarm Records: c:\users\user\appdata\roaming\rotronic_hw4\event
HW4 event files: c:\users\user\appdata\roaming\rotronic_hw4\event
User event files: c:\users\user\appdata\roaming\rotronic_hw4\event
-----
Alarm Settings
Global alarm settings
Archive alarm records after [Months]: 3
Archive file size limit: 10000
Run control timeout [min]: 15
Test alarm interval [Hours]: 24
*Wireless battery alarm limit: 15
-----
E-Mail settings: SMTP

```

Instrument configuration protocols

The file name for this type of protocol consists of the serial number of the instrument followed by the letters CNF and a sequential number generated by HW4. Example of a configuration protocol file name: 0020009709_CNF_2.txt

```

DEVICE CONFIGURATION PROTOCOL
-----
Configuration Date and Time
Date: Dienstag, 1. Dezember 2015
Time: 10:46:21
-----
Device Information
Device Type : HL-20
Firmware Version : V3.1-1
Serial Number : 0020009709
RPC : 2-250781908
Device Protection : Off
-----
Settings
Device Name : HL20
Humidity : %rh
Temperature : °C
Calculation : Dew Point (Dp)
Generate fixed humidity value : Off
Fixed humidity value : 35
Generate fixed temperature value : Off
Fixed temperature value : 23
-----
Alarm
Humidity Lo-Alarm : 40
Humidity Hi-Alarm : 50
Humidity Hysteresis : 0,5
Temperature Lo-Alarm : 20
Temperature Hi-Alarm : 26
Temperature Hysteresis : 0,5
Calculation Lo-Alarm : Off
Calculation Hi-Alarm : Off
Calculation Hysteresis : Off
-----
Display
Display : Humidity / Temperature
2 decimals : Off
Backlight operation : On Key Press

```

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 144 of 174

o **Log function programming protocols**

The file name for this type of protocol consists of the serial number of the instrument followed by the letters PROG and a sequential number generated by HW4. Example of a log function programming protocol file name: 1111111111_PROG_0.txt

o **Probe adjustment protocols**

The file name for this type of protocol in the pdf-format consists of the serial number of the instrument followed by the letters ADJ and a sequential number generated by HW4. Example of a probe adjustment protocol file name: 814120380_ADJ_2.pdf

Calibration Protocol

Calibration protocol

Date: Samstag, 28. November 2015
Time: 22:11:03

Device info
Version: V1.0-0
Serial number: 814120380
Description: Rotronic
Device protection: Off

Calibrate temperature
Reference 1
Reference value: 25,00
Measured: 24,88
Reference 2
Reference value: 50,00
Measured: 50,50
Reference 3
Reference value: 60,00
Measured: 60,64

User: No user logged on
Description:

HW4 version: V3.7.0.15327
HW4 ID: 01 33818108

User events file:
c:\users\user\appdata\roaming\rotronic_hw4\event\HW4USER_2015.evt

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 145 of 174

26.4 Cross referencing protocols and event files

By cross referencing the date and time of log files – or the date, time and authentication stamp of the event files and protocols, it is possible to keep track of events and to identify which user was logged in HW4 at the time of the event.

Example: cross referencing a probe adjustment protocol with the user event file

a) Open the probe adjustment protocol:

The following information is located at the end of the probe adjustment protocol:

- User information
- HW4 information
- User event file: path and name
- Authentication stamp

Calibration Protocol

Calibration protocol

Date: Samstag, 28. November 2015
Time: 22:11:03

Device info
Version: V1.0-0
Serial number: 814120380
Description: Rotronic
Device protection: Off

Calibrate temperature
Reference 1
Reference value: 25,00
Measured: 24,88
Reference 2
Reference value: 50,00
Measured: 50,50
Reference 3
Reference value: 60,00
Measured: 60,64

User: No user logged on
Description:

HW4 version: V3.7.0.15327
HW4 ID: 01 33818108

User events file:
c:\users\user\appdata\roaming\rotronic_hw4\event\HW4USER_2015.evt

b) Open the user event file referenced in the probe adjustment protocol:

Date	Time	Event	Description
11/24/2006	20:37:55	Start HW4 ID#	12 00000002 V2.0.0.31736
11/24/2006	20:38:00	User Log on	A. Smith
11/24/2006	20:38:00	Authentication Stamp of language file not valid	C:\Program Files\HW4\language\English.txt
11/24/2006	20:38:50	Error during probe adjustment	HygroLogNT 0033414009
11/24/2006	20:38:50	Protocol generated	C:\ROTRONIC_HW4\DOC\0033414009_ADJ_0.txt
11/24/2006	20:38:50	Authentication Stamp of protocol	528EB2D1
11/24/2006	20:39:15	Error during probe adjustment	HygroLogNT 0033414009
11/24/2006	20:39:15	Protocol generated	C:\ROTRONIC_HW4\DOC\0033414009_ADJ_1.txt
11/24/2006	20:39:15	Authentication Stamp of protocol	C1BB0E27
11/24/2006	20:39:55	Probe adjusted	HygroClip DI 0019236002
11/24/2006	20:39:55	Protocol generated	C:\ROTRONIC_HW4\DOC\0019236002_ADJ_0.txt
11/24/2006	20:39:55	Authentication Stamp of protocol	763BA3AF

Look for the event "Probe adjusted" (in this example, line 10 of the user event file). Since there could be several such events, make use of the date and time of the probe adjustment protocol to find the correct event. Compare the following information with the information located at the end of the probe adjustment protocol: user name, description and group

Lines 10 and 11 of the user event file report that a probe connected to the HygroClip DI S/N 0019236002 was adjusted and that a protocol was generated. The date and time should match the date and time of the probe adjustment protocol. The authentication stamp on line 12 of the user event file should match the authentication stamp of the probe adjustment protocol.

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 146 of 174

27 FILE PROTECTION

The data and record keeping files generated by HW4 are of two types: binary files and text files. Binary files use the file extension LOG or AL2 while text files use the file extensions: TXT, XLS, EVT and ERR.

27.1 Authentication stamp

HW4 makes use of one or more authentication stamps to verify that a file has not been altered. With the exception of files with the XLS and ERR file extensions all data and record keeping files generated by HW4 are stamped. HW4 will display an error message when opening a stamped file that has been altered.

- **Binary Files (LOG):** Both the header and data sections are protected by an authentication stamp against alterations.
- **Binary Files (AL2):** The file extension AL2 is used for the files holding the HW4 alarm records captured by HW4. This type of file can only be read with HW4.
- **Text Files (TXT):** The file extension TXT is used for all protocols generated by HW4. These files are protected by a single authentication stamp.
- **Text Files (EVT):** The file extension EVT is used for all event files (user and device events). Each individual file entry is protected by an authentication stamp.

27.2 Overview

File extension	Usage	Protected
LOG	Log files (recommended format)	YES
XLS	Log files (alternate format)	NO
ERR	Service files used for trouble shooting	NO
TXT	Protocols	YES
EVT	User and device events	YES
AL2	Alarm records	YES

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 147 of 174

28 RELOCATING THE HW4 USER FOLDER

If for any reason the default path of the HW4 user folder (**ROTRONIC_HW4**) is not suitable, HW4 can be configured to use a different path.

Example: you may want to relocate the folder **ROTRONIC_HW4** to a file server for the purpose of sharing data between several workstations. The server drive where ROTRONIC_HW4 is located should be mapped to all workstations that will use HW4 and sufficient permissions to the ROTRONIC_HW4 folder and subfolders must be given by the server administrator to the different workstation users.

28.1 General guidelines

WARNING:

Prior to relocating the HW4 User Folder:

- Be sure to have a record of your HW4 ID Number. When HW4 is running, this information can be found by clicking on Help – About ROTRONIC HW4 in the HW4 main menu bar. Relocating the HW4 User Folder will require re-entering your HW4 ID Number.
- Be sure to copy the HW4 User Folder to the new location. If you do not copy the HW4 User Folder to the new location, you will have to re-enter all HW4 users, the HW4 Global Settings and you will also have to make a new search for the devices connected to the PC.

During the initial startup, HW4 automatically creates by default a user folder named **ROTRONIC_HW4**

Depending on the operating system, the location of this folder is as follows:

- **Windows XP:** C:\Documents and Settings\Windows User\Application Data
- **Vista and Windows 7:** C:\Users\Windows User\AppData\Roaming
- **Windows 8.1 and Windows 10:**
C:\Users\Windows User\AppData\Roaming\ROTRONIC_HW4

Windows User is the name that was used to log into Windows prior to installing HW4.

HW4 also creates the folders DATA, DATA_ONLINE, SYS, DOC and EVENT within the ROTONIC_HW4 folder.

The ROTRONIC_HW4 folder holds the HW4 configuration data. The subfolders DATA, DATA_ONLINE, SYS, DOC and EVENT hold the log files (measurement data), protocols, event files and alarm records.

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<p style="text-align: center;">Instruction Manual</p> <p style="text-align: right;">Document Type</p> <hr/> <p style="text-align: right;">Page 148 of 174</p>

Example:

The following screen can be accessed from the HW4 main menu bar after clicking on Settings and Tools > HW4 Global Settings > File Locations. The screen shows the default file locations after the initial HW4 startup:

The screenshot shows a window titled "HW4 global settings form" with a close button (X) in the top right corner. The window has a tabbed interface with the following tabs: View, General, Language/Unit system, File locations (selected), Graph settings, Alarm Settings, and Events. The "File locations" tab is active and displays the following settings:

- Measurement data**
 - Logger data files: c:\users\user\appdata\roaming\vrotronic_hw4\data
 - Log to PC files: c:\users\user\appdata\roaming\vrotronic_hw4\data_online
- Configuration data**
 - User folder path: c:\users\user\appdata\roaming\vrotronic_hw4
 - Device configuration files: c:\users\user\appdata\roaming\vrotronic_hw4\sys
 - HW4 Workstation Synchronization: [Synchronisation is not enabled]
- Protocols and events**
 - Protocols: c:\users\user\appdata\roaming\vrotronic_hw4\doc
 - Device event files: c:\users\user\appdata\roaming\vrotronic_hw4\event
 - Alarm Records: c:\users\user\appdata\roaming\vrotronic_hw4\event
 - HW4 event files: c:\users\user\appdata\roaming\vrotronic_hw4\event
 - User event files: c:\users\user\appdata\roaming\vrotronic_hw4\event

At the bottom of the window, there are three buttons: OK, Cancel, and Help.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 149 of 174

28.2 Procedure

IMPORTANT:

- Do not change the name of the HW4 user folder. This name must always be ROTRONIC_HW4.
- You can change freely the name of any of the ROTRONIC_HW4 subfolders
- The ROTRONIC_HW4 subfolders can be freely relocated and do not have to be within the ROTRONIC_HW4 folder

• Step 1

Close HW4. Open My Computer. Select C: > Documents and Settings > *Windows User* > Application Data. Open the Application Data folder.

Windows User is the Windows user account that was logged in at the time HW4 was first started.

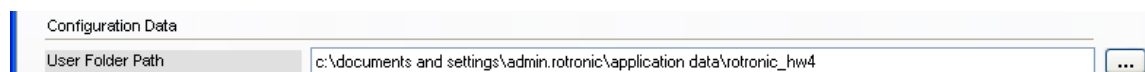
Select the folder named ROTRONIC_HW4. Assuming that the desired location for the HW4 User Folder is C:\HW4_DATA, copy ROTRONIC_HW4 from its current location to C:\HW4_DATA.

Do not rename the folder.

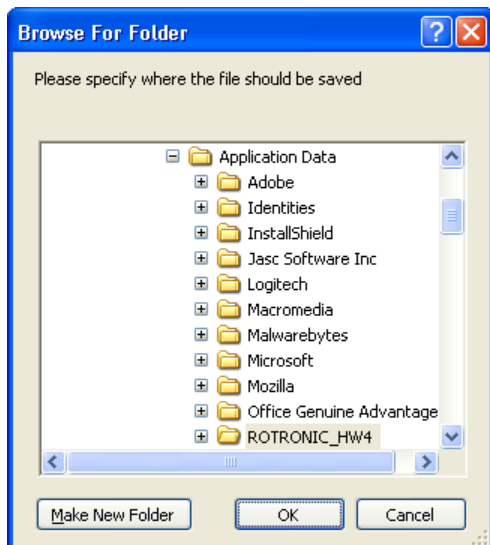
Note: you may have to change the Windows permissions to the folder and subfolder (Security Tab in folder properties).

• Step 2

Start HW4. In the HW4 main menu bar select Settings and Tools > HW4 Global Settings > File locations. Point the HW4 User Folder to C:\HW4_DATA:

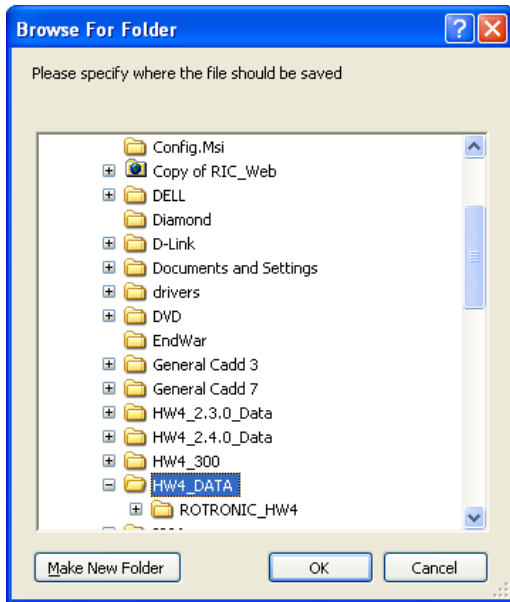


Click on the button to the right of the User Folder Path field. HW4 opens the following box:

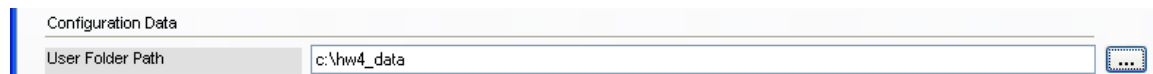


E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 150 of 174

Make the selection pointing HW4 to the desired location of the HW4 User Folder (in this example the folder HW4_DATA in the root directory of drive C)



Click on the OK button.



Click on the OK button at the bottom right corner of the File Locations tab

- **Step 3**

Close and start HW4 again.

In the HW4 main menu bar select Settings and Tools > HW4 Global Settings > File locations. Change the path of the different subfolders used to hold data, configuration, protocol and event files.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 151 of 174

HW4 Global Settings Form

View | General | Language/Unit System | **File Locations** | Graph Settings | Alarm Settings | Events | AwQuick Mode

Measurement Data

Logger Data Files: c:\hw4_data\rotronic_hw4\data ...

Log to PC Files: c:\hw4_data\rotronic_hw4\data_online ...

Configuration Data

User Folder Path: c:\hw4_data\rotronic_hw4 ...

Device Configuration Files: c:\hw4_data\rotronic_hw4\sys ...

HW4 Workstation Synchronization: [Synchronisation is not enabled] ...

Protocols and Events

Protocols: c:\hw4_data\rotronic_hw4\doc ...

Device Event Files: c:\hw4_data\rotronic_hw4\event ...

Alarm Records: c:\hw4_data\rotronic_hw4\event ...

HW4 Event Files: c:\hw4_data\rotronic_hw4\event ...

User Event Files: c:\hw4_data\rotronic_hw4\event ...

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 152 of 174

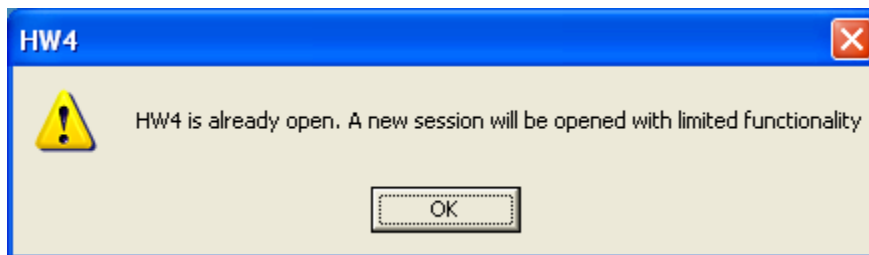
29 CONCURRENT HW4 SESSIONS ON DIFFERENT WORKSTATIONS

HW4 can be installed on a number of workstations connected to a file server and the HW4 User Folder (ROTRONIC_HW4) can be relocated to a file server drive that is mapped to all workstations. The purpose of doing this is to be able to use the same data, protocols, events and alarms on all workstations.

IMPORTANT: Installing the HW4 software on the file server is not recommended and may not work.

LIMITATIONS: Running concurrent sessions of HW4, each on a different workstation is subject to the following limitations.

- The HW4 user who opens the first session (or Master session) can use HW4 with all the rights given to that user by the HW4 administrator.
- When an additional session starts on one of the other workstations, HW4 issues the following warning:



After clicking on the OK button, HW4 starts the new session. The user of this session has only minimum rights (essentially limited to viewing the measurement data), regardless of the rights given to this user by the HW4 administrator. This limitation remains in effect until the end of the session, even when the original Master session has been ended.

- The new session is not tracked by the HW4 user event file (user login, etc.).
- The Master session is the only one to write to the HW4.ini file (HW4 main screen configuration, etc.). In the main, this happens only at the time when this session is closed
- When running concurrent sessions of HW4, the live memory of each workstation holds the information that was in the HW4.ini file at the time the workstation opened the HW4 session. No complete update of this file takes place during a session. This means that workstations that are running the additional HW4 sessions are essentially limited to viewing measurement data and that they do not necessarily have current information regarding any of the changes made by the Master first session or any activity of that session.
- The HW4 edition is automatically the same as the edition used to open the Master session.
- Both the online buffer and online graph are local to each workstation and can be locally cleared without affecting the other workstations.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 153 of 174

- The only devices that can be seen simultaneously by several workstations are devices connected either directly to the LAN (Ethernet) or indirectly connected to the LAN by means of a RS-485 multi-drop. Connections via Internet are similar to a LAN connection. To avoid conflicts when devices are being polled by several workstations follow the procedure described in this manual under **Polling Synchronization**
- Without polling synchronization, conflicts may result when the same device is simultaneously polled by several workstations. Using a longer polling interval may make such conflicts less frequent. When there is a conflict, a device icon may temporarily appear in the device tree with a red cross over it. This does not necessarily mean that communication with the device was lost and it may simply show that the device is busy. For example, a HygroLog NT that is in the process of uploading a log file to the server is likely to appear busy to a number of workstations. False alarms may be avoided by using an appropriate time delay for the alarm type "no communication with device".

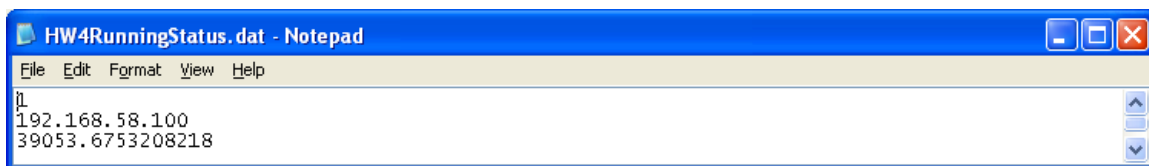
CONFIGURATION: After installing HW4 on the different workstations, each workstation can be configured to make HW4 use a common HW4 User Folder (ROTRONIC_HW4) that is located on a drive of the file server that is mapped to all workstations.

See [Relocating the HW4 User Folder](#)

It is important to distinguish between a Windows user and a HW4 user. Do not confuse HW4 rights with the permissions to a Windows folder. The administrator of the Windows 2003 server should grant sufficient permissions to the HW4 user folder and subfolders (Folder Properties – Security tab) so that all workstations have access to the same files.

NOTE: The file HW4RunningStatus.dat is located in the HW4 User Folder (ROTRONIC_HW4). This file holds the IP address of the workstation that is (or was) running the Master session. This information may be used to identify the location of this workstation.

HW4RunningStatus.dat can be opened with Notepad:



The first line is either a 1 or a 0 (1 means the Master session is still open / 0 means that a new Master session can be started).

29.1 Polling synchronization

To avoid conflicts when one or several devices connected to a LAN are simultaneously polled by several workstations, proceed as follows for each HW4 workstation:

- **Step 1:** Select a server drive that is mapped to all workstations and create a folder (for example HW4_300_Sync). Be sure to give each workstation sufficient permissions to this folder (except for Full Control, give all Windows permissions to each user).
- **Step 2:** In the HW4 main menu bar select Settings and Tools > HW4 Global Settings > File locations.

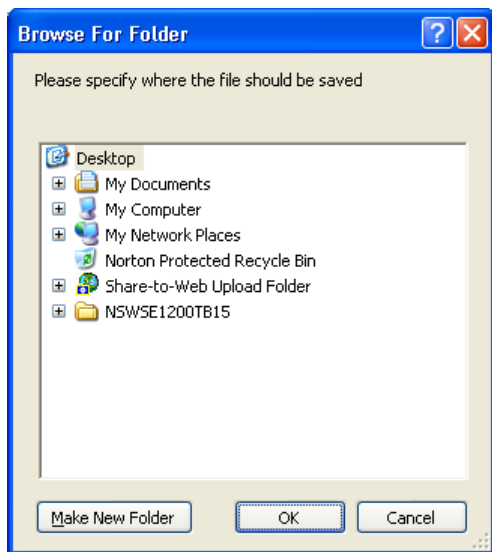
E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 154 of 174

The screenshot shows the 'HW4 Global Settings Form' with the 'File Locations' tab selected. The form is organized into several sections:

- Measurement Data:**
 - Logger Data Files: c:\hw4_data\rotronic_hw4\data
 - Log to PC Files: c:\hw4_data\rotronic_hw4\data_online
- Configuration Data:**
 - User Folder Path: c:\hw4_data\rotronic_hw4
 - Device Configuration Files: c:\hw4_data\rotronic_hw4\sys
 - HW4 Workstation Synchronization: [Synchronisation is not enabled]
- Protocols and Events:**
 - Protocols: c:\hw4_data\rotronic_hw4\doc
 - Device Event Files: c:\hw4_data\rotronic_hw4\event
 - Alarm Records: c:\hw4_data\rotronic_hw4\event
 - HW4 Event Files: c:\hw4_data\rotronic_hw4\event
 - User Event Files: c:\hw4_data\rotronic_hw4\event

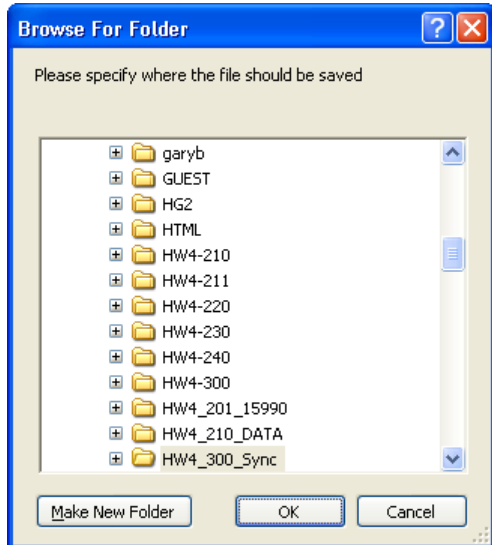
Each field has a text input box and a button with three dots (the browse button) to its right.

Click on the button to the right of the HW4 Workstation Synchronization Folder Path field. HW4 opens the following box:



Make the selection pointing HW4 to the synchronization folder on the file server (in this example the folder HW4_300_Sync in the root directory of mapped server drive J:)

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 155 of 174



Click on the OK button and save the new HW4 file locations.



- Close and restart HW4. Upon startup HW4 will create two files in the synchronization folder (in this example J:\HW4_300_Sync):

HW4_Synch_Close.txt
HW4_Synch_Open.txt

These files are used by HW4 to synchronize the polling of devices common to the different HW4 workstations so as to prevent conflicts resulting from the simultaneous polling of the same device by two or more workstations.

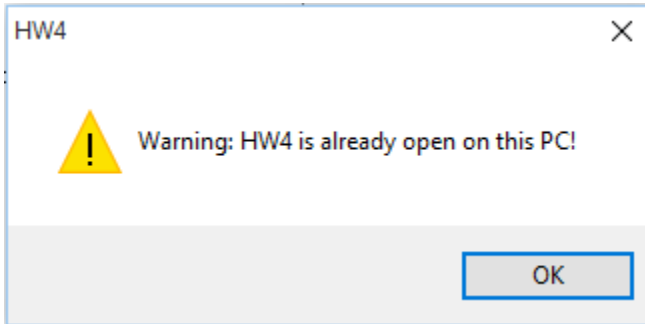
IMPORTANT: The polling interval (Main Menu Bar > Settings and Tools > HW4 Global Settings > General Tab) must be set to a value that allows the different workstations to poll all of the devices present in the device tree. For example, if each workstation requires about 6 seconds for polling the devices and there are 4 workstations, set the polling interval to at least 25 to 30 seconds.

E-M-HW4v3-Main_20 <small>Document code</small>	Rotronic AG Bassersdorf, Switzerland <small>Unit</small>
General instructions and common functions <small>Document title</small>	<p style="text-align: right;">Instruction Manual</p> <p style="text-align: right;"><small>Document Type</small></p> <hr/> <p style="text-align: right;">Page 156 of 174</p>

30 MULTIPLE HW4 SESSIONS ON THE SAME PC

We do not recommend running simultaneously multiple sessions of HW4 on the same PC or workstation. Doing so may give unpredictable results.

Nevertheless, if you so desire, HW4 will let you open more than one session on a PC or workstation and will issue the following warning:

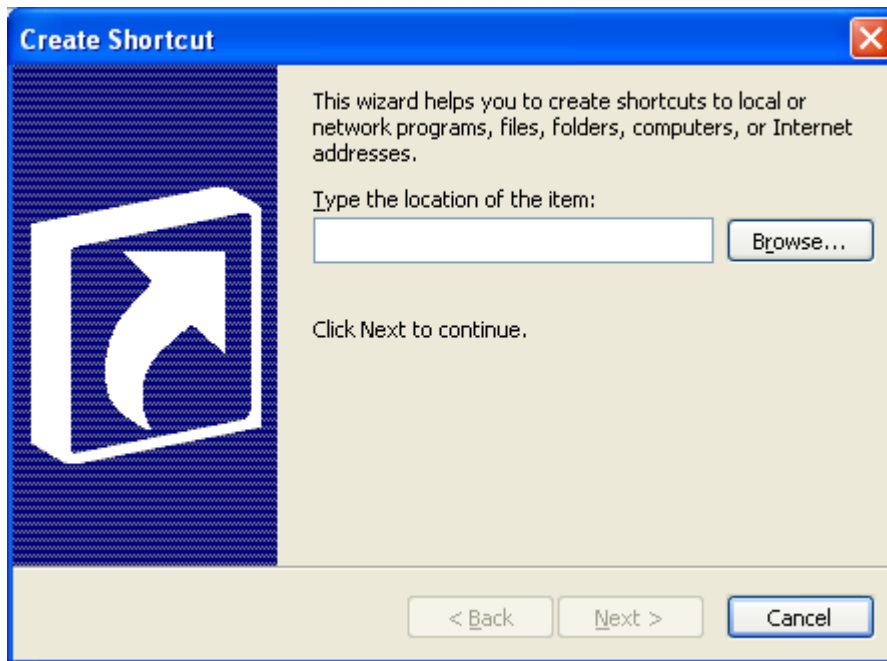


E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 157 of 174

31 STARTING HW4 AUTOMATICALLY with Windows

HW4 can be started automatically by Windows, for example after re-starting the PC. To do this a few steps are required.

- Configure Windows so that it can be started without requiring any keystroke or mouse click.
- During the initial start-up HW4 creates the HW4 User Folder in C:\Documents and Settings\Windows User\Application Data\ROTRONIC_HW4. Relocate this folder so that it can be accessed by all Windows users .See: [Relocating the HW4 User Folder](#)
- In the HW4 main menu bar, select Settings and Tools > HW4 Global Settings > General. Use the mouse to place a check mark in the box labeled “Auto-Start Mode”. See [General Tab](#)
- In Windows, right click on Start and select Explore all Users.
- Select Documents and Settings > All Users > Start Menu > Programs. In Programs, open the folder Startup. Right click with the mouse on a blank spot within the folder view and select New > Shortcut.
- This opens the create shortcut wizard:



- Use the Browse button to locate HW4.exe in C:\Program Files\HW4.

Click on the OK button to save the changes. Because the shortcut is in the Startup folder in All Users, HW4 will start automatically each time that Windows starts up.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 158 of 174

32 BASIC ETHERNET CONCEPTS

32.1 Compatibility requirements

In order to use a device / docking station on a LAN, the device (also called a host) must be configured so as to be compatible with the LAN.

- **IP address** (Network ID and Host ID)

An IP address consists of 4 numbers (1 to 3 digits each) separated with dots. On any network, each IP address should be unique.

IP addresses are classified as follows:

Class A: **1.x.x.x** to **127.x.x.x**
Class B: **128.0.x.x** to **191.255.x.x**
Class C: **192.0.0.x** to **223.255.255.x**

In the above, x is a number between 0 and 255.

Within an IP address, the network ID is defined depending on the class of the IP address and is indicated above in bold. The remainder of the address is the host ID.

Typically a local area network (LAN) uses class C IP addresses. In a class C address, the first 3 numbers define the network ID and therefore, the maximum number of devices on the network is limited to 254 (host IDs of all zeros or all ones are not allowed).

In order for two devices in a network to communicate together, their IP address must contain the same network ID.

- **Gateway Address**

The gateway address used by the host should be the LAN IP address of the router used to interface with other networks (e.g. Internet) or sub-networks. When there is no router, you may try any unused IP address on the network.

- **Subnet Mask**

The subnet mask is used to differentiate the network ID portion of an IP address from the host ID.

Class A: **255.0.0.0**
Class B: **255.255.0.0**
Class C: **255.255.255.0**

Note: if more network ID's are required, the last number of the subnet mask can be used but this reduces the maximum number of hosts available for each network ID.

In order for two devices in the same network to communicate together, their subnet mask must be the same.

- **TCP port**

TCP ports are used to specify how requests are sent to a device and how a device listens to requests. **HW4 makes exclusive use of port 2101 to communicate with devices on the LAN.** If using a ROTRONIC Ethernet docking station, this port number is already configured and should not be changed.

E-M-HW4v3-Main_20 <small>Document code</small>	Rotronic AG Bassersdorf, Switzerland <small>Unit</small>
General instructions and common functions <small>Document title</small>	Instruction Manual <small>Document Type</small>
	Page 159 of 174

32.2 DHCP

A TCP device / docking station may be configured to enable DHCP (Dynamic Host Configuration Protocol). This makes sense only if a DHCP server such as a router is present on the network.

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.

32.3 MAC Address

Each individual Ethernet device is given by its manufacturer a unique MAC address that cannot be changed by the user. In a way the MAC address is akin to a social security number.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 160 of 174

33 CHANGING THE BAUD RATE OF AN ETHERNET DEVICE

The Baud rate of the internal module of a ROTRONIC device with Ethernet (TCP/IP) interface may have to be changed prior to using the device as the master in a RS-485 multi-drop network.

Changing the baud rate of an Ethernet device is a two step process:

- (1) Change the baud rate in HW4 > Device Manager > Digital Interface
- (2) Change the baud rate using the Web Interface of the internal Digi International module: Configuration > Serial Port > Basic Serial Settings

The Web Server of the Digi International module can be accessed either directly from Internet Explorer (type in the IP address of the module and click on Go) or from the HW4 main menu bar > Settings and Tools > Ethernet Configuration Tool (Digi Device Discovery). When Digi Device Discovery is open, right click on the device with the mouse and select **“Open web interface”**.

In the case of a device with a wired connection, no user name or password are required to open the web server. By contrast, a device with a wireless connection (WI-ME) requires a user name and password. The ROTRONIC factory defaults are as follows:

- User name : **160otronic**
- Password : **wlan**

Note: if for any reason, you had to reset the WI-ME module to the original Digi International manufacturer defaults, the user name reverts to **root** and the password **dbps**.

The home page of the Digi module web server is as follows:

The screenshot shows the home page of the Digi module web server. On the left is a navigation sidebar with categories: Home, Configuration (Network, Serial Port, GPIO, Alarms, Security, System), Management (Serial Ports, Connections), Administration (File Management, Backup/Restore, Update Firmware, Factory Default Settings, System Information, Reboot), and Logout. The main content area has a dark blue header 'Home' and several sections: 'Getting Started', 'Tutorial' (with text: 'Not sure what to do next? This Tutorial can help.'), 'System Summary' (displaying: Model: Digi Connect ME, IP Address: 192.168.57.152, MAC Address: 00:40:9D:24:60:3D, Description: JPL Test1, Contact: JPL Test 1, Location: JPL Test 1), and 'User Interfaces' (showing 'Web Interface (Default)' and a 'Custom Interface' section with 'Launch' and 'Set as Default' buttons).

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 161 of 174

The left hand side of the web server home page displays a menu. Left click with the mouse on Serial Port to gain access to the Serial Port Configuration page:

Serial Port Configuration - HygroLog NT

▼ Port Profile Settings

Current Port Profile: **TCP Sockets** [Change Profile...](#)
The TCP Sockets Profile allows a serial device to communicate over a TCP r

TCP Server Settings

Connect directly to the serial device using the following TCP ports on the n

Enable Telnet access using TCP Port:

Enable Raw TCP access using TCP Port:

Enable Secure Socket access using TCP Port:

TCP Client Settings

Automatically establish bi-directional TCP connections between the serial d

Automatically establish TCP connections

Establish connection under one of the following conditions:

- Always connect and maintain connection
- Connect when data is present on the serial line
Match string:
- Strip string before sending
- Connect when DCD (Data Carrier Detect) line goes high
- Connect when DSR (Data Set Ready) line goes high

Establish connection to the following network service:

IP Address:

Service: ▼

TCP Port:

Apply

▶ Basic Serial Settings

▶ Advanced Serial Settings

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 162 of 174

Click with the mouse on Basic Serial Settings.



Digi Connect ME Configuration and Managemen

Home

Configuration

Network

Serial Port

GPIO

Alarms

Security

System

Management

Serial Ports

Connections

Administration

File Management

Backup/Restore

Update Firmware

Factory Default Settings

System Information

Reboot

Serial Port Configuration - HygroLog NT

▶ Port Profile Settings

▼ Basic Serial Settings

Description:

Baud Rate:

Data Bits:

Parity:

Stop Bits:

Flow Control:

▶ Advanced Serial Settings

Set the baud rate to match the value entered in Device Manager > Interface.

Warning: exercise caution when using the device web server:

- Be sure to use settings that are compatible with your LAN.
- The menu item "Serial Port" on the home page allows the configuration of the TCP ports used by the device. No configuration should be required. Whatever you do, "Enable raw TCP access using TCP port" should always be checked and the port number should always be 2101.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 163 of 174

34 WATER ACTIVITY MEASUREMENT WITH HW4

34.1 *Applicability*

Water activity measurement is available only with the following version of HW4: HW4 Professional with AwQuick.

34.2 *Water Activity: definition and applications*

34.2.1 Definitions

The moisture content of a product can be defined as the percentage weight of water in relation to the dry weight of the product.

Products in which moisture can be present can be classified in two categories: hygroscopic and non hygroscopic. Examples of hygroscopic materials are salts, vegetal fibers, most metal oxides, many polymers, etc. Examples of non hygroscopic products are metal powders, glass granules, etc.

Regarding the moisture content of a product, we define static equilibrium as a set of conditions under which the product does not exchange any moisture with its environment. Under conditions of static equilibrium, the moisture content of a hygroscopic product depends on the nature of the product and also on the two following factors:

- (a) the partial pressure of water vapor in the immediate environment of the product
- (b) the temperature of the product

If the moisture content of a product is not dependent on both these factors, the product is not hygroscopic.

Hygroscopic products may absorb water in different ways: sorption with formation of a hydrate, binding by surface energy, diffusion of water molecules in the material structure, capillary condensation, formation of a solution, etc. Depending on the absorption process, water is bound to the product with more or less strength. Moisture content can include both an immobilized part (e.g. water of hydration) and an active part.

Water activity A_w (or equilibrium relative humidity %ERH) measures the vapor pressure generated by the moisture present in a hygroscopic product.

$A_w = p / p_s$ and $\%ERH = 100 \times A_w$, where:

- p : partial pressure of water vapor at the surface of the product
- p_s : saturation pressure, or the partial pressure of water vapor above pure water at the product temperature

Water activity reflects the active part of moisture content or the part which, under normal circumstances, can be exchanged between the product and its environment.

Water activity is usually defined under static conditions of equilibrium. Under such conditions, the partial pressure of water vapor (p) at the surface of the product is equal to the partial pressure of water vapor in the immediate environment of the product. Any exchange of moisture between the product and its environment is driven by a difference between these two partial pressures.

Finally, water vapor can also be present in a gas or gas mixture. The relative humidity of a gas is defined as $\%RH = 100 \times p/p_s$, where (p) is the partial pressure of the water vapor present in the gas mixture and (p_s) is the saturation pressure, or the partial pressure of water vapor above pure water at the temperature of the gas.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 164 of 174

34.2.2 Aw and Temperature

Both water activity (materials) and relative humidity (gases) are referred to the saturation pressure (ps) or partial pressure of water vapor above pure water:

$$Aw = p / ps$$

$$\%RH = 100 \times p/ps$$

The saturation pressure (ps) is strongly dependent on temperature. At normal room temperature, (ps) increases by about 6.2% for a 1°C increase in temperature. In an open environment that is not saturated with water vapor, the partial pressure of water vapor (p) does not change with temperature. In a closed environment, (p) changes proportionally to the °K temperature (°K temperature = °C temperature + 273.16). At normal room temperature, the change in (p) caused by a small change in the °C temperature is practically negligible. Because (p) does not change with temperature while (ps) does, the relative humidity of a gas (%RH = 100 x p/ps) is strongly temperature dependent. At 95 %RH and room temperature, an increase of 1°C results in a relative humidity decrease of about 6 %RH. At 50%RH, the same temperature increase causes relative humidity to decrease by about 3 %RH.

The water activity of most hygroscopic products is not as strongly dependent on temperature. At room conditions, research data typically shows that water activity varies only by roughly 0.0005 to 0.005 Aw (0.05 to 0.5 %RH) when temperature changes by 1°C.

This is explained by the fact that the partial pressure (p) at the surface of a hygroscopic product does vary with temperature. Above most hygroscopic products, the magnitude of the change in the partial pressure of water vapor (p) with temperature is similar (but not exactly equal) to the magnitude of the change of the saturation pressure (ps) above pure water.

In summary, a change in temperature causes the partial pressure of water vapor above a hygroscopic product to change. At the same time, the partial pressure in the air above the product is practically unchanged. It follows that any change in the temperature of a hygroscopic product automatically causes the product to exchange moisture with the air (or gas) that surrounds it. Moisture is exchanged until the partial water vapor pressure at the surface of the product and in the air is equal. When measuring water activity, it is essential to keep temperature as constant as possible.

34.2.3 Applications

The active part of moisture content and, therefore, water activity, provide better information than the total moisture content regarding the micro-biological, chemical and enzymatic stability of perishable products such as foods and seeds. For similar reasons, water activity is equally relevant in the pharmaceutical industry where it provides useful information regarding the cohesion of tablets and pills, or the adherence of coatings. Water activity can be directly compared with the relative humidity of the ambient air to prevent dimensional changes in a product (paper, photographic film), to prevent hygroscopic powders (powdered sugar, salt) from caking or turning into a solid block, etc.

Water activity can be used with some products (mostly synthetic products) as a means of indirectly measuring the total moisture content. This requires developing sorption isotherms to this purpose. Sorption isotherms are graphs that provide the relationship between water activity and moisture content at constant temperature. For most natural products, repeatable sorption isotherms cannot be reliably developed and water activity should be regarded as separate from moisture content.

34.3 Instruments and probes for measuring water activity

In principle, any ROTRONIC instrument and probe from can be used together with HW4 to measure water activity. Probes such as the HC2-AW and HC2-AW-USB were specifically designed for measuring the water activity of product samples.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 165 of 174

34.4 *Water activity measurement modes in HW4*

The AwE / AwQuick tab is available only with HW4 Professional with AwQuick. This tab appears in the right pane of the HW4 main screen both in the Device View Mode and in the Group View Mode.

HW4 features two modes for measuring water activity and the name of the tab depends on which mode has been selected.

- **AwE mode**

In this mode HW4 monitors the stability of both temperature and humidity. The measurement is automatically ended as soon as both humidity and temperature reach equilibrium. The natural (or static) equilibration of most products typically requires from 45 to 60 minutes and can take as long as a couple of hours.

- **AwQuick mode:**

In the AwQuick mode, HW4 uses an algorithm to project the full equilibrium value (water activity) of the measured product. The measurement is automatically ended and typically requires about 5 minutes.

HW4 performs the following tasks:

- 1) The value of the humidity signal is constantly monitored
- 2) The stability of the temperature signal is constantly monitored
- 3) After an initial period of time (dwell time), HW4 uses the humidity data to project the end value of the equilibration process (water activity). The measurement ends automatically as soon as the projected Aw value is stable.

With the dwell time set to 4 minutes, measurements typically require about 5 minutes. When temperature conditions are stable (both at the product and probe), the measurement obtained with the AwQuick mode is generally within ± 0.005 aw of the measurement that would be obtained by waiting for full equilibration (AwE mode).

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 166 of 174

34.5 Mode selection and settings

To select the mode and to enter or modify the settings to be used in each mode, select Settings and Tools in the HW4 main menu bar. Under Settings and Tools select HW4 Global Settings and select the AwQuick Mode / AwE Mode tab (the name of this tab changes depending on the mode that is currently selected).

The screenshot shows the 'HW4 Global Settings Form' window with the 'AwQuick Mode' tab selected. The settings are as follows:

Mode	Parameter	Value
AwQuick Mode (Selected)	Dwell Time [min]	4
	Temperature stability [°C/min]	0.01
AwE Mode	Humidity stability [Aw/min]	0.0001
	Temperature stability [°C/min]	0.01

Buttons at the bottom: OK, Cancel, Help.

Note: the values shown above are the most frequently used.

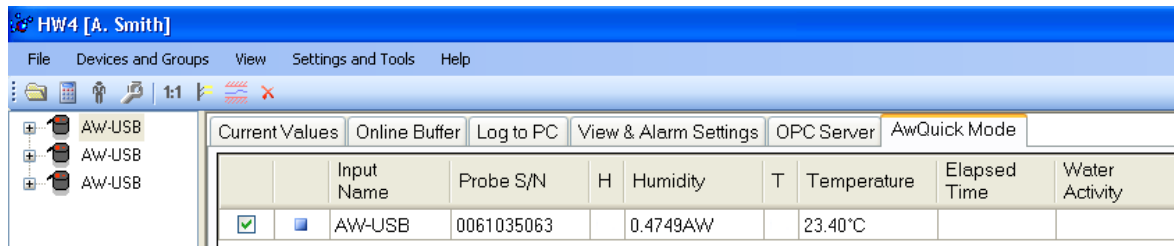
IMPORTANT: Both the selected mode and its settings apply globally to all instruments and probes.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 167 of 174

34.6 Working with individual probes or with a group of probes

Working with individual probes

Probes just discovered by HW4 (HW4 Main Menu Bar > Devices and Groups > Search for Master Devices > USB Masters) are shown individually in the Device Tree.



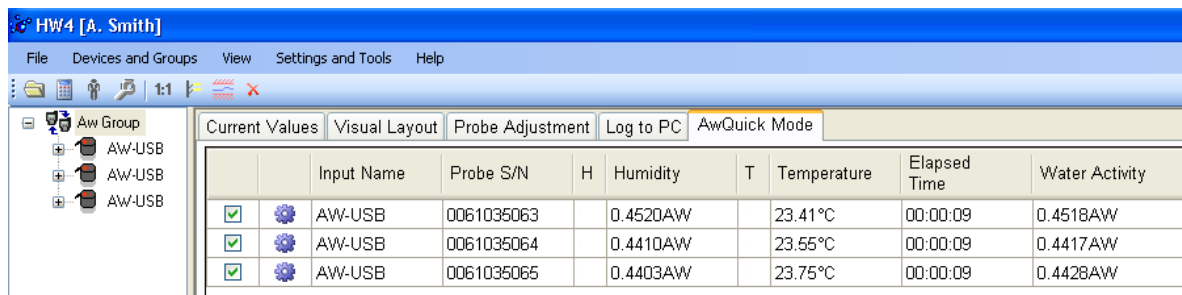
At any time only one probe can be selected in the Device Tree. After selecting a probe, the user can start measuring water activity with that probe.

HW4 can run several water activity measurements concurrently. Select any probe and start measuring water activity with that probe. Select another probe and start measuring water activity with that other probe. The water activity measurement process (AwQuick or AwE mode) runs independently for each probe. When measuring water activity with several individual probes simultaneously, it is incumbent to the user to change from time to time the probe selected in the Device Tree so as to find out when the measurement is ended.

Note: the bottom of the form has 3 text fields labeled “Batch Number”, “Product Name” and “Comments”. The contents of these fields will appear on the water activity measurement report, assuming that the user decides to generate such a report. To customize the contents of these fields for each probe, wait until one of the probes is done and enter a text in each field just before clicking on the “Generate report” button. Select another probe and proceed in the same manner.

Working with a group of probes

Probes that have been discovered by HW4 can be put into a group created by the user as illustrated below:



Working with a group of probes offers the convenience of monitoring all probes at the same time. However, the contents text fields labeled “Batch Number”, “Product Name” and “Comments” are shared by all probes within the group and cannot be customized for each individual probe.

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 168 of 174

34.7 Measurement procedure (AwQuick or AwE Mode)

- 1) Select an individual probe or a group of probes in the Device Tree (left pane of the HW4 main screen)
- 2) In the right pane of the HW4 main screen, select the AwE / AwQuick tab (the label of this tab changes depending on which mode is currently selected in the HW4 Global Settings). Note that the right pane is slightly different depending on whether an individual probe or a group of probe has been selected in the Device Tree.

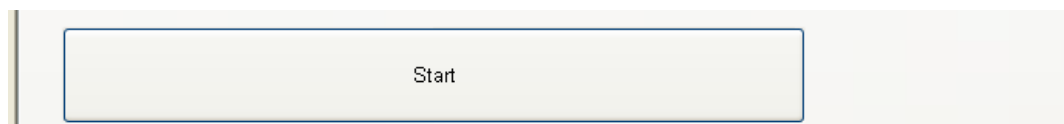
Current Values	Visual Layout	Probe Adjustment	Log to PC	AwQuick Mode		
	Input Name	Probe S/N	H Humidity	T Temperature	Elapsed Time	Water Activity

Current Values	Visual Layout	Probe Adjustment	Log to PC	AwE Mode		
	Input Name	Probe S/N	H Humidity	T Temperature	Elapsed Time	Water Activity

- 3) Select the probe or probes to be used for the measurement by clicking on the box located to the left of the probe (a check mark appears when the probe is selected).

Current Values	Visual Layout	Probe Adjustment	Log to PC	AwQuick Mode			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AW-USB	0061035063	0.4244AW	23.43°C		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AW-USB	0061035064	0.4181AW	23.71°C		
<input type="checkbox"/>	<input type="checkbox"/>	AW-USB	0061035065	0.4164AW	23.76°C		

- 4) To start the measurement, click on the Start button located at the bottom of the form.



A small blue symbol appears to the left of the probe to indicate that the measurement is in progress. After a while trend indicators also appear next to the water activity and temperature readings.

Current Values	Visual Layout	Probe Adjustment	Log to PC	AwQuick Mode			
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AW-USB	0061035063	→ 0.4254AW	→ 23.43°C	00:02:09	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AW-USB	0061035064	→ 0.4187AW	→ 23.70°C	00:02:09	
<input type="checkbox"/>	<input type="checkbox"/>	AW-USB	0061035065	0.4174AW	23.79°C		

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 169 of 174

- 5) When HW4 detects equilibrium condition, the measurement ends automatically and the symbol to the left of the probe changes to green. The result appears in the "Water Activity" column.

Current Values		Visual Layout	Probe Adjustment	Log to PC	AwQuick Mode				
		Input Name	Probe S/N	H	Humidity	T	Temperature	Elapsed Time	Water Activity
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AW-USB	0061035063		0.4257AW		23.43°C	00:04:24	0.4378AW
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AW-USB	0061035064		0.4196AW		23.71°C	00:04:24	0.4322AW
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AW-USB	0061035065		0.4183AW		23.78°C	00:04:24	0.4308AW

- 6) Optional: at this time you may want to enter a Batch Number, a Product Name and Comments in the fields located at the bottom of the form. This information will appear in the water activity measurement report should you choose to generate such a report.

Batch Number	<input type="text" value="TEST 1"/>
Product Name	<input type="text" value="Product Example"/>
Comments	<input type="text" value="Test Example"/>

- 7) Optional: click on the button labeled "Generate report" to generate a water activity report. See also "automatic report generation further down in this manual)

<input type="button" value="Generate report"/>
--

- 8) The process is ended by clicking on the Stop button located at the bottom of the form. At this time a new measurement can be started.

<input type="button" value="Stop"/>

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	Instruction Manual Document Type
	Page 170 of 174

34.8 Automatic report generation (AwQuick or AwE Mode)

A report can be automatically generated after the Aw measurement is done. To enable this function, use the following steps prior to clicking on the “Start” button:

Batch Number

Product Name

Comments

Auto-Generate Report

Enabled save as PDF

Save path

- 1) Enter a Batch Name or Number (mandatory) to identify the report
- 2) Optional: enter a product name and comments
- 3) Click on the box labeled “Enabled” to display a check mark
- 4) Optional: Click on the box labeled “save as PDF” to display a check mark and save the report in the pdf file format
- 5) Select a path on the PC after clicking on the browse button located to the right of the “Save path” field

NOTE: when the measurement is done, the report will be saved at the location defined in the field “Save path under the file name Batch Number.txt or Batch Number.pdf .

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 171 of 174

34.9 Water activity measurement report

NOTE: Generate and save Protocols” must be enabled in HW4 Global Settings > Events tab

Prior to clicking on the Stop button, click on the “Generate report” button to generate a measurement report. HW4 opens a dialog box that allows the user to specify a file name and a location. The report is saved as a text file (extension txt).

The screenshot shows a text file window titled "C:\HW4_32b_DATA\ROTRONIC_HW4\DOC\TEST 5.txt". The file content is as follows:

```

File  View
AwQuick Mode
Batch Number: TEST 1
Product Name: Product Example
Comments: Test Example

Date: Monday, November 05, 2012
Time:12:50:42

Input Name: AW-USB
Probe S/N: 0060812364
Elapsed Time: 00:03:24
Water Activity: 0.9750AW
Temperature: 23.50°C

Input Name: AW-USB
Probe S/N: 0060812369
Elapsed Time: 00:03:24
Water Activity: 0.9760AW
Temperature: 23.51°C

Configured by
HW4 User name: A. Smith
User description:Administrator
User ID number:10B2DDF7F8F2B6CA

HW4 Information
Version:V3.2.0 Beta (Build 12299)
HW4 ID:01 33818035

User Events File
c:\hw4_32b_data\rotronic_hw4\event\HW4USER_2012.evt

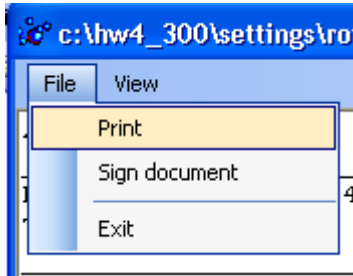
Authentication Stamp
AF340640

AUTHENTICATION STAMP OK

```

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 172 of 174

Use the report menu bar to sign and / or print the report.



34.9.1 Signing the report

Select "Sign document" from the file menu to add your HW4 user name and a comment text to the report. For authentication purposes you will need to enter your password.

Sign the document

Document name: Test 1.txt

Software: HW4 V3.2.0 Beta (Build 12243)

Date: Wednesday, October 24, 2012

HW4 user name: A. Smith

Password: xxxxxxxx

Text

My Test

Sign Cancel

E-M-HW4v3-Main_20 Document code	Rotronic AG Bassersdorf, Switzerland Unit
General instructions and common functions Document title	<p style="text-align: right;">Instruction Manual</p> <p style="text-align: right;">Document Type</p> <hr/> <p style="text-align: right;">Page 173 of 174</p>

A new section is inserted at the bottom of the report:

```

[#E][HW4 user signature]
Name: A. Smith
Description: Administrator
ID: 10B2DDF7F8F2B6CA
Date: Wednesday, October 24, 2012
Document: Test 1.txt
Software: HW4 V3.2.0 Beta (Build 12243)

Text:
My Test

[#e]Signature ID
9176D8

```

AUTHENTICATION STAMP OK

E-M-HW4v3-Main_20	Rotronic AG Bassersdorf, Switzerland
Document code	Unit
General instructions and common functions	Instruction Manual
	Document Type
Document title	Page 174 of 174

35 DOCUMENT RELEASES

Release	Software Ver.	Date	Notes
_10	3.0.0	Jun. 22, 2010	<ul style="list-style-type: none"> Original release
_11	3.0.0	Aug. 19, 2010	<ul style="list-style-type: none"> Modified contents of chapters 27 and 28
_12	3.1.0	Nov. 8, 2011	<ul style="list-style-type: none"> Updated document to reflect HW4 3.1.0
_13	3.2.0	Nov 13, 2012	<ul style="list-style-type: none"> Updated document to reflect HW4 3.2.0
_14	3.3.0	June 20, 2013	<ul style="list-style-type: none"> Updated document to reflect HW4 3.3.0
_15	3.3.0	Aug. 23, 2013	<ul style="list-style-type: none"> Corrected installation instructions Changed the description of the alarm indication on the HW4 main screen Made a number of minor editorial corrections
_16	3.4.0	Apr. 3, 2014	<ul style="list-style-type: none"> Updated document to reflect HW4 3.4.0
_17	3.5.0	Dec. 15, 2014	<ul style="list-style-type: none"> Updated document to reflect HW4 3.5.0
_18	3.6.0	June 30, 2015	<ul style="list-style-type: none"> Updated document to reflect HW4 3.6.0 HL-1, TL-1 added to HW4 LITE version System compliance: XP removed, Windows Server added New HW4 Data Viewer module
_19	3.7.0	December 2016	<ul style="list-style-type: none"> Updated document to reflect HW4 3.7.0 New restrictions of HW4-LITE Shortcut buttons for PDF report and bulk data download User management: copy user, forced password New view of live chart New features for alarm table New features to sign log file
_20	3.9.0	April 2019	<ul style="list-style-type: none"> Chapter 3.9 "HW4 v. 3.8.0" and Chapter 3.10 "HW4 v. 3.9.0"