ROTRONIC MANUAL

RMS-CONVERTER

rotronic
MEASUREMENT SOLUTIONS

Table of Contents

Scope:

This manual is valid for the RMS-Converter Firmware Version V1.3. The small digit represents small changes, bug fixes etc. that do not influence main functions of the device.

1 Overview

1.1 *RMS System Overview*

The Rotronic Monitoring System RMS is a network of various devices and RMS server software. The software represents the core piece of the whole RMS. It collects measuring and system data of the devices and stores it into the database. The single devices work as input modules (datalogger) and output moduls (displays, analog outputs, switching outputs. The user can monitor this measuring- and system data by PC, laptop or smart mobiles everywhere and every time.

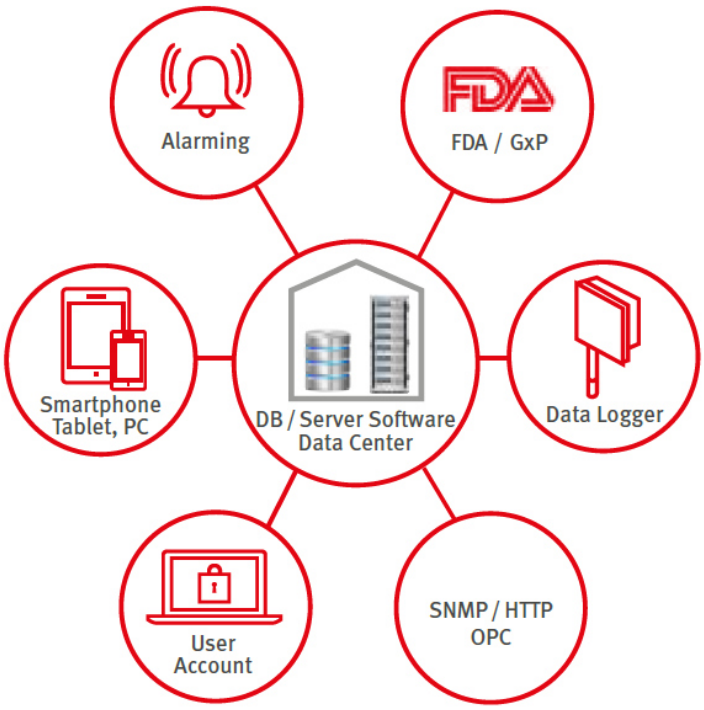
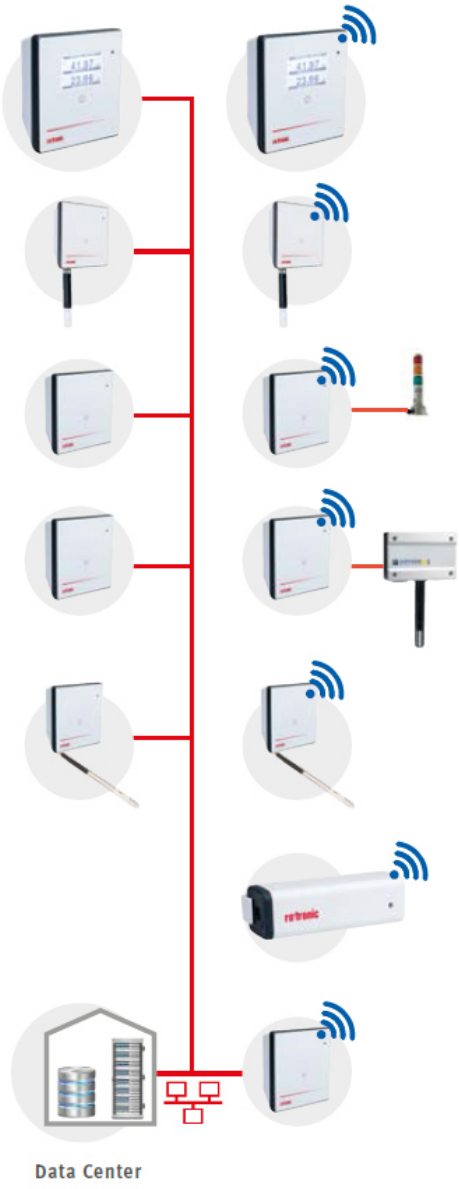


Figure 1: Schematic diagram of the RMS with the server software and database at the heart

1.2 *Device Overview*

All devices can be configured as wanted as modules of the system. The following table shows all basic types of the RMS devices. Almost all modules[1] have the following options:

- Interface: Ethernet / Wireless
- Housing: Wall housing / DIN top hat rail housing



Display Module
The display module can show any values from the RMS network. Humidity, temperature and switch states can be configured per software.

Standard Logger
Records the measured data of the digital HygroClip HCD or other RMS probes. Stored in the ring memory, the data are then sent to the server software.

Output Module
Provides two analog voltage or current outputs or is also available as variant with two solid-state relays in order, for example, to switch alarm lamps.

Input Module
Records voltage or current signals from analog devices such as particle counters, flow transmitters or CO2 probes. For example:

- HF5 transmitter (humidity & temperature)
- AF1 transmitter (air flow)
- CO2 transmitter (CO2)
- PF4 transmitter (differential pressure)

Temperature Logger
The loggers can be equipped with various temperature sensors (NTC, Pt100, Pt1000 or K-element). This offers highest flexibility in use.

Mini Logger
A temperature logger with integrated or remote NTC sensor. Instead of a temperature sensor, it is also available with a switch input in order, for example, to monitor door contacts.

Gateway
The gateway is the connecting element between Ethernet and wireless network and forwards the data flow from the loggers to the data centre.

[1] Except for the Mini Logger

2 RMS-CONVERTER

2.1 *General*

The RMS-CONVERTER provides simple integration of digital devices into the Rotronic Monitoring System. Whereas standard RMS devices send data directly to the RMS server software and database, other devices cannot. The RMS-CONVERTER does this for non-RMS digital devices: the RMS-CONVERTER collects the measurement values and system data of a digital device, buffers this data on the integrated SQL database and sends them to the server software. As such, the RMS-CONVERTER acts as a communication interface translating a standard or proprietary protocol for RMS.

2.2 *Power Supply*

The digital input module has the following power supply:

- 5 VDC (a 230AC/5VDC converter is included).

2.3 *Interface*

The communication interface of the RMS-CONVERTER is TCP/IP.

2.4 *Limit of measurement points*

The RMS-CONVERTER can integrate a limited number of measurement points into RMS.
The limit is defined within the order code: RMS-CONVERTER-xxx, where the xxx is the number of measurement points.

- RMS-CONVERTER-100: integration of 100 measurement points.

IMPORTANT: Each device has a certain number of measurement points. Do not confound the number of measuring points with the number of devices.

2.5 *MS SQL database*

2.5.1 Data logging

The values of every measurement are saved in the memory with the time stamp. The RMS-CONVERTER logs data within the onboard MS SQL database. In case of a communication interruption between the RMS server software and the RMS-CONVERTER, the data will be stored for a maximum of 7 days.

IMPORTANT: The RMS-CONVERTER has no backup battery or integrated power supply, meaning that the log function is only active when power is supplied to the device!

2.5.2 Data gaps

In order to avoid data gaps within RMS due to power or communication interrupts:

- The RMS-CONVERTER and the digital device must be powered via an uninterrupted power supply.
- The switch must be powered via an uninterrupted power supply.
- The RMS-CONVERTER and the digital device must be configured with a fix IP address of the same subnet (only the last numbers of the IP addresses of the devices differ between each other), so that a point to point connection can remain open. The device within the red frame below can communicate with the RMS-CONVERTER should there be a power or communication (higher on the network) interrupt.

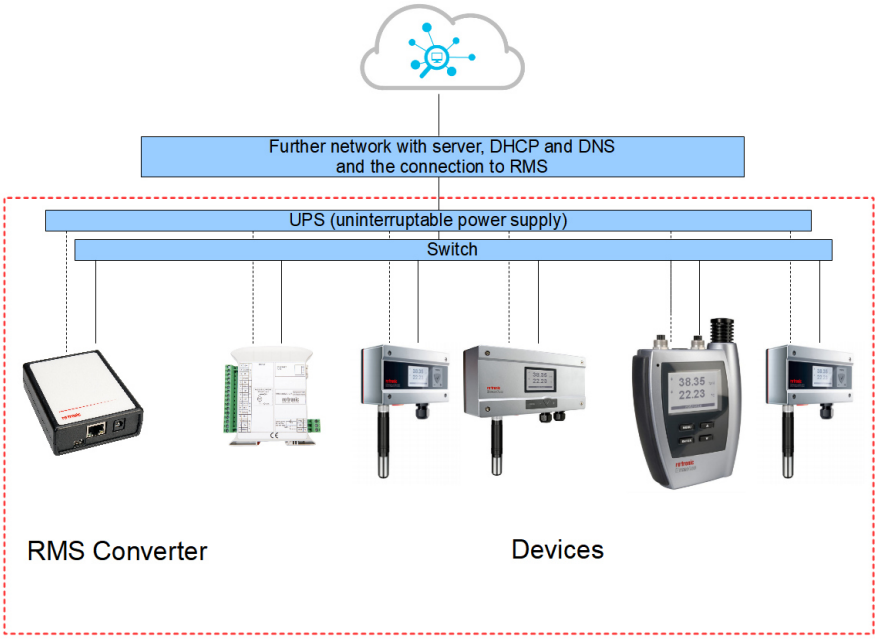


Figure 2: Recommendations for setting up the RMS-CONVERTER on a network.

2.6 *RTC (Real Time Clock)*

The RMS-CONVERTER can only log with the correct time stamp synchronized to UTC. In case of a power interruption on the RMS-CONVERTER, during the restart, it will first synchronize its time with the RMS server UTC. Before that, the RMS-CONVERTER will not start to log.

Recommendation: Install an uninterrupted power supply for the RMS-CONVERTER.

2.7 *Data encryption*

The communication between the RMS-CONVERTER and the RMS Server software/MS SQL database is encrypted. The communication between the RMS-CONVERTER and the digital devices is not encrypted.

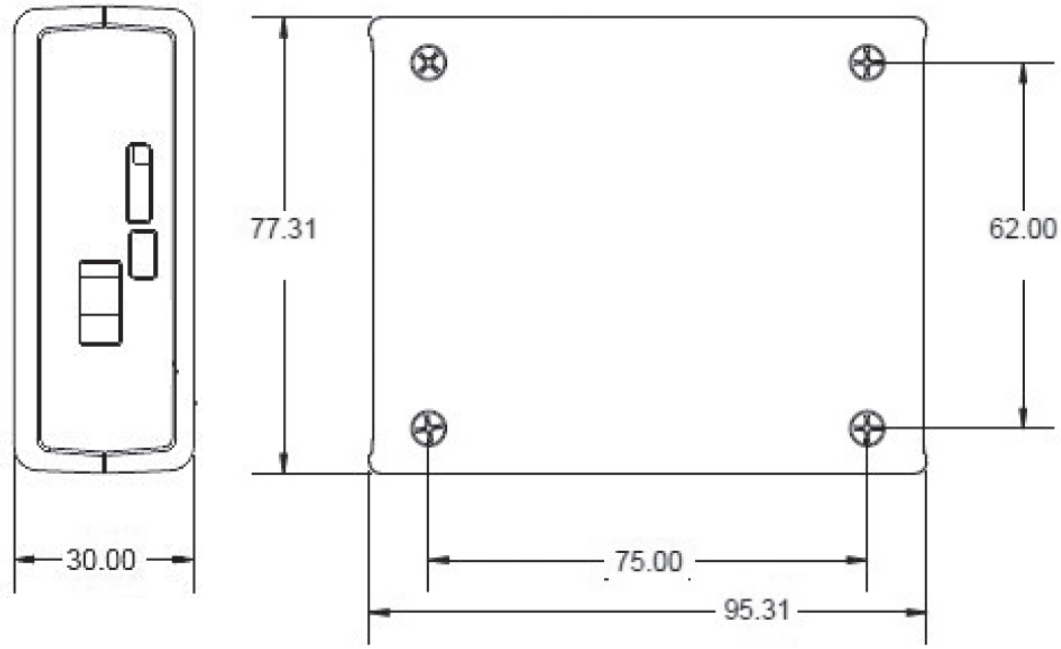
2.8 *Measurement interval*

The minimum measurement interval of the RMS-CONVERTER is every 60 seconds. The measurement interval can only be set when the device is added to RMS.

Note: If an interval change is required, the RMS-CONVERTER and all devices added via the RMS-CONVERTER should be deleted and added again. When the RMS-CONVERTER is deleted from RMS, all of the measurement and device data are also deleted. When adding the RMS-CONVERTER again to RMS, the measurement interval can be selected.

The minimum measurement interval of any device added via the RMS-CONVERTER is every 60 seconds. The measurement interval can at any time under: tools>setup>devices.

2.9 *Dimensions*



2.10 *Function Overview*

Overview of the main software functions of the device

► Add non RMS devices to RMS	The RMS-CONVERTER allows for the integration of non RMS devices into RMS.

► IP configuration	The devices can have static or dynamic IP configurations. It is recommended that you use a fix IP configuration whenever possible.
► RMS Web Server settings	The RMS-CONVERTER has the server address and software path of the RMS server software stored in it in order to build up communication with the RMS server software. The two parameters can be set with the RMS configuration software: • **Host**: Address of the server with the RMS software. • **Server path**: Server path where the server software is installed.
► Audit Trail	Only changes of the device made within the RMS software will appear in the audit trail.
► Save measured data	The measured values of every measurement are saved in the MS SQL database (7 days). If the data cannot be sent to the server software directly, they are kept in the device and then sent later as soon as the connection to the server software has been restored.
►Firmware update	The firmware of the device can be directly updated via the RMS server software.

3 Installation and configuration

To install the RMS-CONVERTER, it is necessary to connect it to the Ethernet network and supply power.

Note: If the RMS-CONVERTER is already installed within an RMS system, the device is then write protected and no changes can be made to the device. In order to carry out changes within the device, the device must be removed from RMS.

3.1 *Default configuration*

The RMS-CONVERTER is by default configured with DHCP active. That means that the RMS-CONVERTER receives the IP-address automatically from the DHCP-server.

IMPORTANT: Rotronic recommends using a fix IP address for the RMS-CONVERTER as well as for the digital devices. The reason being the support of the log function within the RMS-CONVERTER in case of any interruption to the RMS server.

A fix IP-address can be set by a manual configuration via the web browser or via the RMS CONFIG Software.

The host name of the device is “rms-convXXXXXXXX” where XXXXXXXX is a space holder for the serial number without the first two digits “00” (see the bottom side of the RMS Converter).

3.2 *Configuration via web browser*

To configure the RMS-CONVERTER please type in the host name of the device http://rms-convXXXXXXXX into the address bar of the web browser.

If the RMS-CONVERTER is configured with a fixed IP address, the device can be accessed by typing the IP address into the web browser (example: http://192.168.0.1).

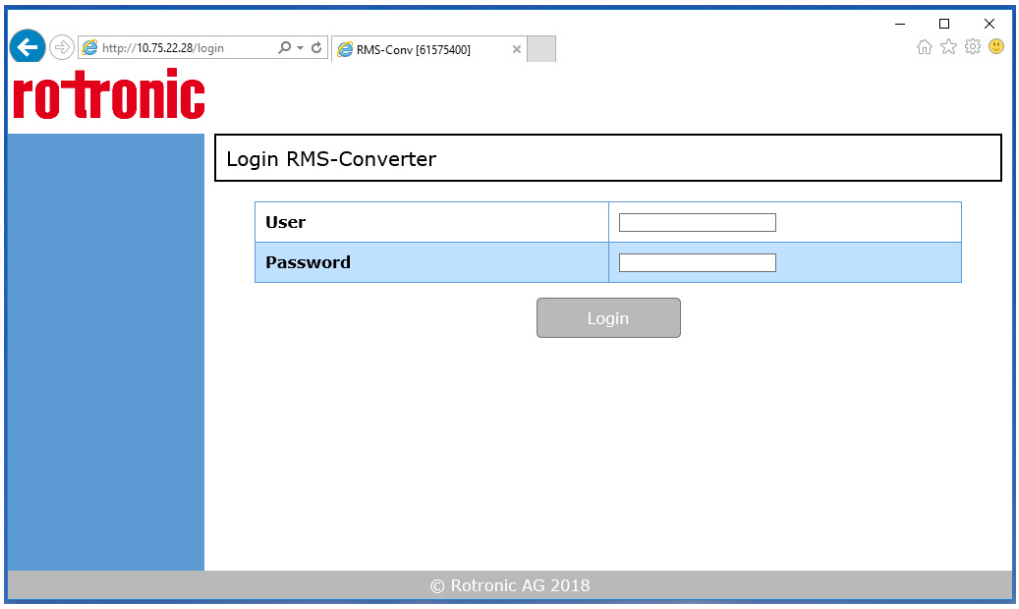


Figure 3: Login to the RMS-CONVERTER via web browser.

There is a default user and password specified for the RMS-Converter:

- Default user: *rotronic*
- Default password: *rmsconv*

Recommendation: change the password for security reasons.

Note: should the password be forgotten, simply unplug the device and replug it in: the default login is vaild for 10 minutes.

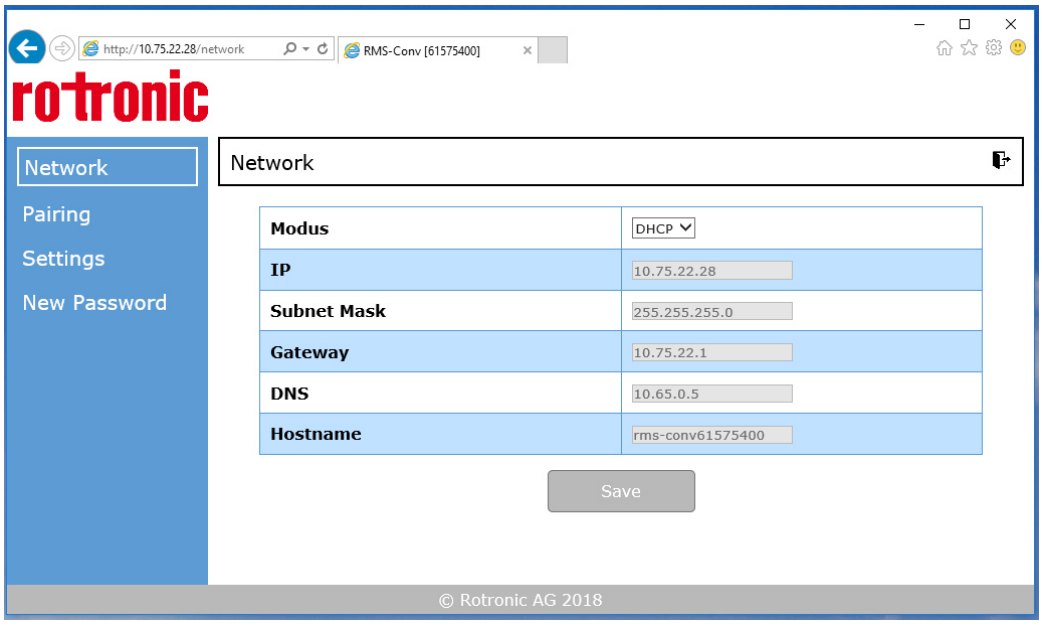
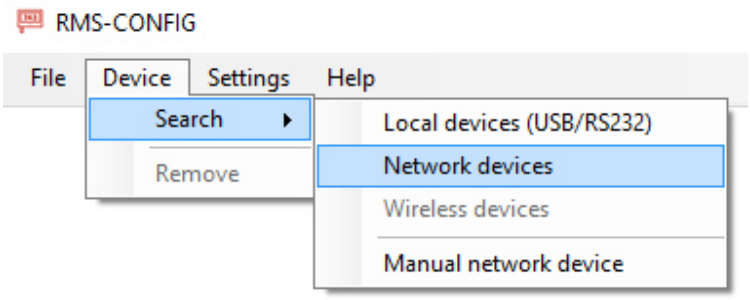
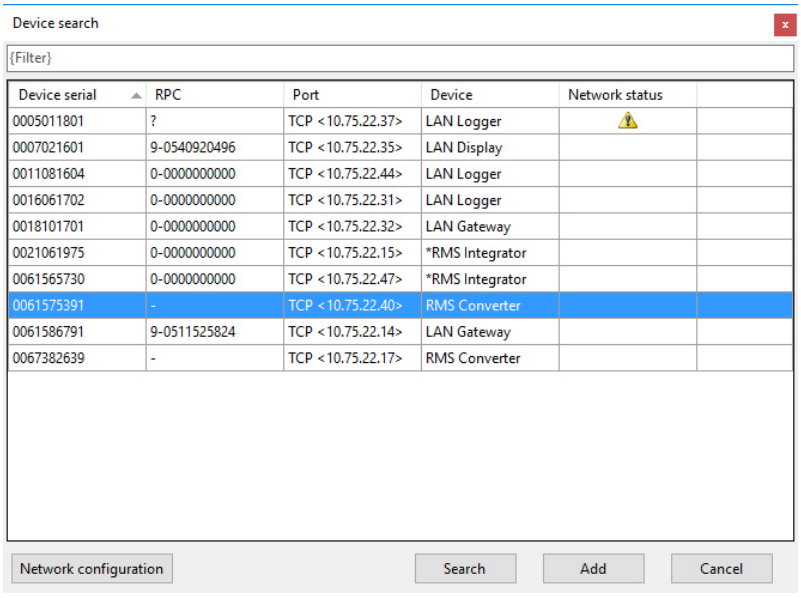
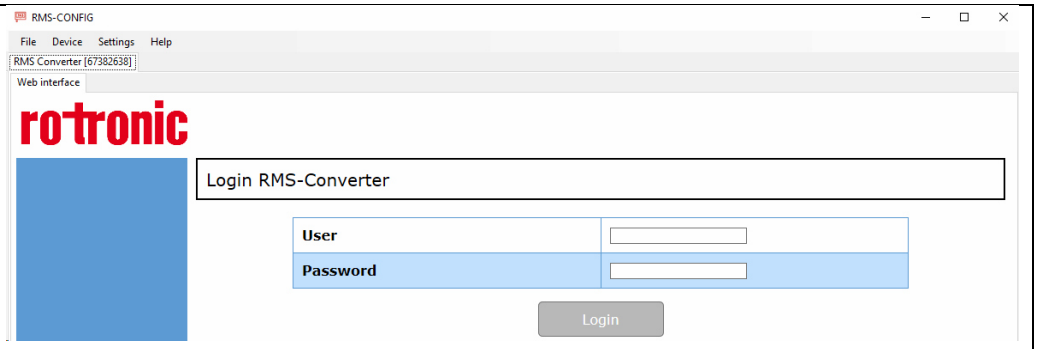


Figure 4: Configuration of the RMS-CONVERTER via web browser.

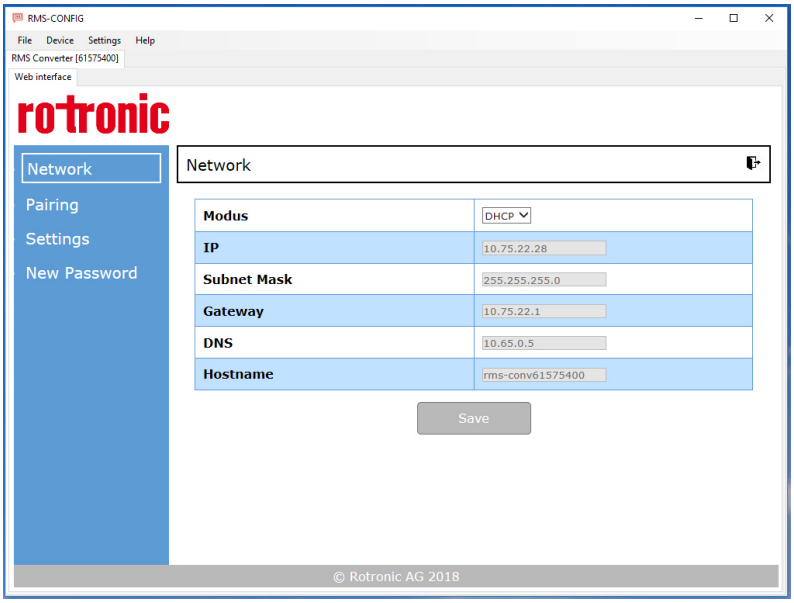
3.3 *Configuration via RMS CONFIG software*

The RMS-CONVERTER can also be configured with the RMS CONFIG software, a configuration software tool that can be downloaded from www.rotronic.com.

Step 1	Search for network devices: 
Step 2	Select the RMS-CONVERTER via the Add button 
Step 3	Login to the device: Default user: *rotronic* Default password: *rmsconv*



Step 4 Configure the network settings:



3.4 *Pairing of the RMS-CONVERTER*

The RMS-CONVERTER will be paired either with an on premise server or with the Rotronic cloud server, this is to be selecting in the pairing page. In the case of an on premise server, the IP address of the server is required.

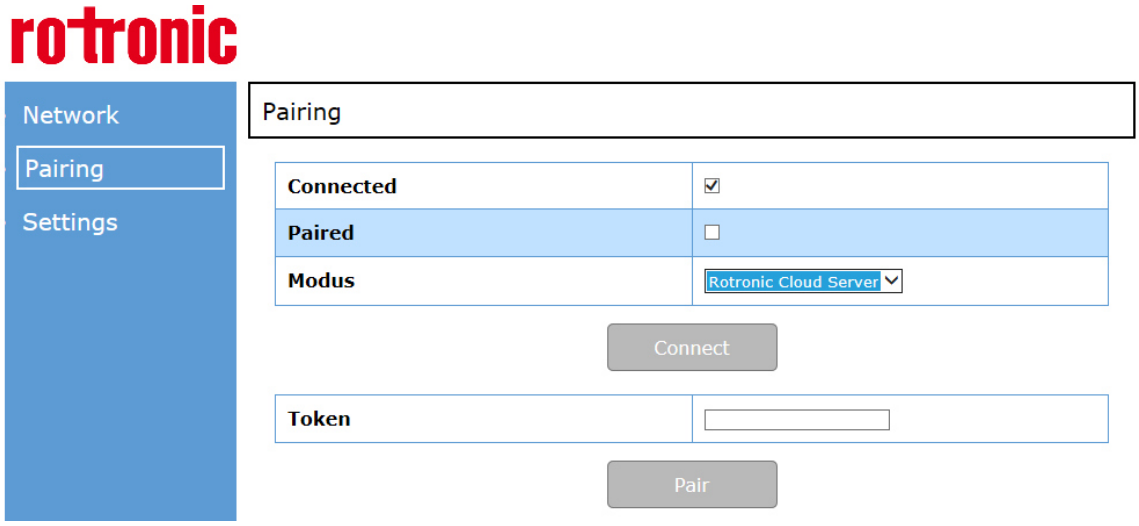


Figure 5: Select Modus before connecting the RMS-CONVERTER to the Rotronic cloud server.

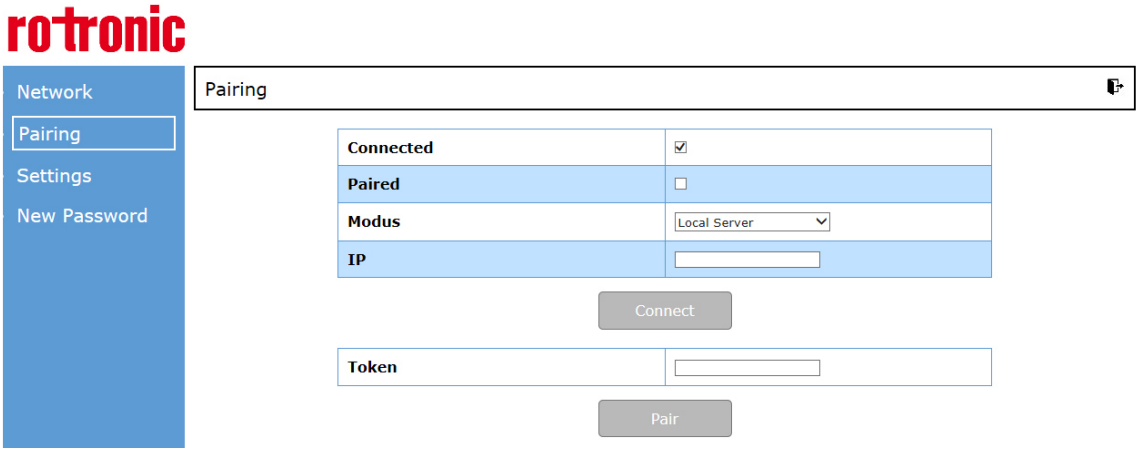


Figure 6: Select Modus before connecting RMS-CONVERTER to an on premise server.

Once paired, the paired box will be ticked. From this moment on, no changes are possible on the RMS-CONVERTER as it is integrated into RMS.

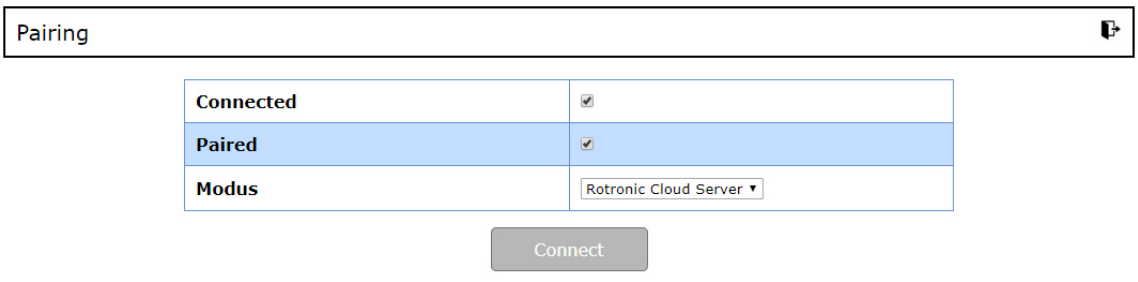


Figure 7: Paired box is ticked.

3.5 *Settings of the RMS-CONVERTER*

In the case of an on premise server, the WebService path must be adapted to the local settings of the local server. After correct configuration, the RMS-CONVERTER can be integrated into RMS.

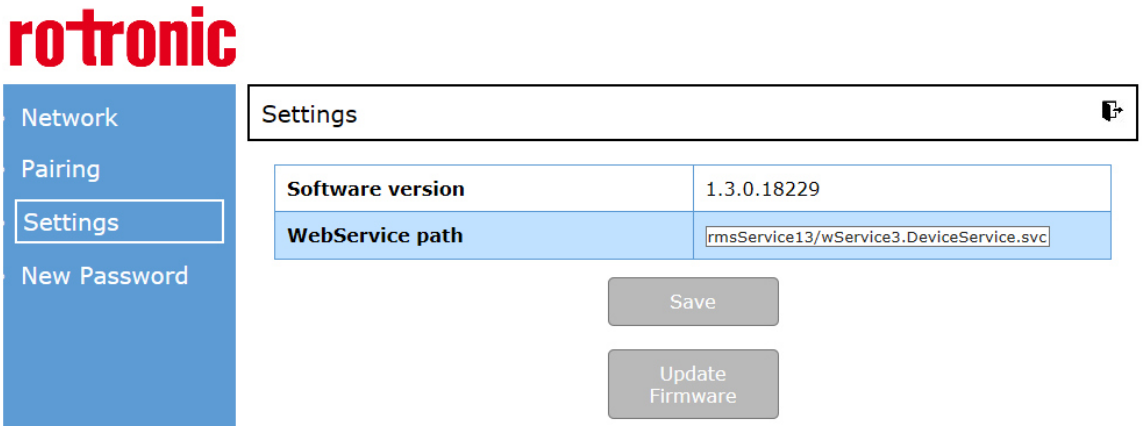


Figure 8: Update of the WebService path for any on premise servers.

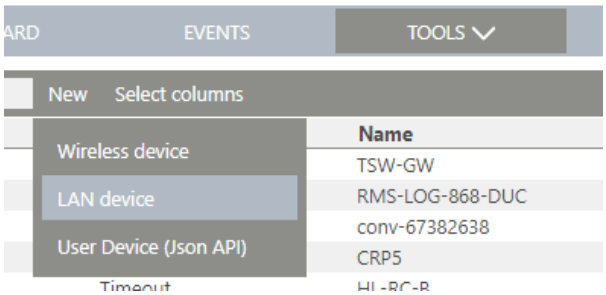
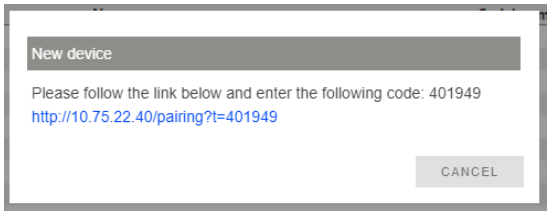
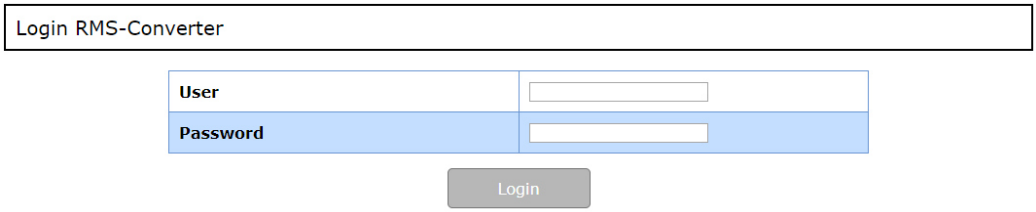
In case of local server, the **WebService path** must be adapted to the local settings of the local server. See user manual **E-IM-RMS-WEB**

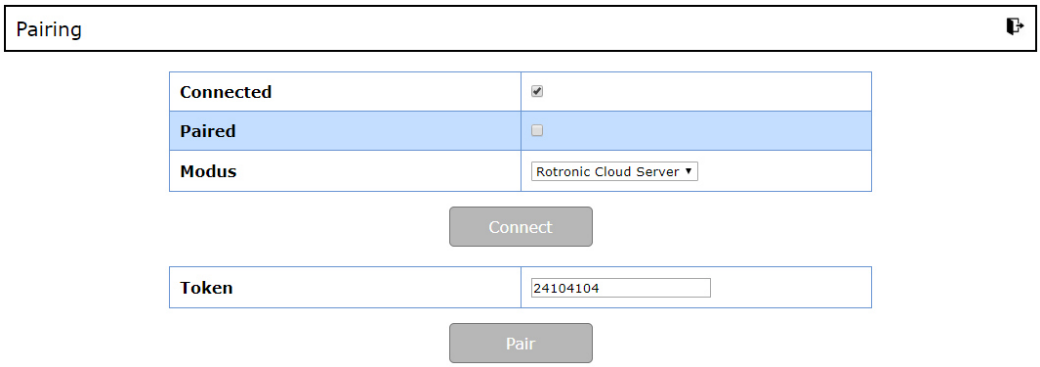
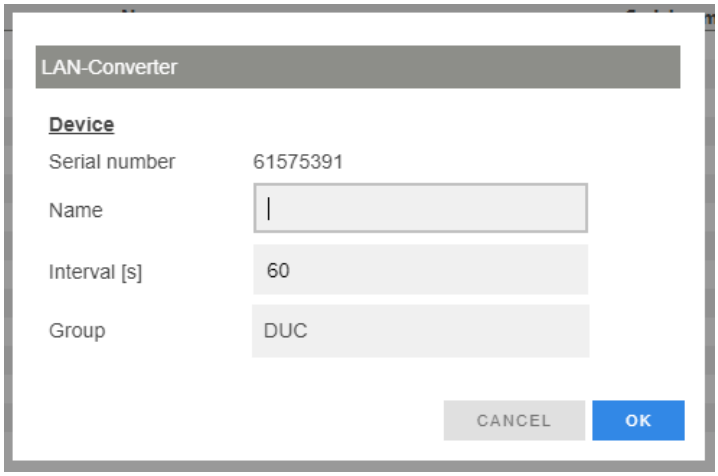
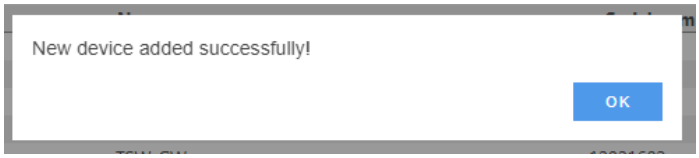
IMPORTANT: For a successful integration of the RMS-CONVERTER into RMS, the network port 80 must be opened. The RMS-CONVERTER must be able to send data to the RMS server (on premise or cloud):

- **In case of an active DHCP: A DHCP server must supply an IP address automatically.**
- **In case of fix IP: the network administrator can manually set a fixed IP address for the RMS-CONVERTER.**

4 Integration of the RMS-CONVERTER into RMS

The RMS-CONVERTER is integrated into RMS with the following 6 steps.

Step 1	Login into the RMS Software > *Tools* > *Setup* > *Devices* > *New* > *LAN device.* 
Step 2	Type the serial number of the RMS Converter and click <OK>. 
Step 3	Click the link. 
Step 4	Login to the device: Default user: *rotronic* Default password: *rmsconv* 

Step 4	A token will be given to the RMS-CONVERTER. Click <Pair> and change back to the browser tab *Devices – RMS Setup.* 
Step 5	Configure the device further (device name, interval, group) 
Step 6	The configuration / integration of the RMS Converter is finished. 

For details of the RMS server software please see the user manual **E-SM-RMS-WEB**

5 Firmware update

The RMS-CONVERTER firmware update can be done either via RMS or with the RMS CONFIG software. The actual version of the firmware can be found at www.rotronic.com.

IMPORTANT: In order to carry out a firmware update the RMS-CONVERTER must be disabled within RMS.

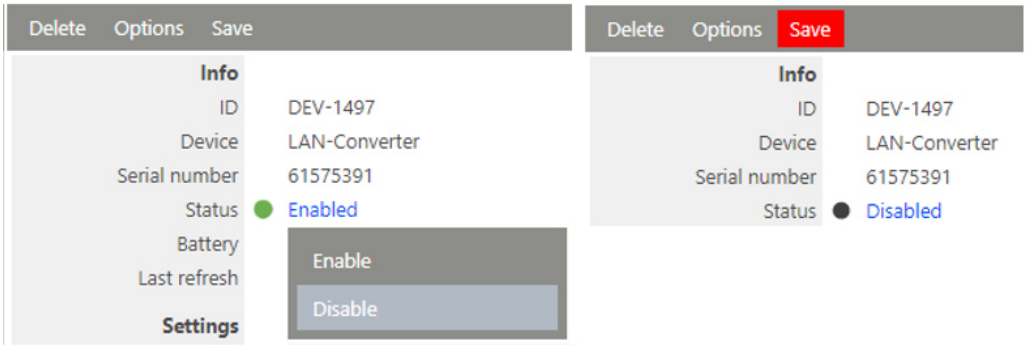


Figure 9: Disable the device in RMS.

5.1 *Firmware update via RMS*

- Step 1: Login to the RMS software>Tools>Setup>Device and select the RMS-CONVERTER for the firmware update.
- Step 2: Select options and click on <Firmware update>.

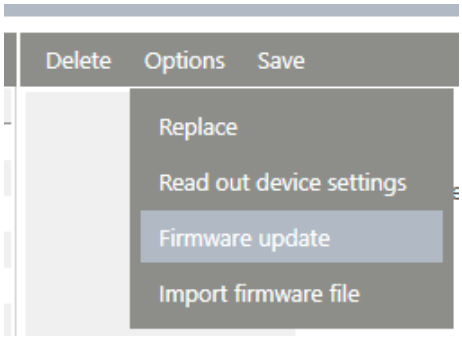


Figure 10: Firmware update in RMS.

- Step 3: The RMS software compares the actual firmware version with the latest firmware version and devices if a firmware update is required or not. Click on <OK>.

Figure 11: Firmware update in RMS.

- Step 4: Firmware will update:

Figure 12: Firmware update running in RMS.

- Step 5: Firmware updated successfully:

Figure 13: Firmware update successful in RMS.

5.2 *Firmware update with RMS CONFIG*

- Step 1: Add the RMS-CONVERTER to RMS CONFIG: Device>Search>Network devices.
- Step 2: Choose the device and select <Add>.
- Step 3: The login window of RMS CONFIG appears, default User: rotronic; default password: rmsconv.

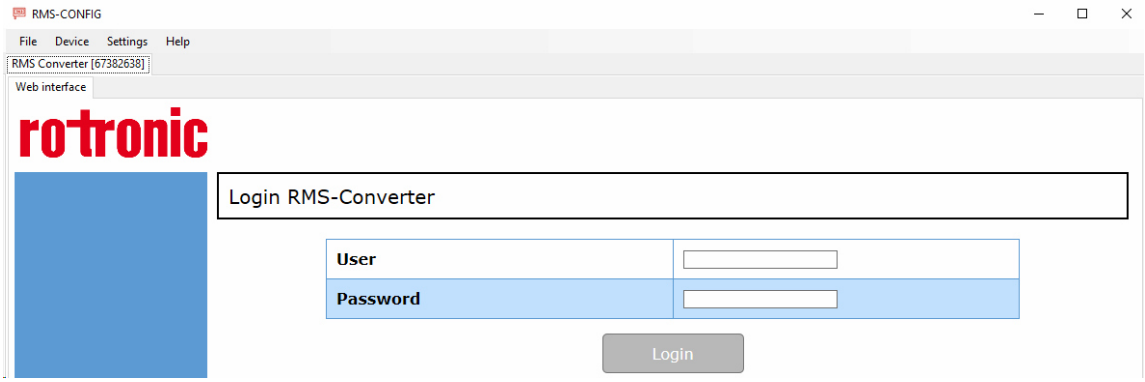


Figure 14: Firmware update in RMS Config.

- Step 4: Select settings and click on <Update Firmware>.

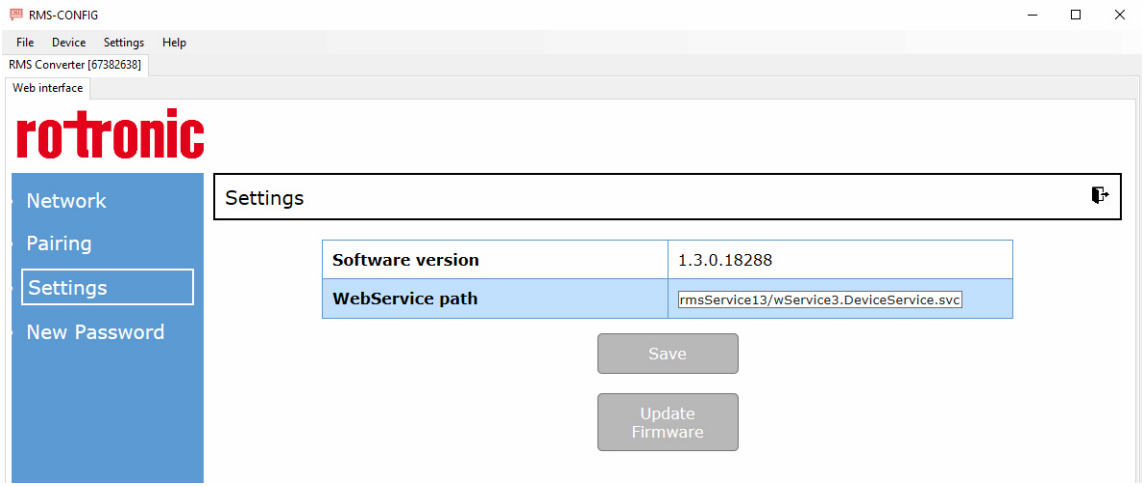


Figure 15: Firmware update in RMS Config.

- Step 5: A dialog window open, select the .bin firmware and open.
- Step 6: Firmware update complete.

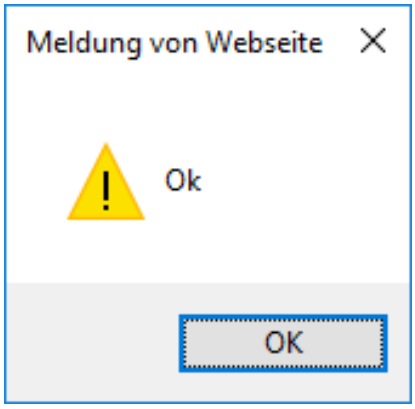


Figure 16: Successful firmware update.

6 Integration of Rotronic conventional products into RMS

6.1 *General*

Rotronic offers an extensive range of measurement devices. Please see www.rotronic.com for more details. Some of these devices can be integrated into RMS via the RMS-CONVERTER.

IMPORTANT: Conventional products from Rotronic are configured via the HW4 software. It is crucial that the device manual and HW4 manual is read before integration of the devices into RMS. RMS will overwrite settings on the conventional products when added into RMS with the RMS-CONVERTER.

6.1.1 Standard functions

If accessible, the RMS-CONVERTER can provide, amongst others, the following information to RMS:

- Device identification (product name and serial number)
- Measurement values (read)
- Relay values (read)
- Triggering of a relay (write)
- Adjustment possibility (write)
- Scaling of analog outputs (write)
- Scaling of analog inputs (write)
- Access to logged data (read)
- …

6.1.2 RMS and HW4

IMPORTANT: Rotronic recommends NOT to run HW4 and RMS in parallel (where devices are connected to both HW4 and RMS). Running both systems at the same time will result in timeouts, data gaps and other errors due to communication failure. As soon as HW4 is launched on a PC, it will automatically start the integrated search function for all devices that are on the network.

For the initial installation and setup of a conventional product, HW4 can be required.

Rotronic recommends the following procedures:

- Use of a communication cable AC3001/3006/3009 directly from an isolated laptop with HW4 to the device.
- Deactivate the automatic search function (ADDP) with the Rotronic device via the web browser menu.
- Deactivate the devices within RMS (please see the RMS Software user manual for more details).

6.1.3 Limitations

RMS is designed for IoT devices as well as networks where each device has an integrated memory and power supply to bridge power and/or communication interrupts. This postulates a strict architecture in terms of communication, timing and other various points to ensure an uninterrupted monitoring.

The RMS-CONVERTER enables digital devices to be integrated into RMS, these digital devices may be stand alone, but also part of another network or system with another design. As such limitations exist in terms of device features and functions for communication stability and overall performance.

IMPORTANT: Time outs and data gaps can occur due to mismatching systems and limited compatibility!

6.1.4 Compatible devices with an Ethernet connection

Device name	Order code	Function	Parameter measured
HF5	HF5xx-xxxxxLxx	Transmitter with 1 interchangeable probe input.	Temperature and relative humidity.
HF8	HF8xx--x9xxx/9	Transmitter with 2 interchangeable probe inputs and data logger function and 4 relays.	Temperature and relative humidity.
PF4	PF4xx-Lxxxxxx	Transmitter with 1 interchangeable probe input and 1 relay.	Differential pressure, temperature and relative humidity.
PF4/PF5 (new generation)	N/A	Transmitter with 1 interchangeable probe input and relay.	Differential pressure, temperature and relative humidity.
CRP5	CRP5xx-xxxxxxx	Clean room panel with 1 interchangeable probe input, 2 analog and 2 digital inputs and 6 relays.	Differential pressure, temperature, relative humidity, pressure, digital and analog inputs.
HL-NT	HL-NT3	Data logger with 3 interchangeable probe inputs.	Temperature and relative humidity.
HL-NT docking stations	HL-DS-NT4 HL-DS-PT4 HL-DS-U4 HL-DS-U4-420	Docking stations with up to 4 interchangeable probe inputs and 2 digital inputs.	Temperature, relative humidity, digital and analog inputs.

6.1.5 Compatible devices within an RS485 network

The RMS software and RMS-CONVERTER hardware are not compatible with RS485 networks.

6.2 *Integration of the HF5 transmitter into RMS*

6.2.1 Device description

The HF5 is a transmitter with a HC2 probe input.

Important: Please consult the HF5 user manual as well as the HW4 manual for HF5 devices for further details.

6.2.2 Network configuration of the device

To add the HF5 into the RMS, it is necessary to setup the individual network configuration of the device as:

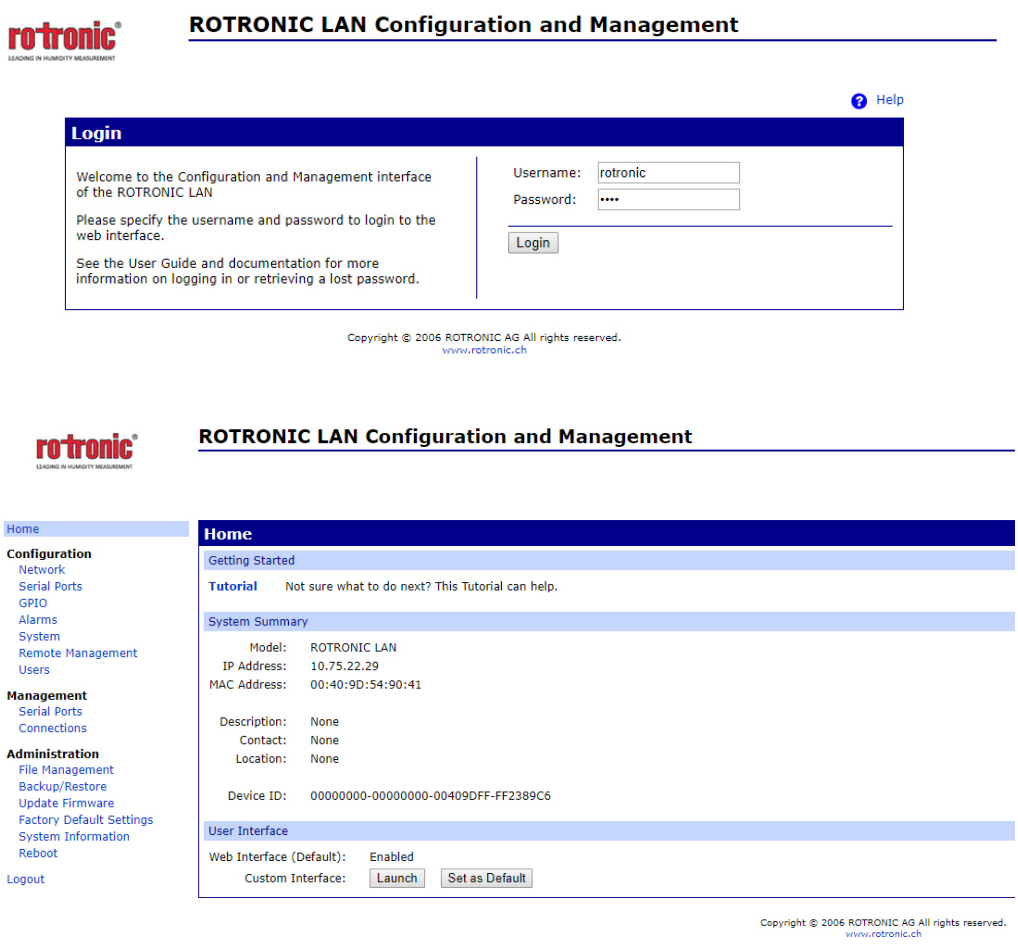
- DHCP active or fixed IP address
- Host name

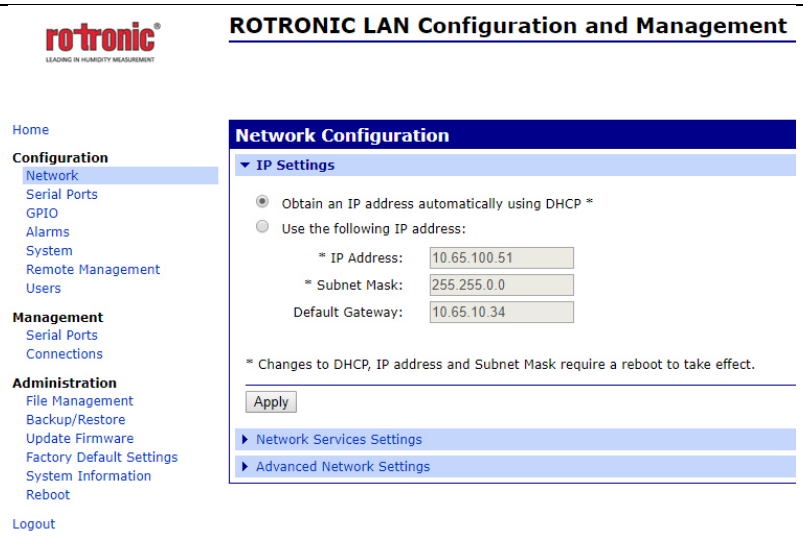
The HF5 default settings are:

- Fix IP address 192.168.1.1
- Host name not defined

To find and configure the network settings of the device, please connect the device into the LAN and use the Digi Device Discovery Tool. (https://www.rotronic.com/en/productattachments/index/download?id=1531)

Step 1	Discover the IP address-	If the IP address or the host name device is known, please type into the address bar of the web browser: http://ipaddress (e.g.

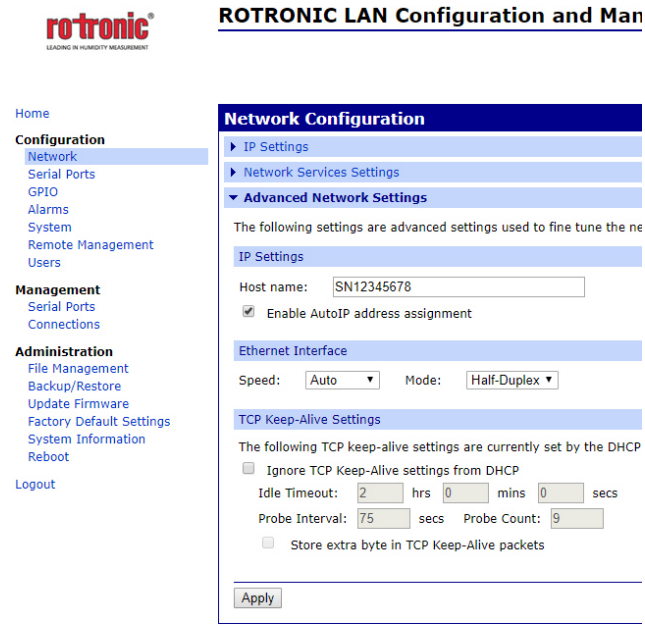
	Open and execute DigiDeviceDiscovery.exe. The device search starts automatically. Double click on the device: a web browser opens.	http://192.178.1.1) or http://hostname (e.g. http://SN12345678).
Step 2	Log in for further network configuration: (default username: rotronic / default password: wlan). 
Step 3	Check or change the network settings:	



IMPORTANT: Rotronic recommends using a fix IP address for the RMS-CONVERTER as well as for the digital devices. The reason being the support of the log function within the RMS-CONVERTER in case of any interruption to the RMS server.

Step 4

Check or change the hostname and set the check mark for “Enable AutoIP address assignment:



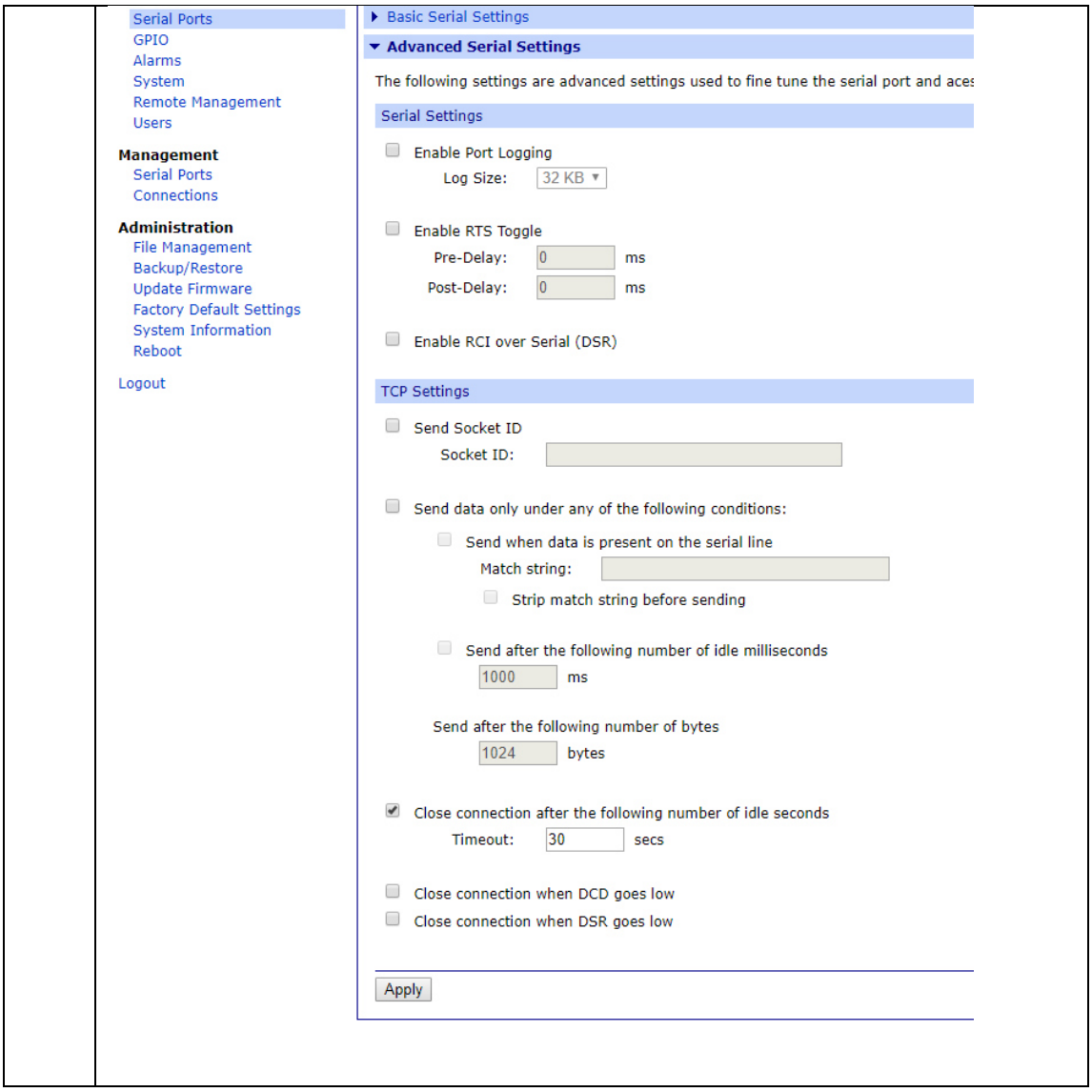
If a DNS is active within the network, the RMS / RMS Converter can communicate based on the host name instead of the IP address.

Step 5

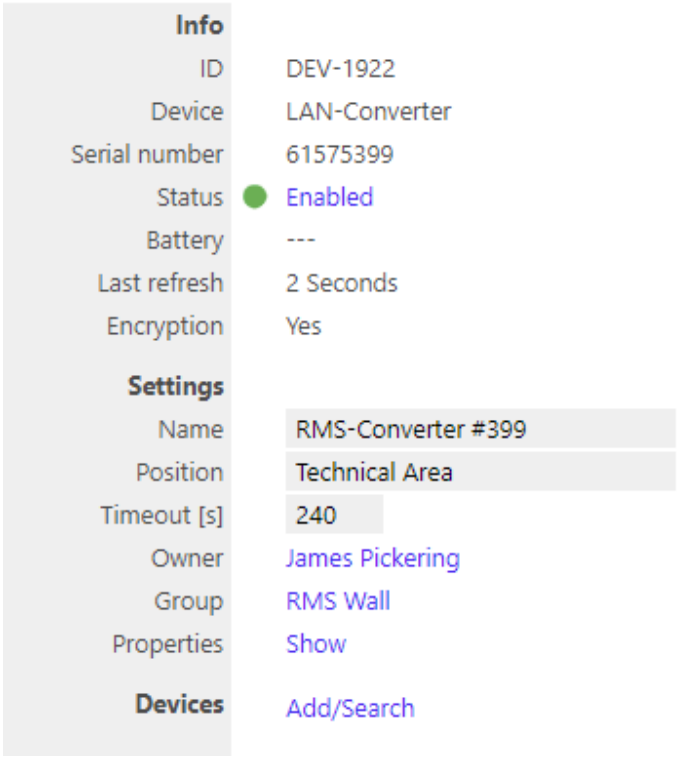
Disable the discovery mode:

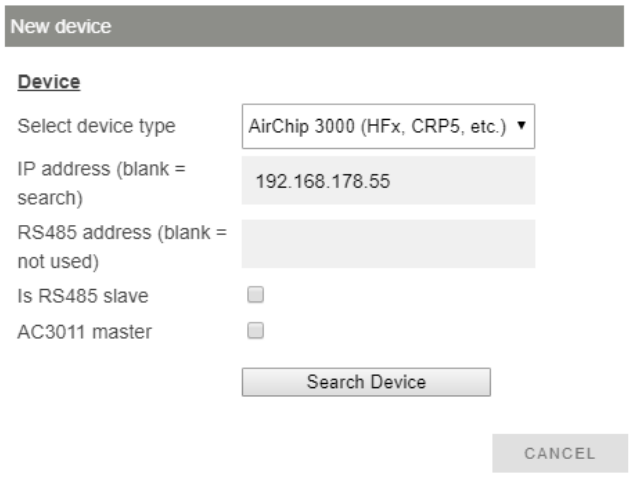
The device search function of HW4 and the Discovery tool uses a Device Discovery function (ADDP). At the end of the configuration, it is meaningful to disable this feature.

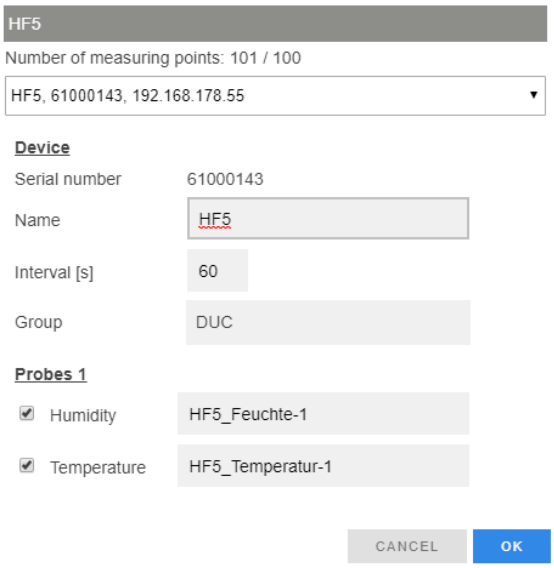
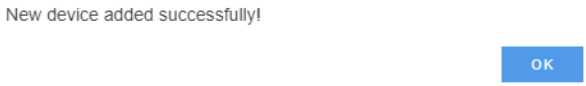
	• Network>Network Services Settings>remove the checkmark of “Enable Device Discovery (ADDP)”. **IMPORTANT: Parallel and unwished communication due to the opening of HW4 will be avoided. A side effect is, that this device will not automatically be found by HW4 or the Discovery tool anymore. To access the device via HW4, the IP address must be added manually.**
Step 6	Close connection after the following number of idle seconds: Unwished parallel communication/requests to the Ethernet address of the Rotronic device can cause an unwished blocking of the devices internal access to the Ethernet port. For that reason the following setting can be done: • Serial Ports>Advanced serial settings>TCP Settings>Set a checkmark to “Close connection after the following number of idle seconds”. • >Serial Ports> Advanced serial settings> TCP Settings> Timeout: xx seconds. If the port is blocked then the device will renew/unblock the port by itself after the chosen timeout. This way a permanent timeout of the device will be avoided. The loss of data will be reduced significantly. For an RMS-CONVERTER interval of 60 seconds, a timeout of 10 to 30 seconds would be meaningful.

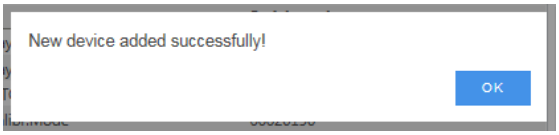

Serial Ports
GPIO
Alarms
System
Remote Management
Users
Management
Serial Ports
Connections
Administration
File Management
Backup/Restore
Update Firmware
Factory Default Settings
System Information
Reboot
Logout
Basic Serial Settings
Advanced Serial Settings
The following settings are advanced settings used to fine tune the serial port and aces
Serial Settings
Enable Port Logging
Log Size: 32 KB
Enable RTS Toggle
Pre-Delay: 0 ms
Post-Delay: 0 ms
Enable RCI over Serial (DSR)
TCP Settings
Send Socket ID
Socket ID:
Send data only under any of the following conditions:
Send when data is present on the serial line
Match string:
Strip match string before sending
Send after the following number of idle milliseconds
1000 ms
Send after the following number of bytes
1024 bytes
Close connection after the following number of idle seconds
Timeout: 30 secs
Close connection when DCD goes low
Close connection when DSR goes low
Apply

6.2.3 Integration into RMS via the RMS-CONVERTER

Step 1	Log into the RMS software. Select Tools > Setup > Devices. Select the RMS-CONVERTER and click on <Add/Search> devices: 

Step 2	Select the device type in the drop down menu. It is possible to type the IP address or host name into the field *IP address.* **IMPORTANT: If the field stays empty, RMS searches automatically. If the automatic search function is disabled, an IP address or a host name has to be typed into the field.** 

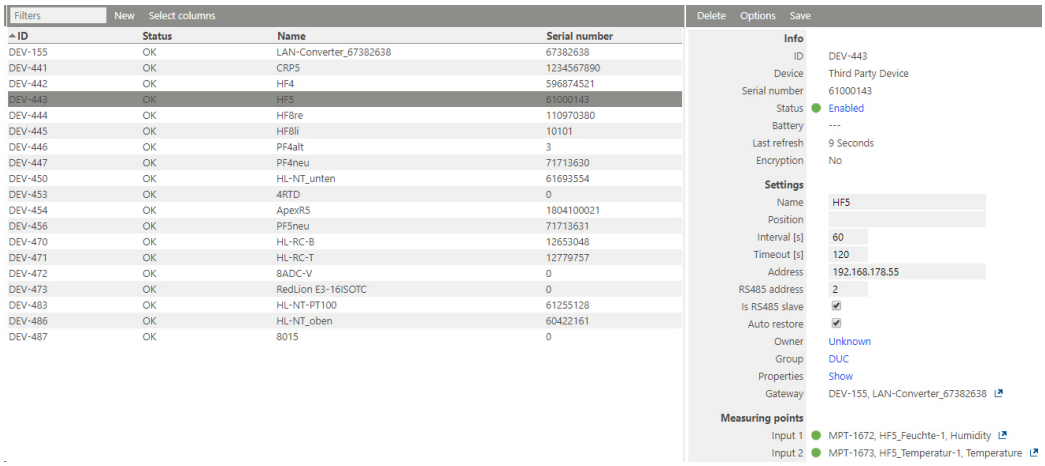
Step 3	The device appears: configure accordingly.  **Note: The interval cannot be shorter than the interval of the RMS Converter.** **IMPORTANT: If not all checkmarks for measurement points are set and it is wished to expand it later then the same device needs to be added again with the same identification and IP address (there is no need to delete the device before adding it). The desired check marks can be set. And afterwards, the added or updated measurement points will appear.**
Step 4	The device is added. 

Step 5	**IMPORTANT: Overwritten settings.** By adding the device to RMS via the RMS-CONVERTER, the following configuration will be overwritten on the device: • Fix value humidity: disabled • Fix value temperature: disabled • Fix value if no probe is connected: disabled • Default relative humidity unit: %rh • Default temperature unit: °C **Note: if one of the settings above is changed with HW4 further to the initial installation into RMS, then RMS will not note the change. However, such a change would cause RMS to not work correctly. The changes will however be overwritten should the RMS-CONVERTER reboot (due to a short power interrupt).**
Step 6	Finish configuration. 

6.2.4 Functionality within RMS

Step 1

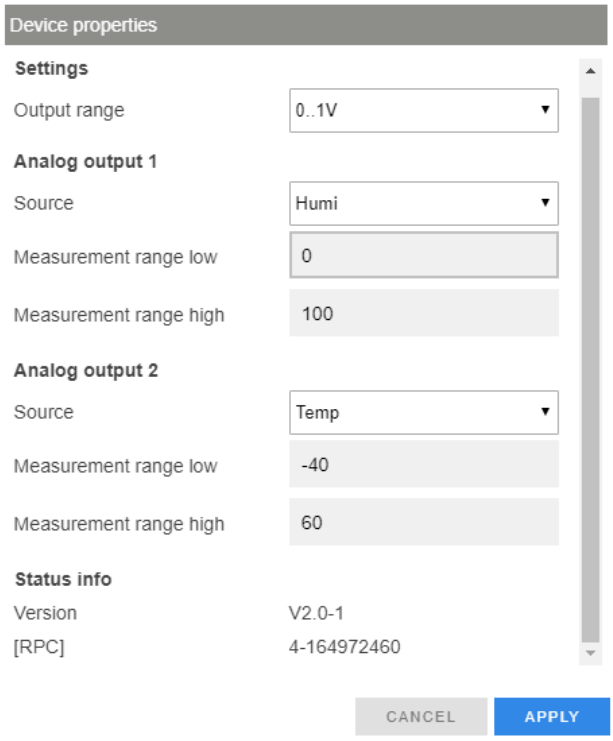
Device settings: log into the RMS software. Select Tools > Setup > Devices. Select the device.

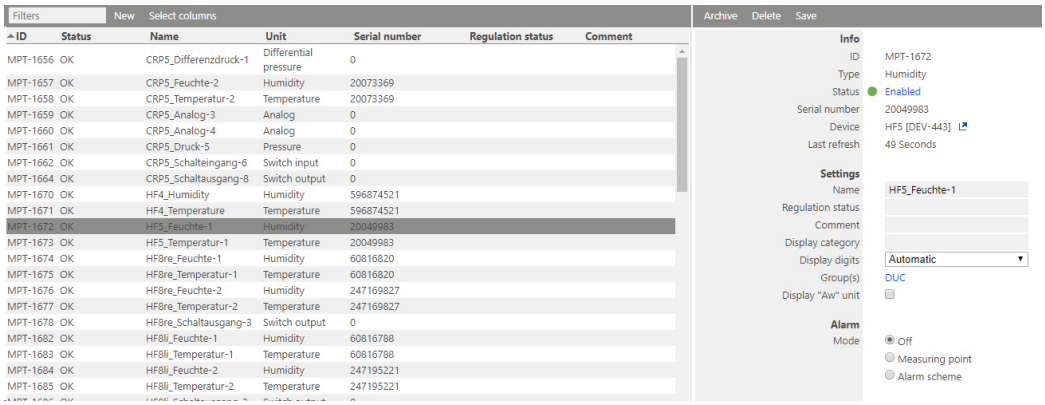


Status: the device can be disabled/enabled. When disabled, the RMS-CONVERTER will not send any requests.

Settings: Any settings can be changed and confirmed by clicking on <Save>.

Properties: Show. The settings can be shown and configured.



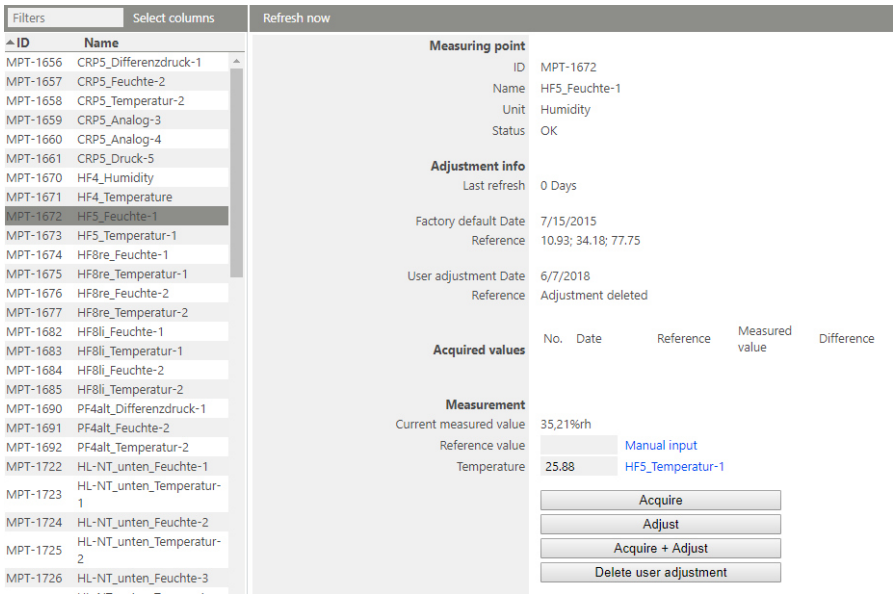
	IMPORTANT: Under options, the firmware update, import firmware file, import device definition and device inventory are not supported for this device. **IMPORTANT: The output range, the sources and the measurement ranges of the analog outputs 1 and 2, can be scaled and stored within the device clicking <Apply>.**
Step 2	Measurement point settings: log into the RMS software. Select Tools > Setup > Measuring point. Select the measuring point. Status: the measuring point can be disabled/enabled. Settings: Any settings can be changed and confirmed by clicking on <Save>. 

Step 3

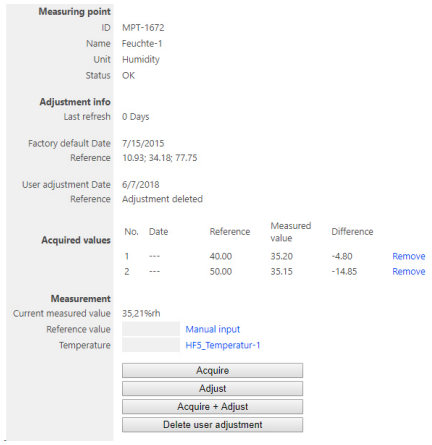
Adjustment: log into the RMS software. Select Tools > Adjustment. Select the measuring point. Click on <Refresh now>.

General procedure:

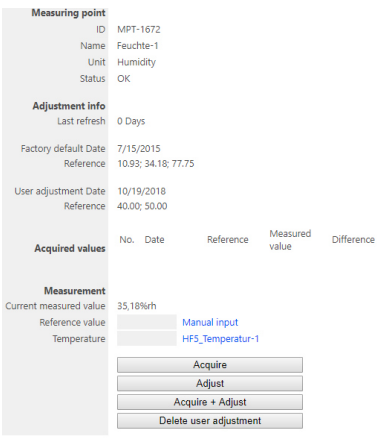
- Type the humidity reference value and click <Acquire>
- Repeat until the desired number of adjustment points are acquired.
  Note: The user of this feature must take care about sufficient stable circumstances for a data acquisition. Please take the interval into account. One value after every 60 seconds does not detect short term changes of the value.
- Click <Adjust> to finish.
- Use the button <Acquire + Adjust> for one point adjustment.
- Click <Delete user adjustment> to delete the last customer adjustment.

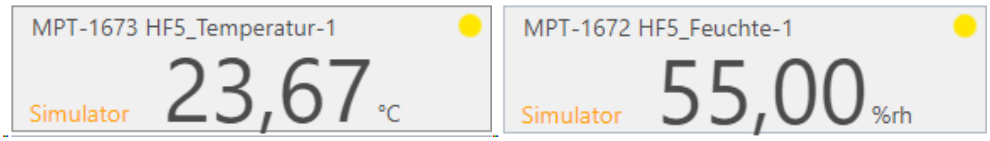


Humidity 2 points acquired



Humidity 2 points adjusted



	Note: For humidity multiple points can be acquired and adjusted. For temperature only 1 or 2 points.
Step 4	Data logging: the HF5 has no internal memory, the HF5 is not battery powered. So the HF5 cannot log during a power interruption. In case of a communication interruption to the RMS Server, the RMS Converter logs the data of the HF5. After the interruption, RMS requests the data from the RMS Converter. In case of a communication interruption between the RMS Converter and the HF5, a data gap would be created.
Step 5	Sensor error: In case of one sensor error out of the two, RMS displays a sensor error for both measurement values. MPT-1672 Sensor error HF5_Feuchte-1 Humidity MPT-1673 Sensor error HF5_Temperatur-1 Temperature 
Step 6	Measurement alarm: Alarms linked to the measurement limits and programmed within the HC2 will not be transmitted to RMS. However if the device has a display and the display is configured correctly, the alarm will show on the display.
Step 7	Fix values on the HC2: fixed measurement values programmed within the HC2 are displayed as simulators within RMS. MPT-1672 Simulator connected HF5_Feuchte-1 Humidity MPT-1673 Simulator connected HF5_Temperatur-1 Temperature  **IMPORTANT: In case of an active fix value of one measurement value of a HC2, RMS will show "simulator connected" for both measurement values of the probe.**

6.3 *Integration of the HF8 transmitter into RMS*

6.3.1 Device description

The HF8 is a transmitter with 2 HC2 or 2 analog inputs and 4 relays.

Important: Please consult the HF8 user manual as well as the HW4 manual for HF8 devices for further details.

6.3.2 Network configuration of the device

To add the HF8 into the RMS, it is necessary to setup the individual network configuration of the device as:

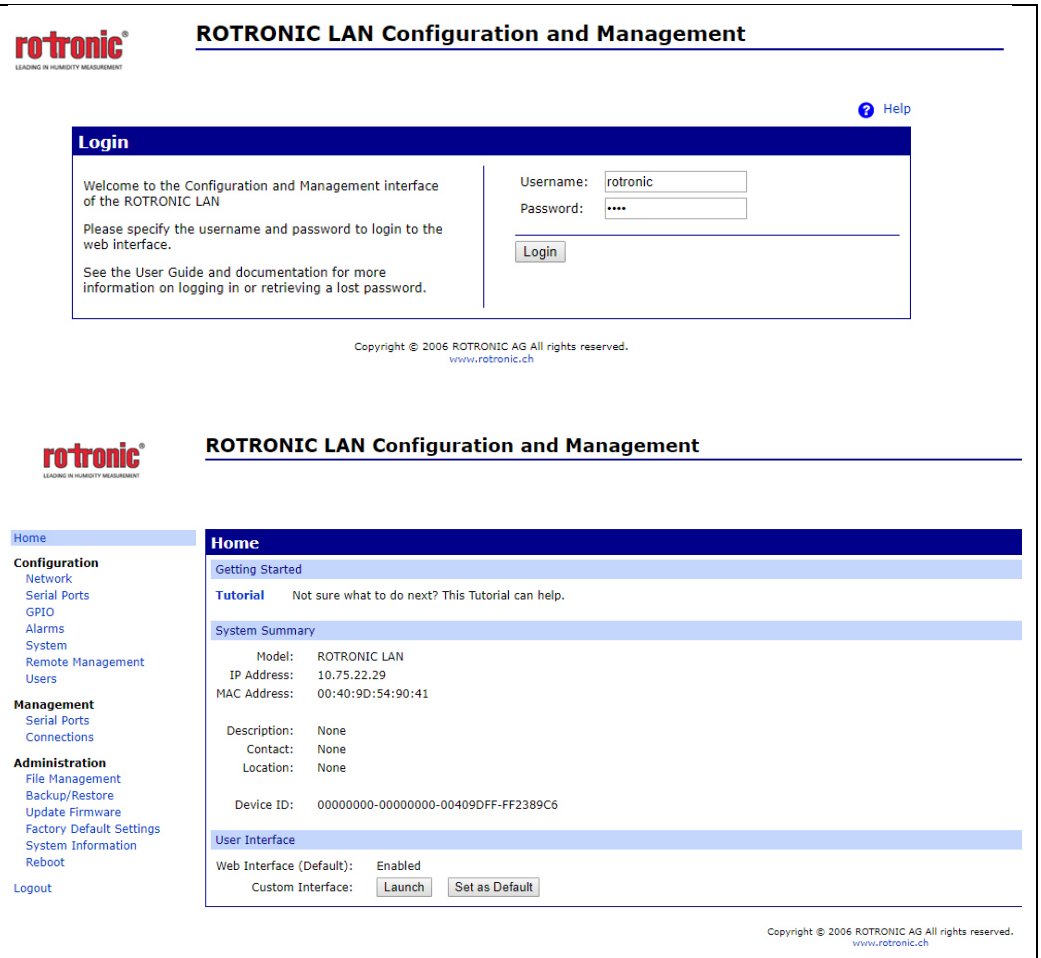
- DHCP active or fixed IP address
- Host name

The HF8 default settings are:

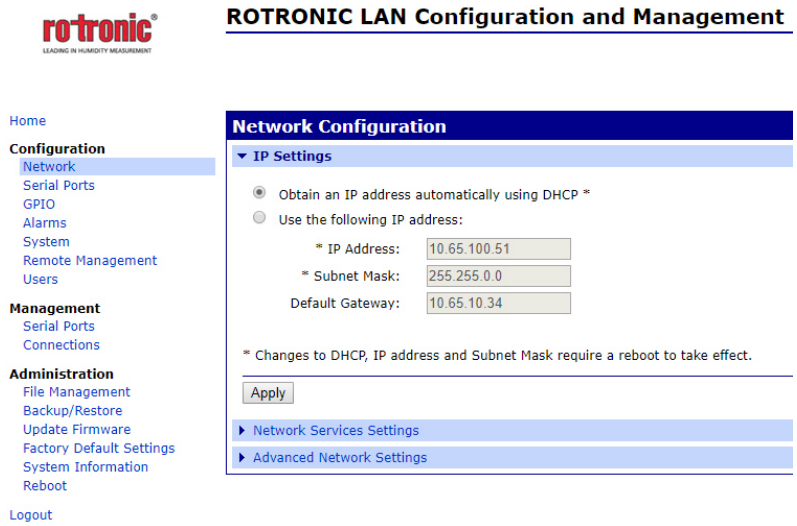
- Fix IP address 192.168.1.1
- Host name not defined

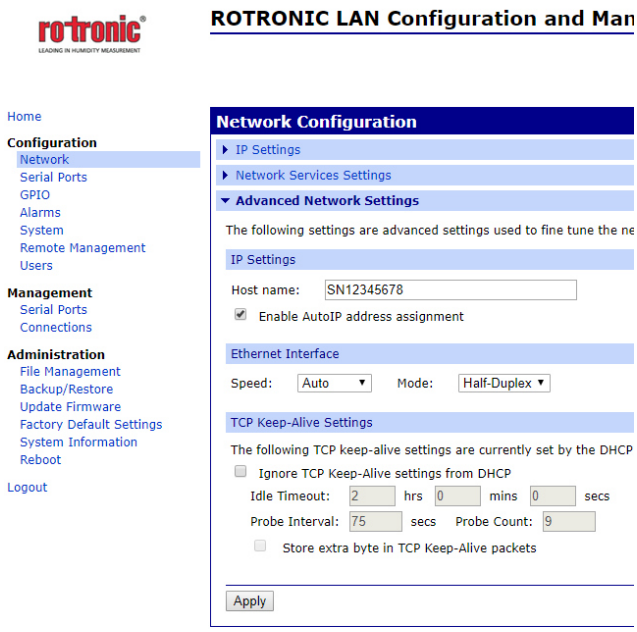
To find and configure the network settings of the device, please connect the device into the LAN and use the Digi Device Discovery Tool. (https://www.rotronic.com/en/productattachments/index/download?id=1531)

Step 1	Discover the IP address- Open and execute DigiDeviceDiscovery.exe. The device search starts automatically. Double click on the device: a web browser opens-	If the IP address or the host name device is known, please type into the address bar of the web browser: http://ipaddress (e. g. http://192.178.1.1) or http://hostname (e. g. http://SN12345678).
Step 2	Log in for further network configuration: (default username: rotronic / default password: wlan)	

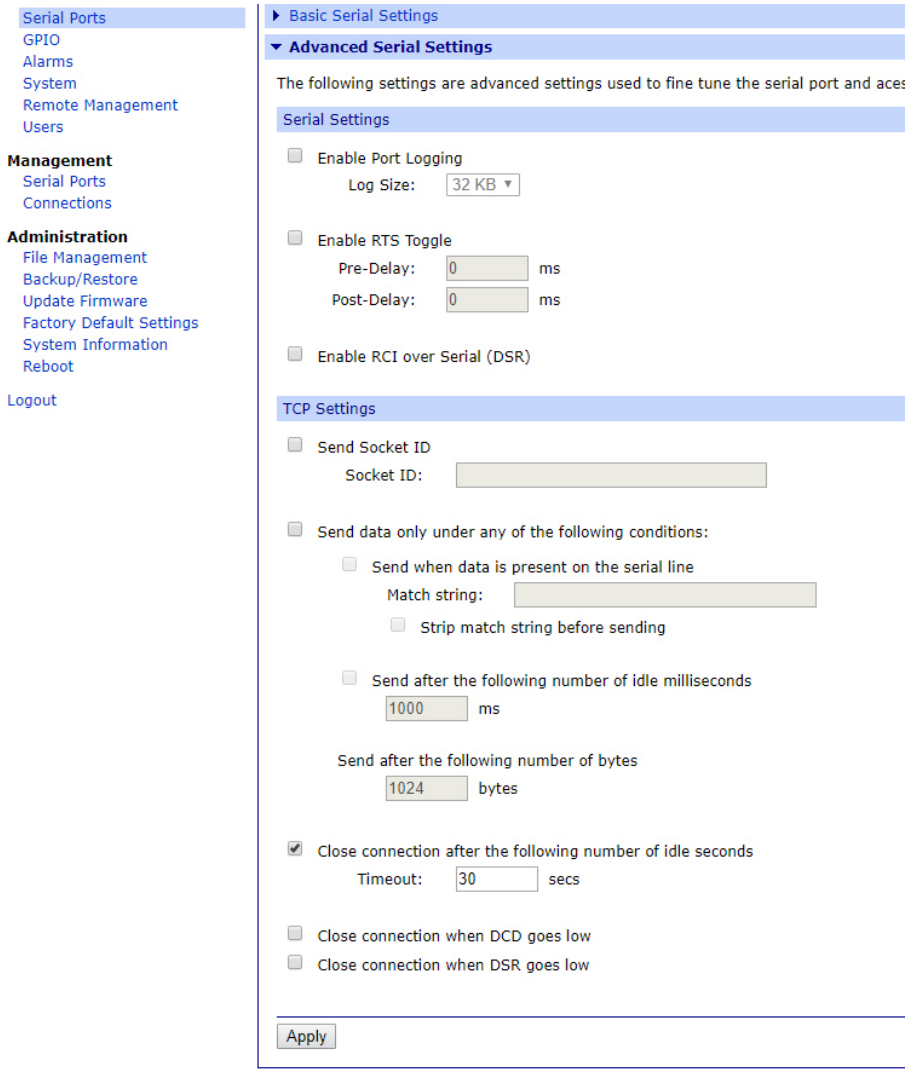


Step 3 Check or change the network settings:

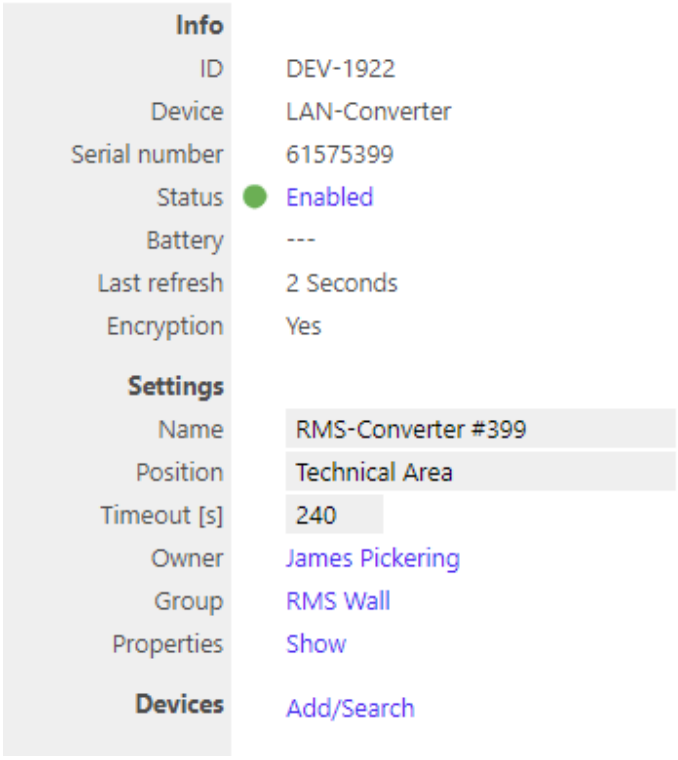


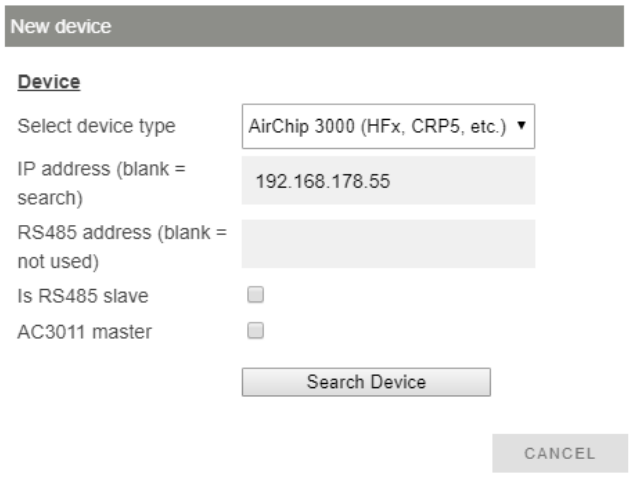
	IMPORTANT: Rotronic recommends using a fix IP address for the RMS-CONVERTER as well as for the digital devices. The reason being the support of the log function within the RMS-CONVERTER in case of any interruption to the RMS server.
Step 4	Check or change the hostname and set the check mark for “Enable AutoIP address assignment:  If a DNS is active within the network, the RMS / RMS Converter can communicate based on the host name instead of the IP address.
Step 5	Disable the discovery mode: The device search function of HW4 and the Discovery tool uses a Device Discovery function (ADDP). At the end of the configuration, it is meaningful to disable this feature. • Network>Network Services Settings>remove the checkmark of “Enable Device Discovery (ADDP)”. **IMPORTANT: Parallel and unwished communication due to the opening of HW4 will be avoided. A side effect is, that this device will not automatically be found by HW4 or the Discovery tool anymore. To access the device via HW4, the IP address must be added manually.**
Step 6	Close connection after the following number of idle seconds: Unwished parallel communication/requests to the Ethernet address of the Rotronic device can cause an unwished blocking of the devices internal access to the Ethernet port. For that reason the following setting can be done: • Serial Ports>Advanced serial settings>TCP Settings>Set a checkmark to “Close connection after the following number of idle seconds”. • >Serial Ports> Advanced serial settings> TCP Settings> Timeout: xx seconds. If the port is blocked then the device will renew/unblock the port by itself after the chosen timeout.

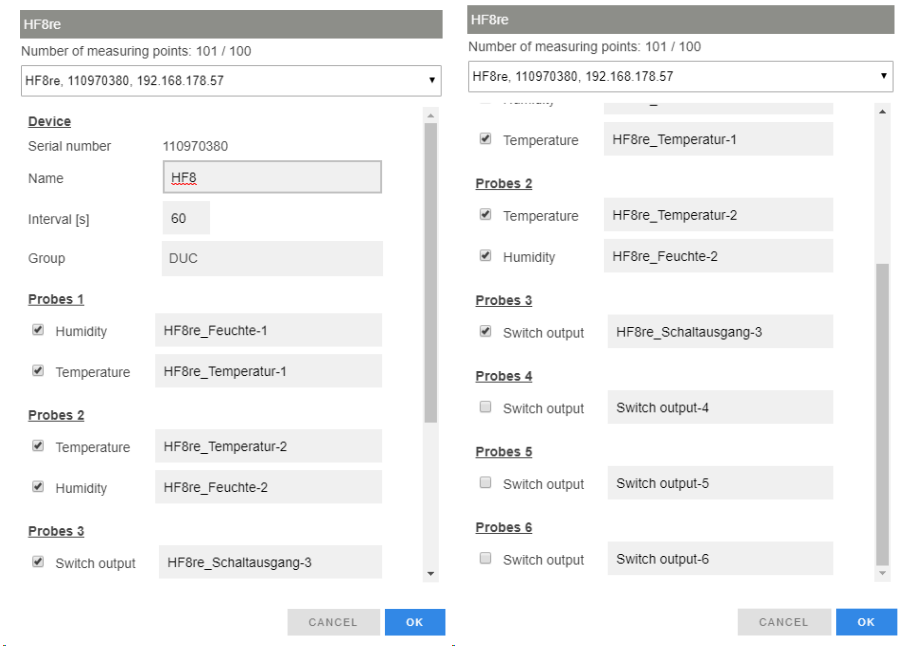
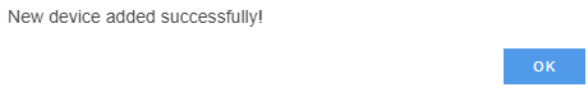
This way a permanent timeout of the device will be avoided. The loss of data will be reduced significantly. For an RMS-CONVERTER interval of 60 seconds, a timeout of 10 to 30 seconds would be meaningful.

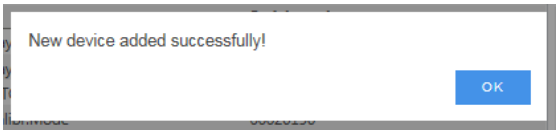


6.3.3 Integration into RMS via the RMS-CONVERTER

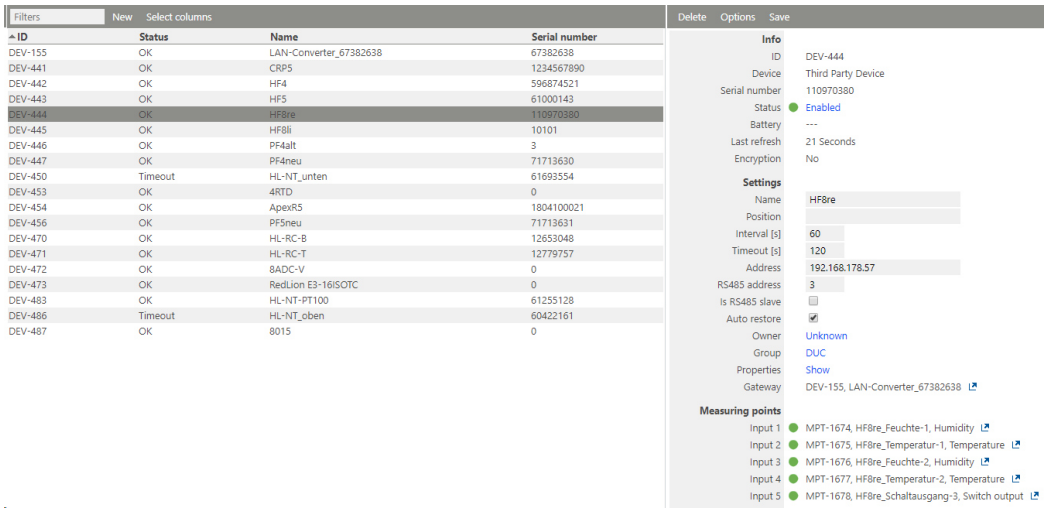
Step 1	Log into the RMS software. Select Tools > Setup > Devices. Select the RMS-CONVERTER and click on <Add/Search> devices: 

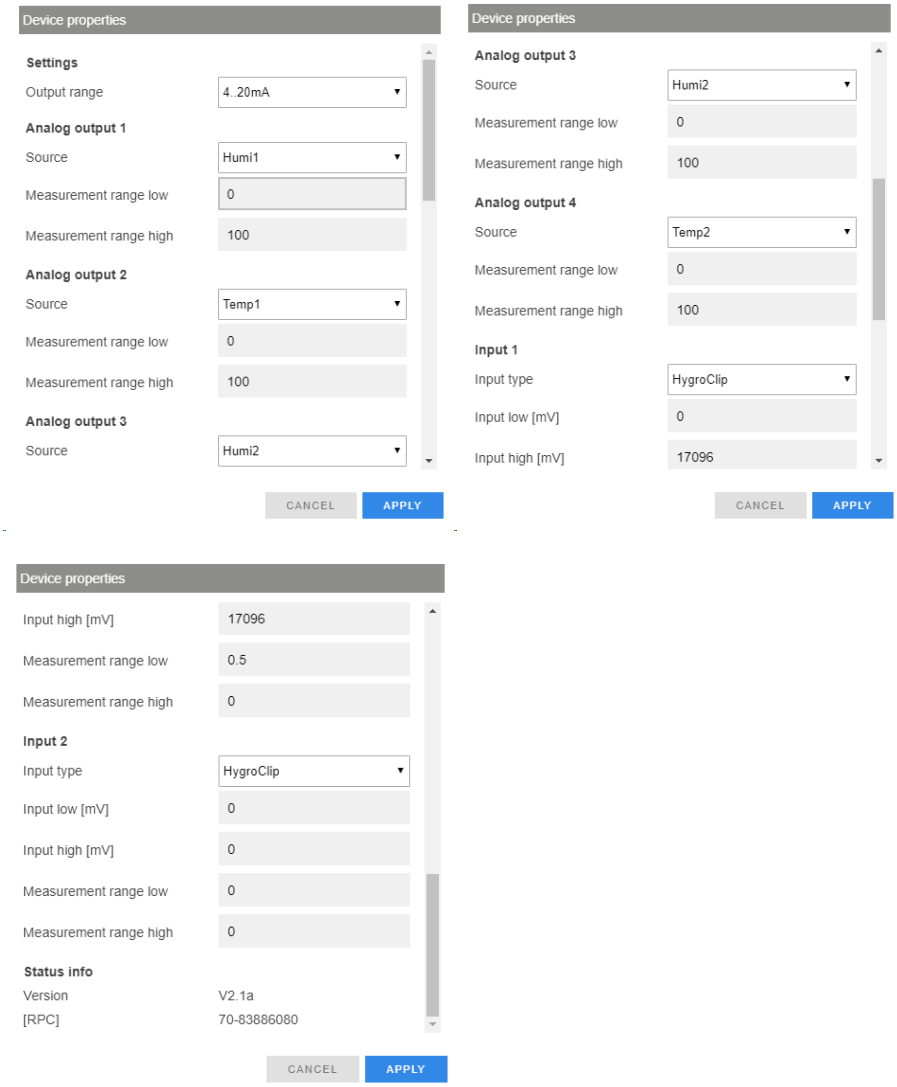
Step 2	Select the device type in the drop down menu. It is possible to type the IP address or host name into the field *IP address.* **IMPORTANT: If the field stays empty, RMS searches automatically. If the automatic search function is disabled, an IP address or a host name has to be typed into the field.** 

Step 3	The device appears: configure accordingly.  **Note: The interval cannot be shorter than the interval of the RMS Converter.** **IMPORTANT: If not all checkmarks for measurement points are set and it is wished to expand it later then the same device needs to be added again with the same identification and IP address (there is no need to delete the device before adding it). The desired check marks can be set. And afterwards, the added or updated measurement points will appear.**
Step 4	The device is added. 

Step 5	**IMPORTANT: Overwritten settings.** By adding the device to RMS via the RMS-CONVERTER, the following configuration will be overwritten on the device: • Fix value humidity: disabled • Fix value temperature: disabled • Fix value if no probe is connected: disabled • Default relative humidity unit: %rh • Default temperature unit: °C • Link alarm on humidity to relay: disabled • Link alarm on temperature to relay: disabled • Link alarm on calculated value to relay: disabled **Note: if one of the settings above is changed with HW4 further to the initial installation into RMS, then RMS will not note the change. However, such a change would cause RMS to not work correctly. The changes will however be overwritten should the RMS-CONVERTER reboot (due to a short power interrupt).**
Step 6	Finish configuration. 

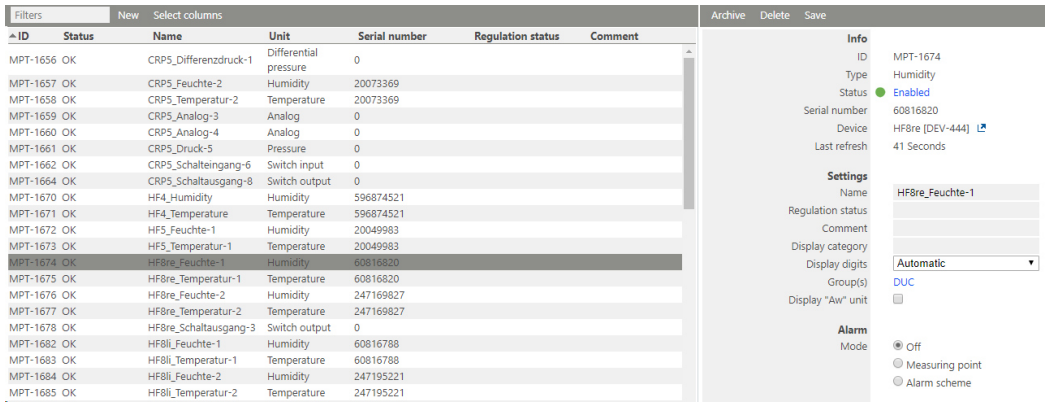
6.3.4 Functionality within RMS

Step 1	Device settings: log into the RMS software. Select Tools > Setup > Devices. Select the device.  Status: the device can be disabled/enabled. When disabled, the RMS-CONVERTER will not send any requests. Settings: Any settings can be changed and confirmed by clicking on <Save>. Properties: Show. The settings can be shown and configured.



IMPORTANT: Under options, the firmware update, import firmware file, import device definition and device inventory are not supported for this device.

IMPORTANT: The output range, the sources and the measurement ranges of the analog outputs 1 and 2, can be scaled and stored within the device clicking <Apply>.

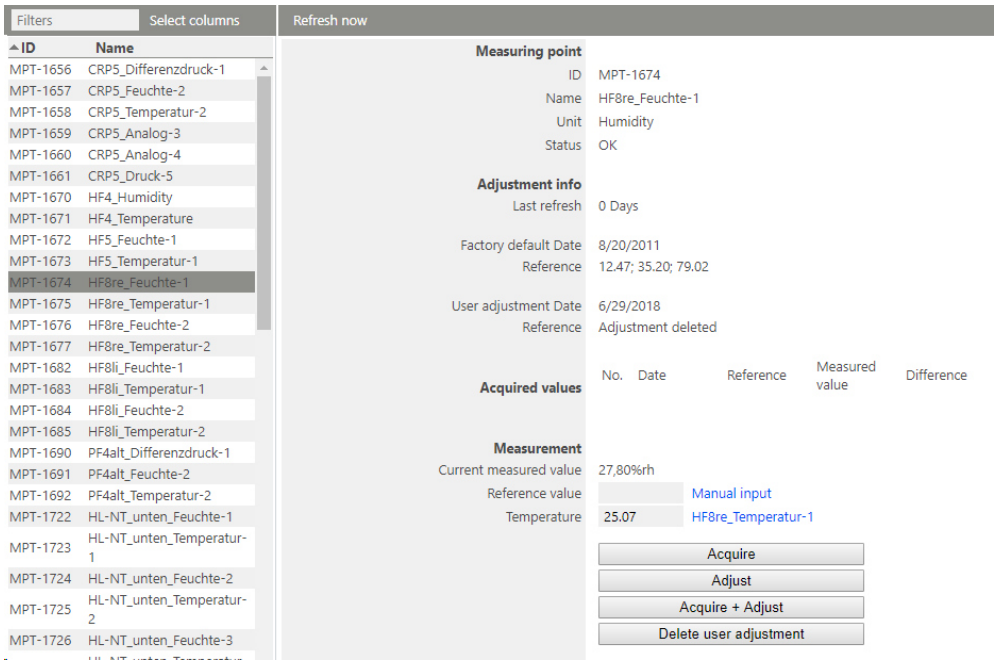
Step 2	Measurement point settings: log into the RMS software. Select Tools > Setup > Measuring point. Select the measuring point. Status: the measuring point can be disabled/enabled. Settings: Any settings can be changed and confirmed by clicking on <Save>. 

Step 3

Adjustment: log into the RMS software. Select Tools > Adjustment. Select the measuring point. Click on <Refresh now>.

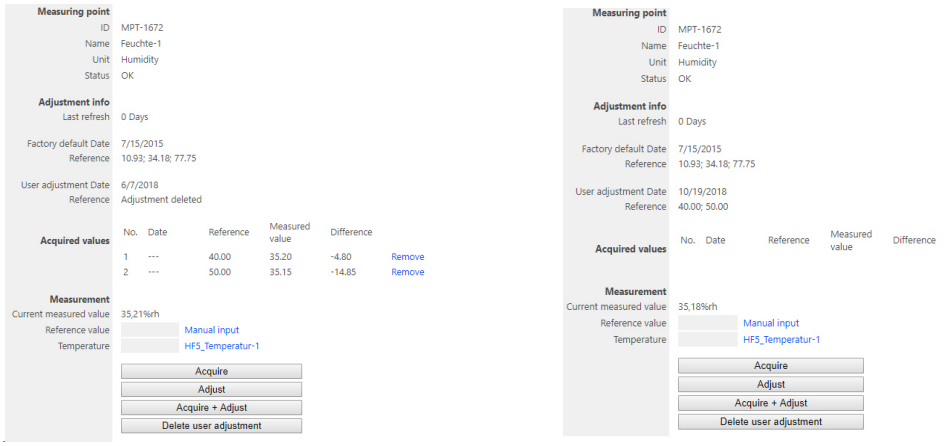
General procedure:

- Type the humidity reference value and click <Acquire>
- Repeat until the desired number of adjustment points are acquired.
  Note: The user of this feature must take care about sufficient stable circumstances for a data acquisition. Please take the interval into account. One value after every 60 seconds does not detect short term changes of the value.
- Click <Adjust> to finish.
- Use the button <Acquire + Adjust> for one point adjustment.
- Click <Delete user adjustment> to delete the last customer adjustment.



Humidity 2 points acquired

Humidity 2 points adjusted



Note: For humidity multiple points can be acquired and adjusted. For temperature only 1 or 2 points.

Step 4

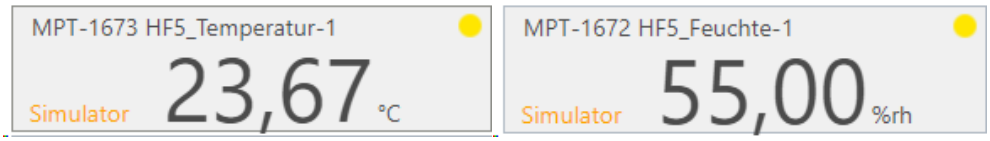
Data logging: the HF8 has an internal memory, the HF8 is not battery powered. So the HF8 cannot log during a power interruption.

In case of a communication interruption to the RMS Server, the RMS Converter logs the data of the HF8. After the interruption, RMS requests the data from the RMS Converter.

In case of a communication interruption between the RMS Converter and the HF8, the HF8 would log the data. After the interruption, RMS requests the data from the RMS Converter.

The HF8 can log up to 10,000 relative humidity and temperature values provided by a single HygroClip 2 probe or up to 20,000 data values provided by a single 1-channel analog probe. Both probe inputs can be logged at the same time and in that case the recording capacity per probe is cut in half. The calculated parameter cannot be recorded.
With an interval of 60s, the HF8 is able to bridge a communication interruption of maximum
10’000min ≈ 167h ≈ 7d → 1 Hygroclip connected or
5’000min ≈ 83h ≈ 3.5d → 2 Hygroclip connected or
20’000min ≈ 333h ≈ 14d → 1 Analog input used

This time can be increased by using a higher log interval.

Step 5	Sensor error: In case of one sensor error out of the two, RMS displays a sensor error for both measurement values. MPT-1672 Sensor error HF5_Feuchte-1 Humidity MPT-1673 Sensor error HF5_Temperatur-1 Temperature 
Step 6	Measurement alarm: Alarms linked to the measurement limits and programmed within the HC2 will not be transmitted to RMS. However if the device has a display and the display is configured correctly, the alarm will show on the display.
Step 7	Fix values on the HC2: fixed measurement values programmed within the HC2 are displayed as simulators within RMS. MPT-1672 Simulator connected HF5_Feuchte-1 Humidity MPT-1673 Simulator connected HF5_Temperatur-1 Temperature  **IMPORTANT: In case of an active fix value of one measurement value of a HC2, RMS will show "simulator connected" for both measurement values of the probe.**

6.4 *Integration of the PF4 transmitter into RMS*

6.4.1 Device description

The PF4 is a transmitter with an integrated differential pressure sensor and 1 Pt100 or HC2 probe/analog input and 1 relay.

Important: Please consult the PF4 user manual as well as the HW4 manual for PF4 devices for further details.

6.4.2 Network configuration of the device

To add the HF8 into the RMS, it is necessary to setup the individual network configuration of the device as:

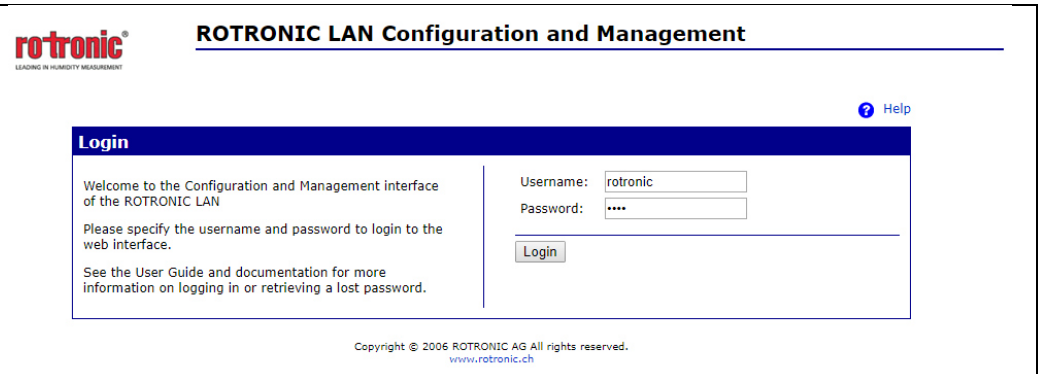
- DHCP active or fixed IP address
- Host name

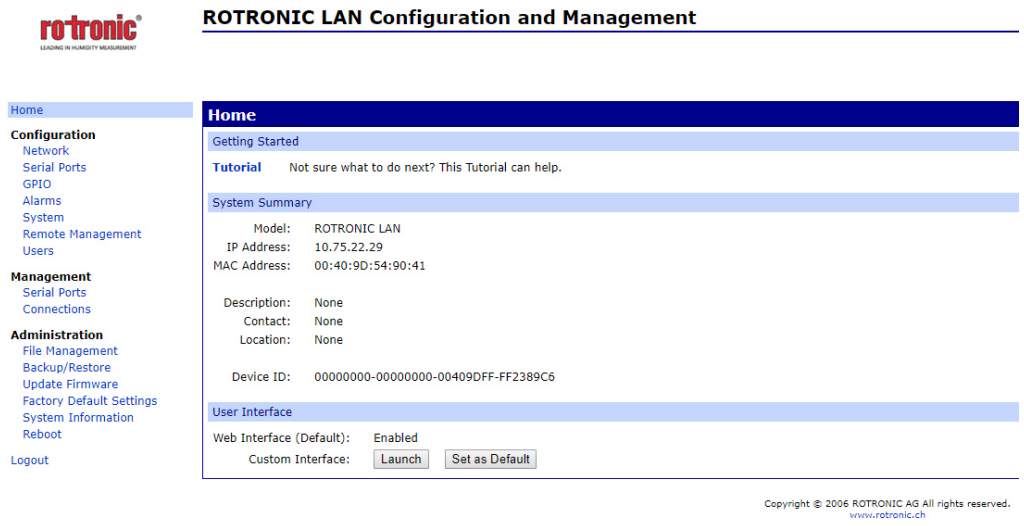
The HF8 default settings are:

- Fix IP address 192.168.1.1
- Host name not defined

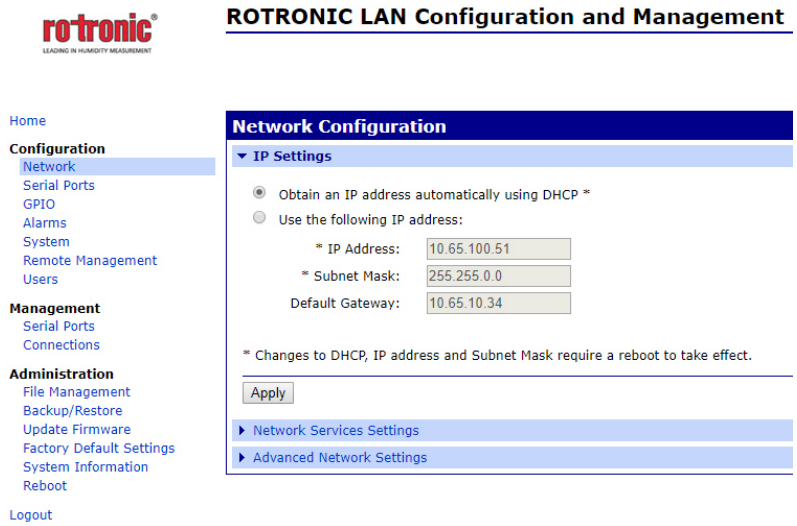
To find and configure the network settings of the device, please connect the device into the LAN and use the Digi Device Discovery Tool. (https://www.rotronic.com/en/productattachments/index/download?id=1531).

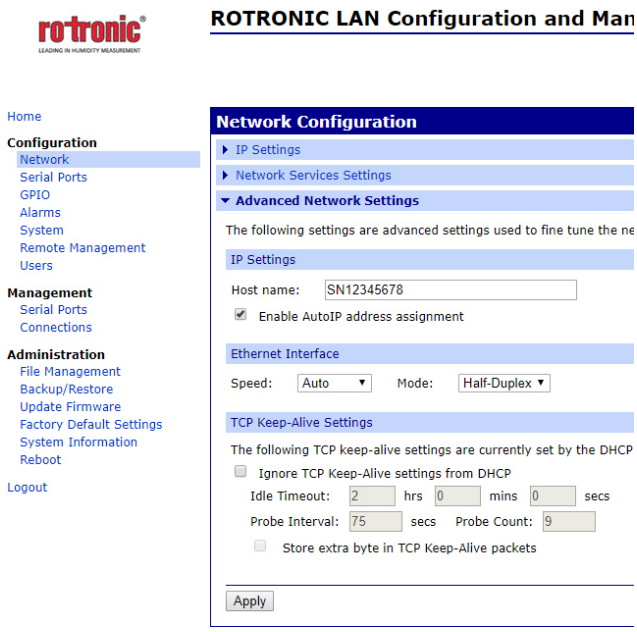
Step 1	Discover the IP address- Open and execute DigiDeviceDiscovery.exe. The device search starts automatically. Double click on the device: a web browser opens-	If the IP address or the host name device is known, please type into the address bar of the web browser: http://ipaddress (e. g. http://192.178.1.1) or http://hostname (e. g. http://SN12345678)-
Step 2	Log in for further network configuration: (default username: rotronic / default password: wlan)	



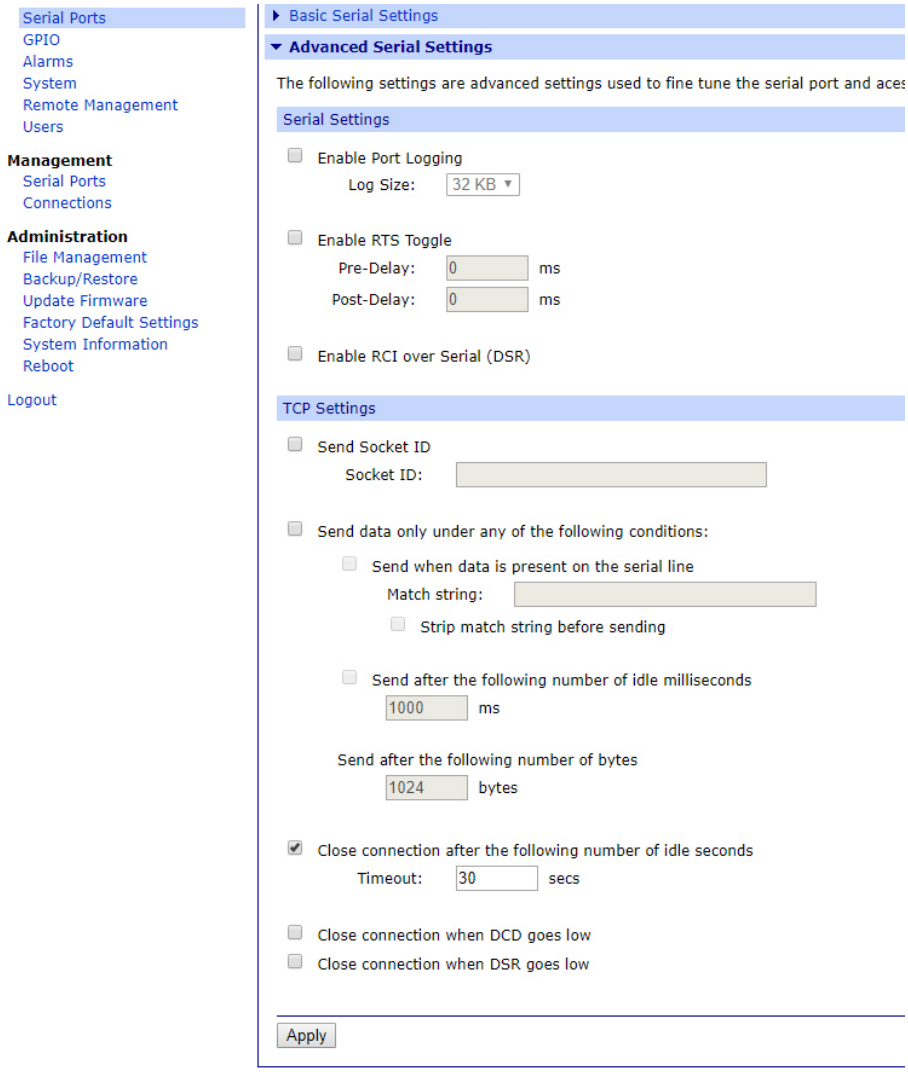


Step 3 Check or change the network settings:

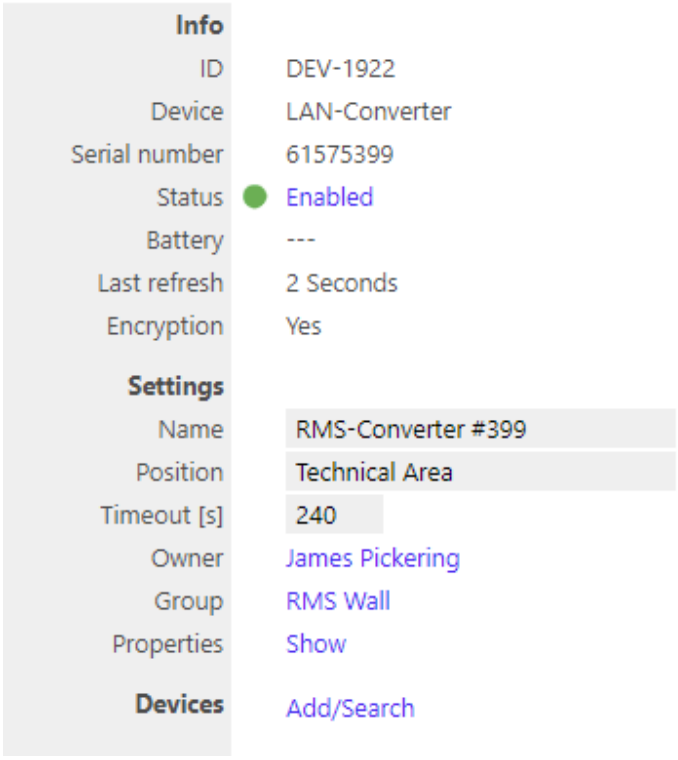


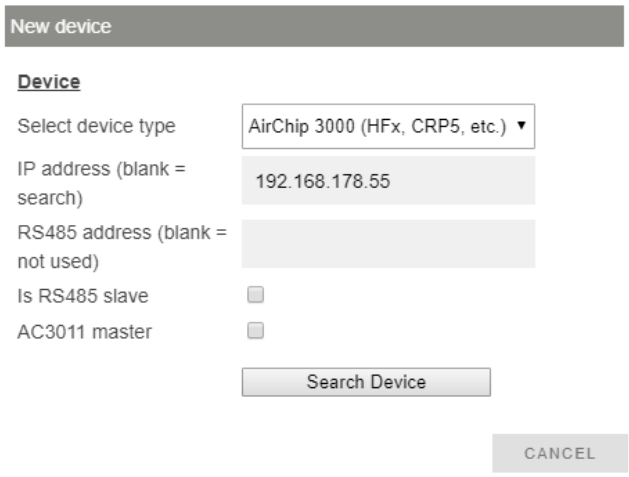
	IMPORTANT: Rotronic recommends using a fix IP address for the RMS-CONVERTER as well as for the digital devices. The reason being the support of the log function within the RMS-CONVERTER in case of any interruption to the RMS server.
Step 4	Check or change the hostname and set the check mark for “Enable AutoIP address assignment:  If a DNS is active within the network, the RMS / RMS Converter can communicate based on the host name instead of the IP address.
Step 5	Disable the discovery mode: The device search function of HW4 and the Discovery tool uses a Device Discovery function (ADDP). At the end of the configuration, it is meaningful to disable this feature. • Network>Network Services Settings>remove the checkmark of “Enable Device Discovery (ADDP)”. **IMPORTANT:** Parallel and unwished communication due to the opening of HW4 will be avoided. A side effect is, that this device will not automatically be found by HW4 or the Discovery tool anymore. To access the device via HW4, the IP address must be added manually.
Step 6	Close connection after the following number of idle seconds: Unwished parallel communication/requests to the Ethernet address of the Rotronic device can cause an unwished blocking of the devices internal access to the Ethernet port. For that reason the following setting can be done: • Serial Ports>Advanced serial settings>TCP Settings>Set a checkmark to “Close connection after the following number of idle seconds”. • >Serial Ports> Advanced serial settings> TCP Settings> Timeout: xx seconds.

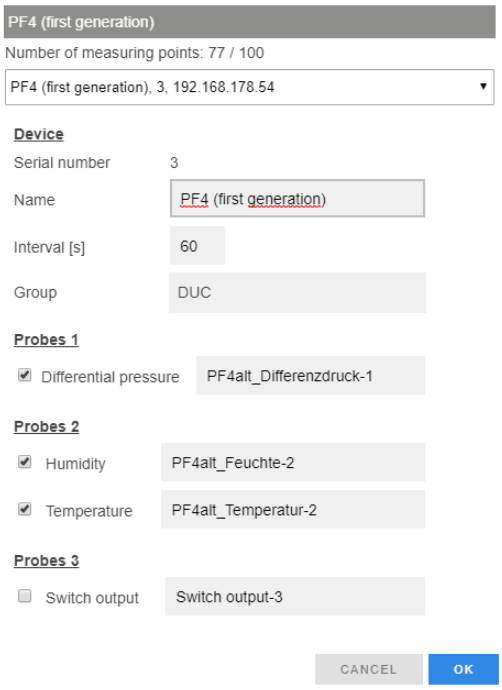
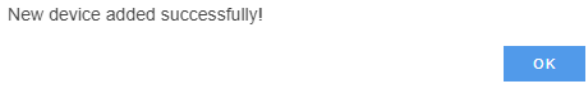
If the port is blocked then the device will renew/unblock the port by itself after the chosen timeout. This way a permanent timeout of the device will be avoided. The loss of data will be reduced significantly. For an RMS-CONVERTER interval of 60 seconds, a timeout of 10 to 30 seconds would be meaningful.

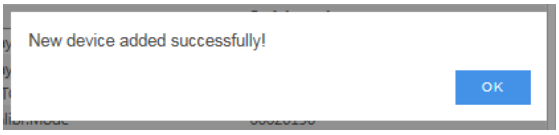


6.4.3 Integration into RMS via the RMS-CONVERTER

Step 1	Log into the RMS software. Select Tools > Setup > Devices. Select the RMS-CONVERTER and click on <Add/Search> devices: 

Step 2	Select the device type in the drop down menu. It is possible to type the IP address or host name into the field *IP address.* **IMPORTANT:** If the field stays empty, RMS searches automatically. If the automatic search function is disabled, an IP address or a host name has to be typed into the field. 

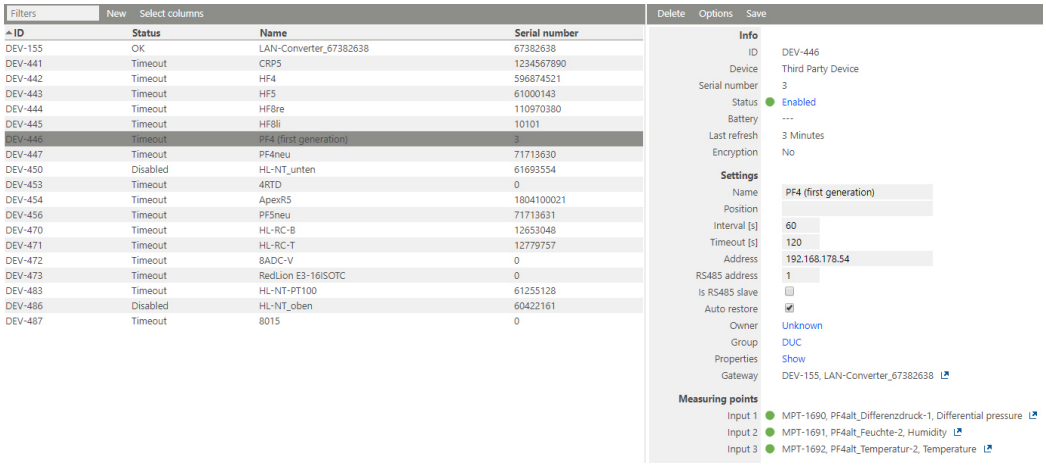
Step 3	The device appears: configure accordingly.  **Note: The interval cannot be shorter than the interval of the RMS Converter.** **IMPORTANT: If not all checkmarks for measurement points are set and it is wished to expand it later then the same device needs to be added again with the same identification and IP address (there is no need to delete the device before adding it). The desired check marks can be set. And afterwards, the added or updated measurement points will appear.**
Step 4	The device is added. 

Step 5	**IMPORTANT: Overwritten settings.** By adding the device to RMS via the RMS-CONVERTER, the following configuration will be overwritten on the device: • Fix value humidity: disabled • Fix value temperature: disabled • Fix value differential pressure: disabled • Fix value calculation: disabled • Fix value analog input: disabled • Fix value if no probe is connected: disabled • Default relative humidity unit: %rh • Default temperature unit: °C • Default pressure unit: Pa • Link alarm on every measurement parameter to relay: disabled **Note: if one of the settings above is changed with HW4 further to the initial installation into RMS, then RMS will not note the change. However, such a change would cause RMS to not work correctly. The changes will however be overwritten should the RMS-CONVERTER reboot (due to a short power interrupt).**
Step 6	Finish configuration. 

6.4.4 Functionality within RMS

Step 1

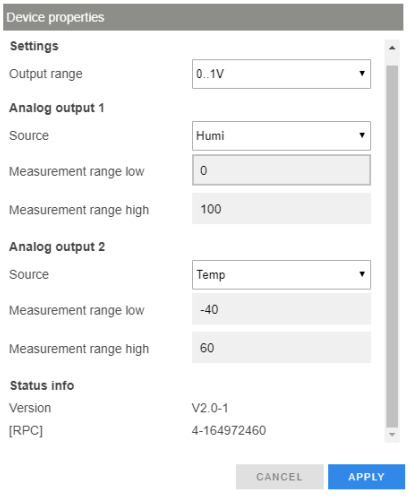
Device settings: log into the RMS software. Select Tools > Setup > Devices. Select the device.



Status: the device can be disabled/enabled. When disabled, the RMS-CONVERTER will not send any requests.

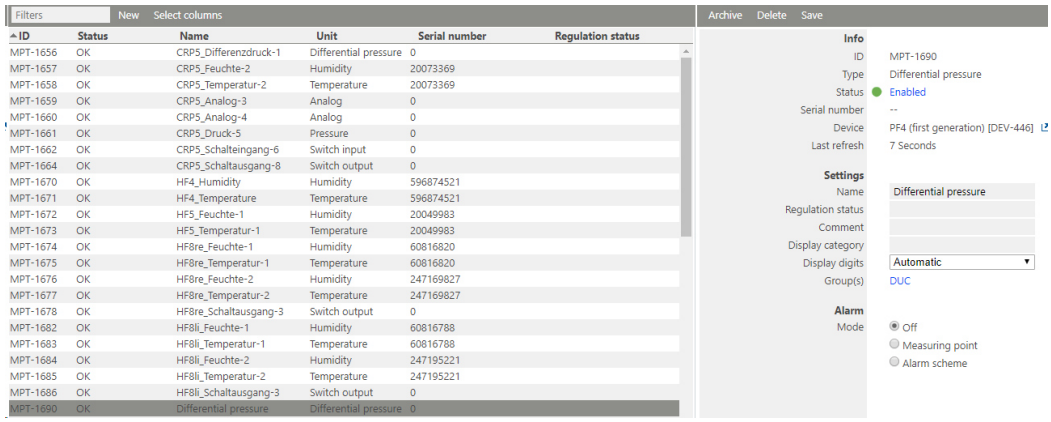
Settings: Any settings can be changed and confirmed by clicking on <Save>.

Properties: Show. The settings can be shown and configured.



IMPORTANT: Under options, the firmware update, import firmware file, import device definition and device inventory are not supported for this device.

IMPORTANT: The output range, the sources and the measurement ranges of the analog outputs 1 and 2, can be scaled and stored within the device clicking <Apply>.

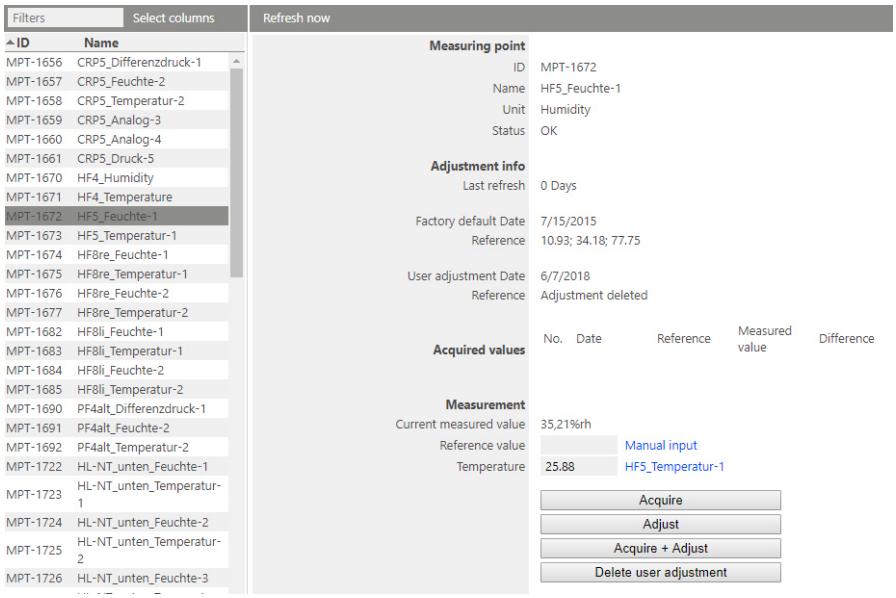
Step 2	Measurement point settings: log into the RMS software. Select Tools > Setup > Measuring point. Select the measuring point. Status: the measuring point can be disabled/enabled. Settings: Any settings can be changed and confirmed by clicking on <Save>. 

Step 3

Adjustment: log into the RMS software. Select Tools > Adjustment. Select the measuring point. Click on <Refresh now>.

General procedure:

- Type the humidity reference value and click <Acquire>
- Repeat until the desired number of adjustment points are acquired.
  Note: The user of this feature must take care about sufficient stable circumstances for a data acquisition. Please take the interval into account. One value after every 60 seconds does not detect short term changes of the value.
- Click <Adjust> to finish.
- Use the button <Acquire + Adjust> for one point adjustment.
- Click <Delete user adjustment> to delete the last customer adjustment.



The PF4 has different adjustment scenarios for differential pressure adjustment:

0-Point compensation

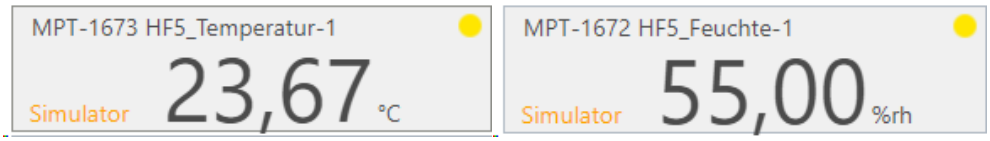
To compensate for long term drift, a 0-Point compensation is recommended. For that, the pressure connectors “+” and “-“ need to be bridged by a short pipe to create a real 0Pa pressure.

The 0-point procedure at the RMS:

1. Type 0 as the reference value and click <Acquire + Adjust> (*or <Acquire> and then <Adjust>*)

Note: A new 0-Point compensation overwrites the previous 0-Point compensation, but does not overwrites the current One point (≠0Pa) adjustment (see below).

	Note: Do not use a low reference value (ex: 0.1Pa). The PF4 would interpret it as a "One point adjustment" such as follows. In this case, the PF4 would display a strong measurement error for higher pressure values. **Note: The real date and reference value cannot be shown due to missing compatibility of these systems.** **One point (≠0Pa) adjustment** The PF4 can be adjusted at an applied pressure (≠0Pa) by the customer. Rotronic recommends to apply a pressure around the end of the measurement range. One point (≠0Pa) adjustment at the RMS: 1. Type xxPa as the reference value and click <Acquire + Adjust> (*or <Acquire> and then <Adjust>*) **Note: Rotronic recommends performing a 0-Point compensation first.** **Note: For the PF4, a customer adjustment with more than one pressure reference value is not possible. The PF4 (first generation) accepts only these two adjustment procedures.** **Note: For humidity, multiple points can be acquired and adjusted. For temperature only 1 or 2 points.**
Step 4	Data logging: the PF4 has no internal memory, the PF4 is not battery powered. So the PF4 cannot log during a power interruption. In case of a communication interruption to the RMS Server, the RMS Converter logs the data of the PF4. After the interruption, RMS requests the data from the RMS Converter. In case of a communication interruption between the RMS Converter and the PF4, the PF4 would not log the data.
Step 5	Sensor error: In case of one sensor error out of the two, RMS displays a sensor error for both measurement values. MPT-1672 Sensor error HF5_Feuchte-1 Humidity MPT-1673 Sensor error HF5_Temperatur-1 Temperature 
Step 6	Measurement alarm: Alarms linked to the measurement limits and programmed within the HC2 will not be transmitted to RMS. However if the device has a display and the display is configured correctly, the alarm will show on the display.

Step 7	Fix values on the HC2: fixed measurement values programmed within the HC2 are displayed as simulators within RMS. MPT-1672 Simulator connected HF5_Feuchte-1 Humidity MPT-1673 Simulator connected HF5_Temperatur-1 Temperature  IMPORTANT: In case of an active fix value of one measurement value of a HC2, RMS will show “simulator connected” for both measurement values of the probe.

6.5 *Integration of the PF4/5 transmitter into RMS*

6.5.1 Device description

The PF4/5 is the latest generation transmitter with an integrated differential pressure sensor and 1 Pt100 or HC2 probe/analog input and 1 relay.

Important: Please consult the PF4/5 user manual as well as the HW4 manual for PF4/5 devices for further details.

6.5.2 Network configuration of the device

To add the PF4/5 into the RMS, it is necessary to setup the individual network configuration of the device as:

- DHCP active or fixed IP address
- Host name

The PF4/5 default settings are:

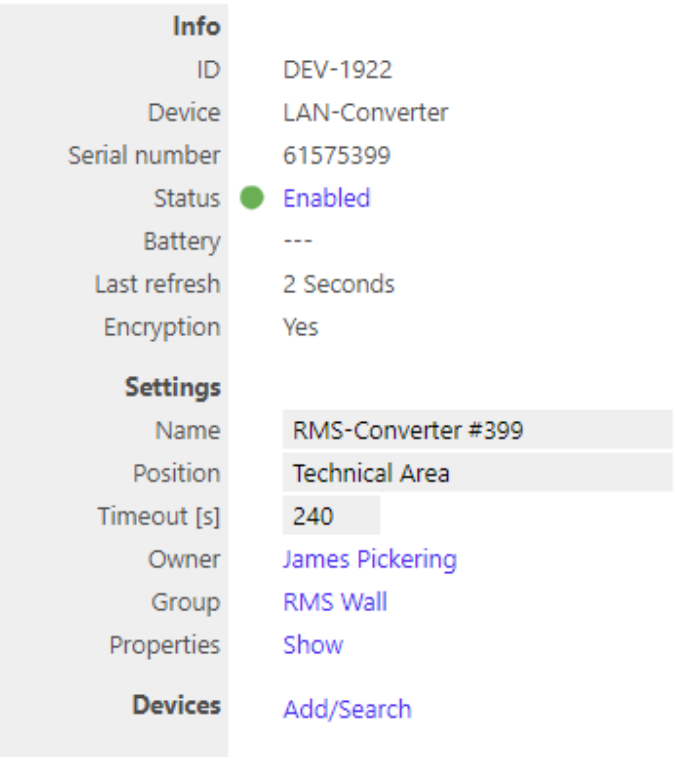
- DHCP on
- Fix IP address 192.168.1.1 (when DHCP is disabled)
- Host name PF45-XXXXXXXX (where XXXXXXXX represents the serial number of the device)

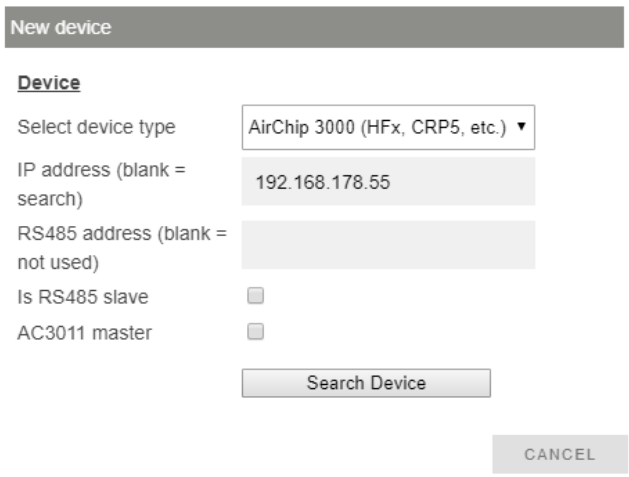
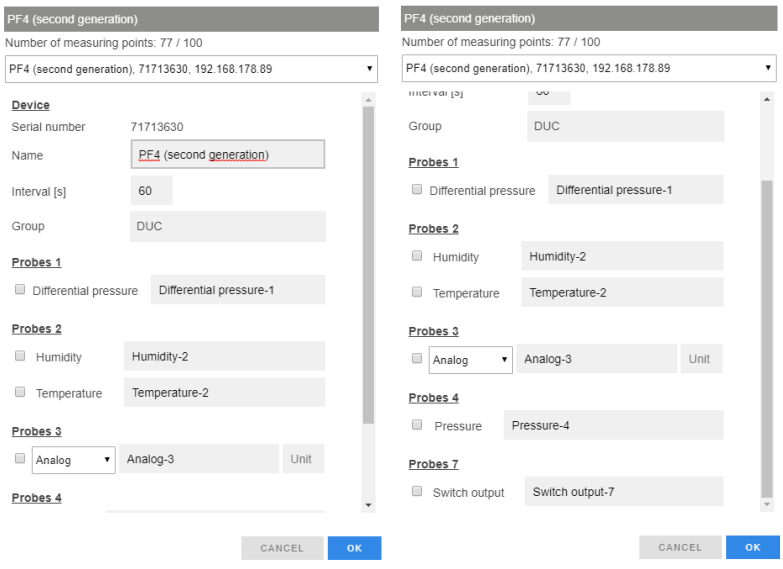
IMPORTANT: The digi device discovery tool does not work with the PF4/5

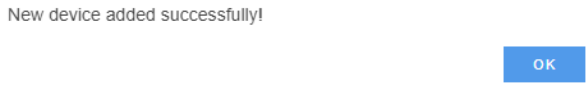
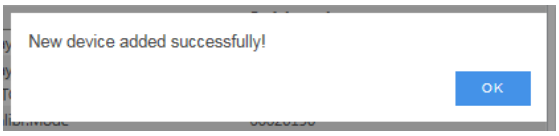
The Options to get the actual device settings are:

- Device display (if existent)
- Automatic or manual device search function via HW4 through the Ethernet connection or by using an AC3006 or AC3009 USB service cable.
- Prompt window -> ping hostname
- Typing the host name into the address bar of the web browser does not work. The PF4/5 does not have a device internal webservice.

6.5.3 Integration into RMS via the RMS-CONVERTER

Step 1	Log into the RMS software. Select Tools > Setup > Devices. Select the RMS-CONVERTER and click on <Add/Search> devices: 

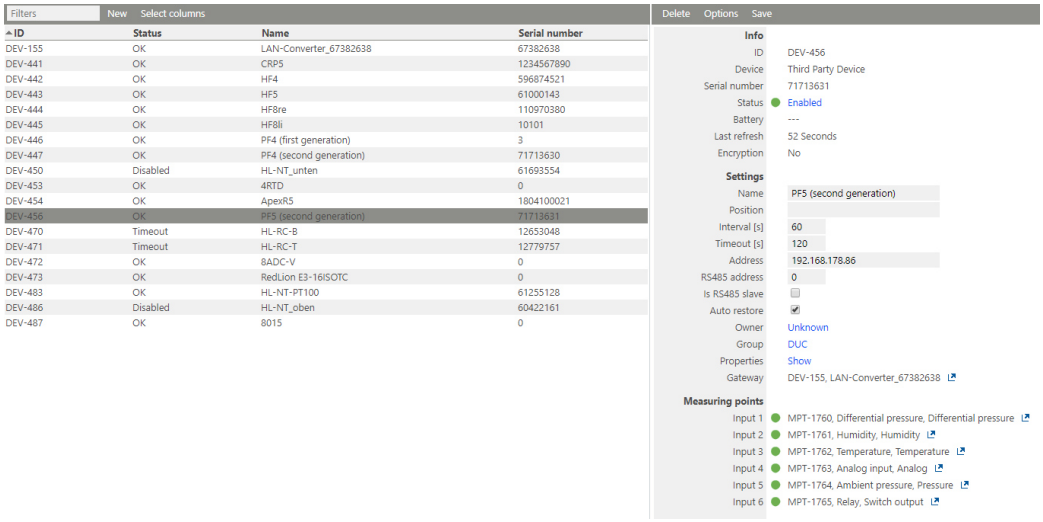
Step 2	Select the device type in the drop down menu. It is possible to type the IP address or host name into the field *IP address.* **IMPORTANT:** If the field stays empty, RMS will not search for the device automatically. 
Step 3	The device appears: configure accordingly.  **Note: The interval cannot be shorter than the interval of the RMS Converter.** **IMPORTANT: If not all checkmarks for measurement points are set and it is wished to expand it later than please add the same device via the RMS-CONVERTER (with the same identification/IP address) again and set the new wished checkmarks. The added or updated measurement points will appear afterwards.**

Step 4	The device is added. 
Step 5	**IMPORTANT: Overwritten settings.** By adding the device to RMS via the RMS-CONVERTER, the following configuration will be overwritten on the device: • Fix value humidity: disabled • Fix value temperature: disabled • Fix value differential pressure: disabled • Fix value calculation: disabled • Fix value analog input: disabled • Fix value flow: disabled • Fix value ambient pressure: disabled • Fix value if no probe is connected: disabled • Default relative humidity unit: %rh • Default temperature unit: °C • Default pressure unit: Pa • Default flow unit: m/s • Default analogue input unit: empty • Default ambient pressure unit: hPa • Link alarm on every measurement parameter to relay: disabled • Relay mute: disabled • Relay alarm on delay: disabled • Relay off after max. time: disabled **Note: if one of the settings above is changed with HW4 further to the initial installation into RMS, then RMS will not note the change. However, such a change would cause RMS to not work correctly. The changes will however be overwritten should the RMS-CONVERTER reboot (due to a short power interrupt).**
Step 6	Finish configuration. 

6.5.4 Functionality within RMS

Step 1

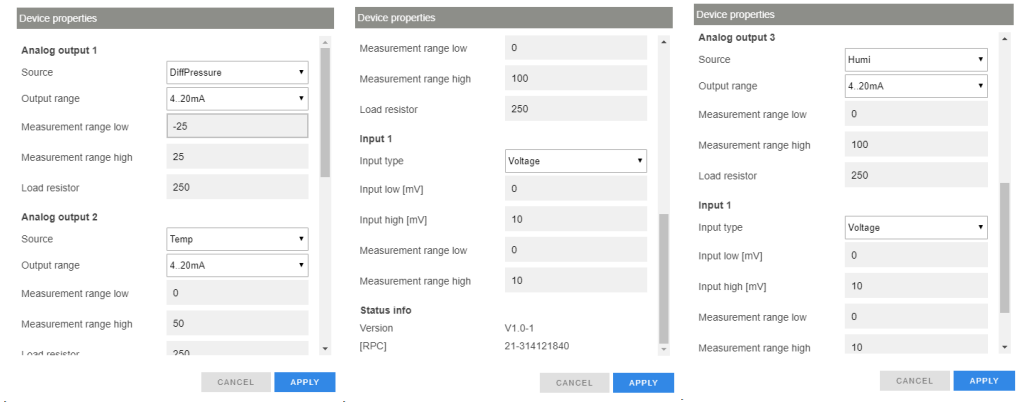
Device settings: log into the RMS software. Select Tools > Setup > Devices. Select the device.



Status: the device can be disabled/enabled. When disabled, the RMS-CONVERTER will not send any requests.

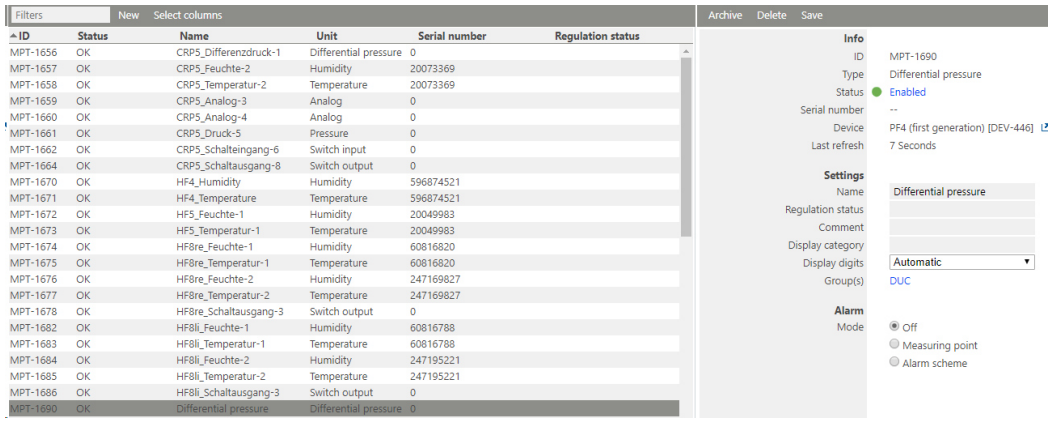
Settings: Any settings can be changed and confirmed by clicking on <Save>.

Properties: Show. The settings can be shown and configured.



IMPORTANT: Under options, the firmware update, import firmware file, import device definition and device inventory are not supported for this device.

IMPORTANT: The output range, the sources and the measurement ranges of the analog outputs 1 and 2, can be scaled and stored within the device clicking <Apply>.

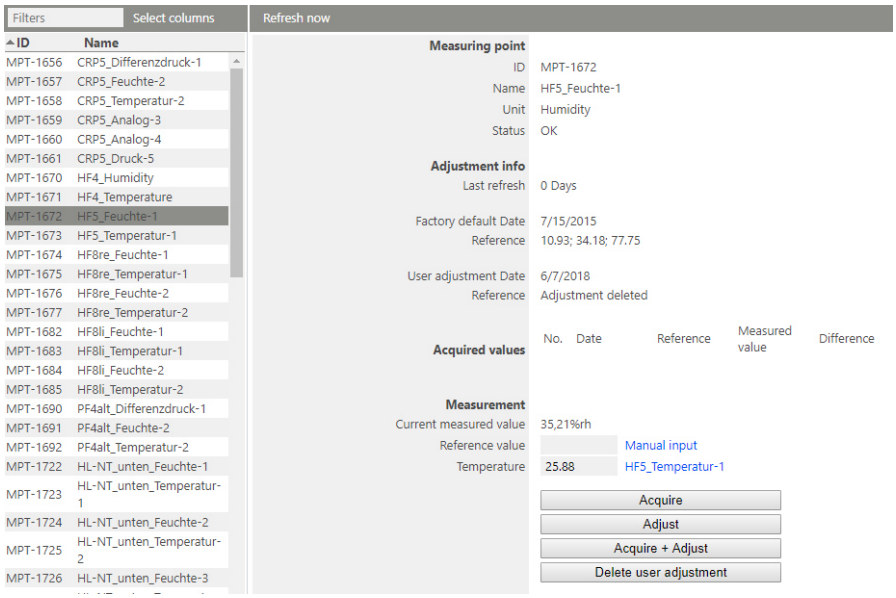
Step 2	Measurement point settings: log into the RMS software. Select Tools > Setup > Measuring point. Select the measuring point. Status: the measuring point can be disabled/enabled. Settings: Any settings can be changed and confirmed by clicking on <Save>. 

Step 3

Adjustment: log into the RMS software. Select Tools > Adjustment. Select the measuring point. Click on <Refresh now>.

General procedure:

- Type the humidity reference value and click <Acquire>
- Repeat until the desired number of adjustment points are acquired.
  Note: The user of this feature must take care about sufficient stable circumstances for a data acquisition. Please take the interval into account. One value after every 60 seconds does not detect short term changes of the value.
- Click <Adjust> to finish.
- Use the button <Acquire + Adjust> for one point adjustment.
- Click <Delete user adjustment> to delete the last customer adjustment.



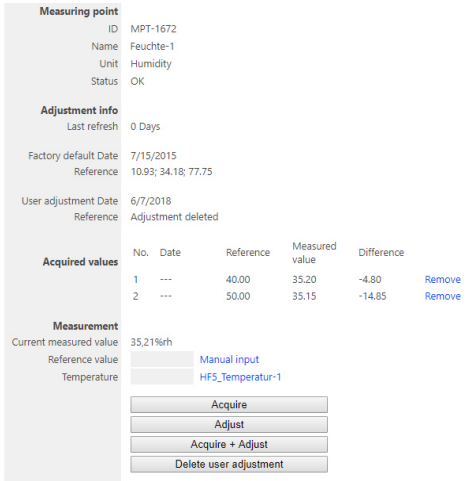
The PF4/5 has different adjustment scenarios for differential pressure.

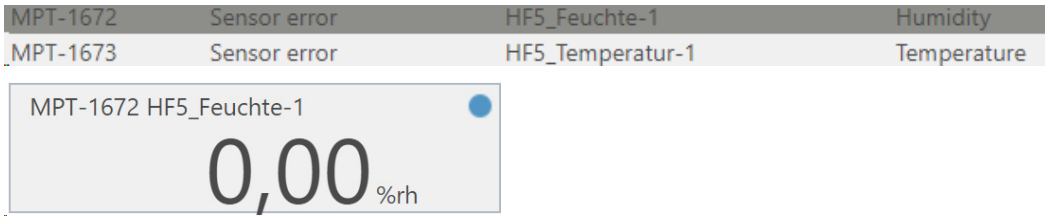
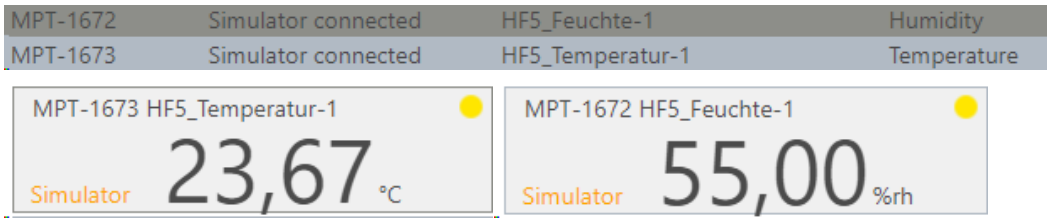
Common adjustment
The PF4/5 can be adjusted at multiple reference pressure values.

Note: A new common adjustment overwrites the common adjustment before, but does not overwrite the 0-point compensation.

0-Point compensation
To compensate long term drift, a 0-Point compensation is recommended.

1. Type in 0 as the reference value and click <Acquire + Adjust> (*or <Acquire> and than <Adjust>*)

	2. A valve closes the “+” and “-“ connectors of the sensor internally and defines a new 0-point. This procedure needs app. 10sec. The PF5 will not be able to send measurement values out during this time. **Note: The PF4 has a 0-point compensation integrated within the device internal sensor. No extra adjustment is necessary.** **Note: A new 0-Point compensation overwrites the previous 0-Point compensation, but doesn’t overwrites the current One point (≠0Pa) adjustment (see below).** **Note: The real date and reference value cannot be shown due to missing compatibility of these systems.** For relative humidity and temperature: Humidity 2 points acquired  Humidity 2 points adjusted  **Note: For humidity, multiple points can be acquired and adjusted. For temperature 1 or 2 points.**
Step 4	Data logging: the PF4/5 has no internal memory, the PF4/5 is not battery powered. So the PF4/5 cannot log during a power interruption. In case of a communication interruption to the RMS Server, the RMS Converter logs the data of the PF4/5. After the interruption, RMS requests the data from the RMS Converter. In case of a communication interruption between the RMS Converter and the PF4/5, the PF4/5 would not log the data.

Step 5	Sensor error: In case of one sensor error out of the two, RMS displays a sensor error for both measurement values. 
Step 6	Measurement alarm: Alarms linked to the measurement limits and programmed within the HC2 will not be transmitted to RMS. However if the device has a display and the display is configured correctly, the alarm will show on the display.
Step 7	Fix values on the HC2: fixed measurement values programmed within the HC2 are displayed as simulators within RMS.  **IMPORTANT:** In case of an active fix value of one measurement value of a HC2, RMS will show “simulator connected” for both measurement values of the probe.

6.6 *Integration of the CRP5 clean room panel into RMS*

6.6.1 Device description

The CRP5 is a clean room panel an integrated differential pressure sensor and 1 HC2 probe input and 1 relay, 6 relays, 4 analog outputs, 2 analog inputs and 2 digital inputs.

Important: Please consult the CRP5 user manual as well as the HW4 manual for the CRP5 devices for further details.

6.6.2 Network configuration of the device

To add the CRP5 into the RMS, it is necessary to setup the individual network configuration of the device as

- IP address

Note: The CRP5 has no DHCP function and no host name. It can be addressed only by the fix IP address.

The CRP5 default settings are:

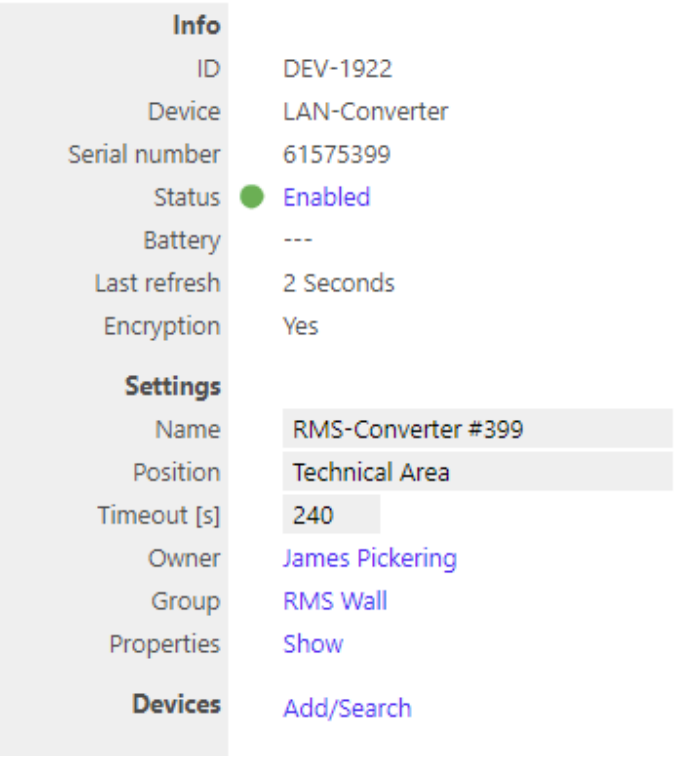
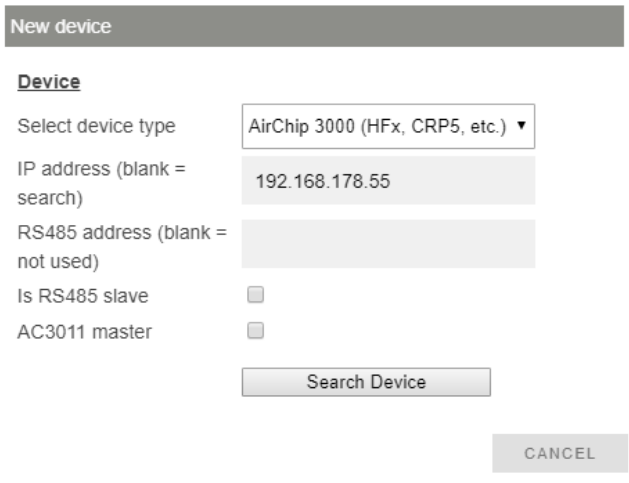
- Fix IP address 192.168.1.1

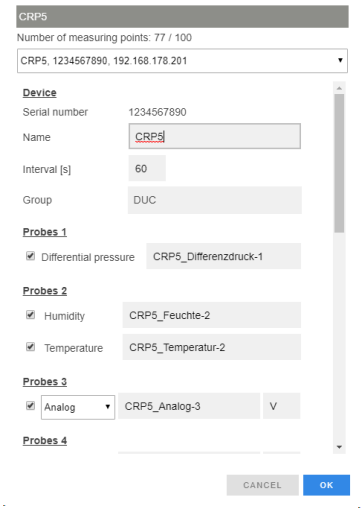
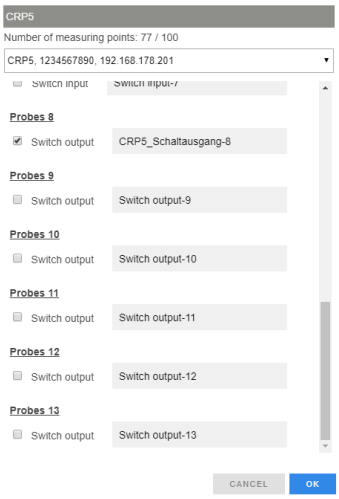
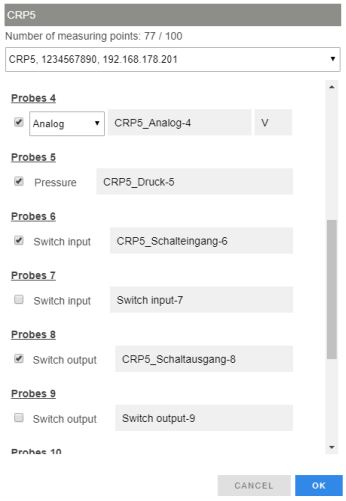
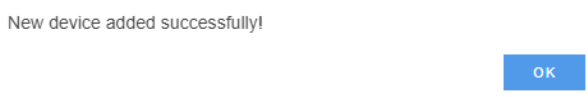
IMPORTANT: The digi device discovery tool does not work with the CRP5

The options to get the actual device settings are:

- Device display (if existent)
- Automatic or manual device search function via HW4 through the Ethernet connection or by using an AC3006 or AC3009 USB service cable.
- Prompt window -> ping hostname
- Typing the host name into the address bar of the web browser does not work. The CRP5 does not have a device internal webservice.

6.6.3 Integration into RMS via the RMS-CONVERTER

Step 1	Log into the RMS software. Select Tools > Setup > Devices. Select the RMS-CONVERTER and click on <Add/Search> devices: 
Step 2	Select the device type in the drop down menu. It is possible to type the IP address or host name into the field *IP address*. **IMPORTANT:** If the field stays empty, RMS will not search for the device automatically. 

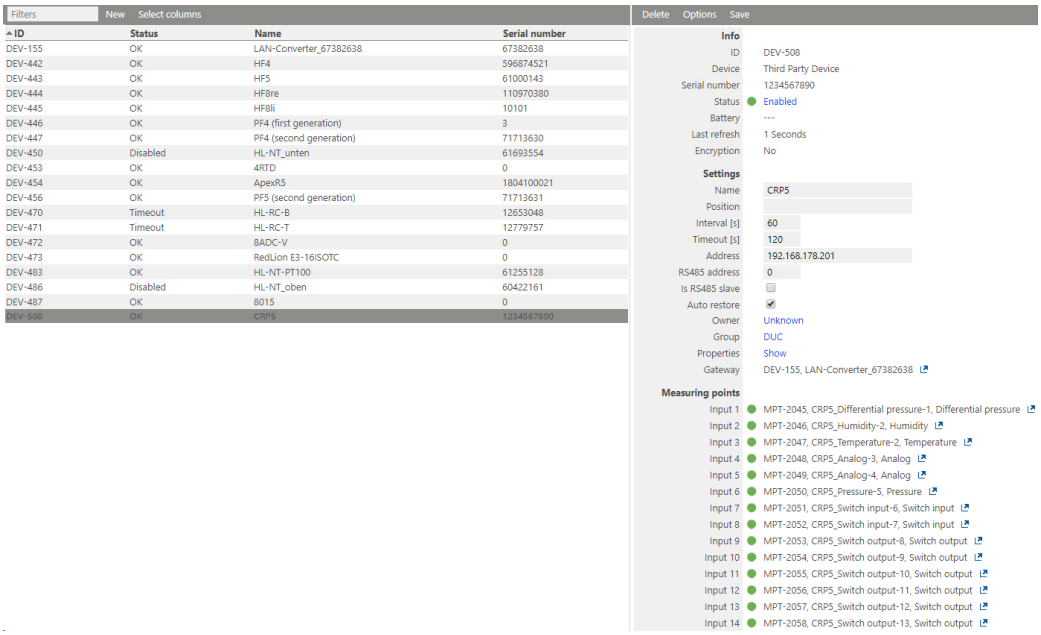
Step 3	The device appears: configure accordingly.    **Note: The interval cannot be shorter than the interval of the RMS Converter.** **IMPORTANT: If not all checkmarks for measurement points are set and it is wished to expand it later then the same device needs to be added again with the same identification and IP address (there is no need to delete the device before adding it). The desired check marks can be set. And afterwards, the added or updated measurement points will appear.**
Step 4	The device is added. 

Step 5	**IMPORTANT: Overwritten settings.** By adding the device to RMS via the RMS-CONVERTER, the following configuration will be overwritten on the device: • Fix value humidity: disabled • Fix value temperature: disabled • Fix value differential pressure: disabled • Fix value calculation: disabled • Fix value analog input: disabled • Fix value digital input: disabled • Default relative humidity unit: %rh • Default temperature unit: °C • Default pressure unit: Pa • Default analogue input unit: empty • Default ambient pressure unit: hPa • Link alarm on every measurement parameter to relay: disabled **Note: if one of the settings above is changed with HW4 further to the initial installation into RMS, then RMS will not note the change. However, such a change would cause RMS to not work correctly. The changes will however be overwritten should the RMS-CONVERTER reboot (due to a short power interrupt).**

6.6.4 Functionality within RMS

Step 1

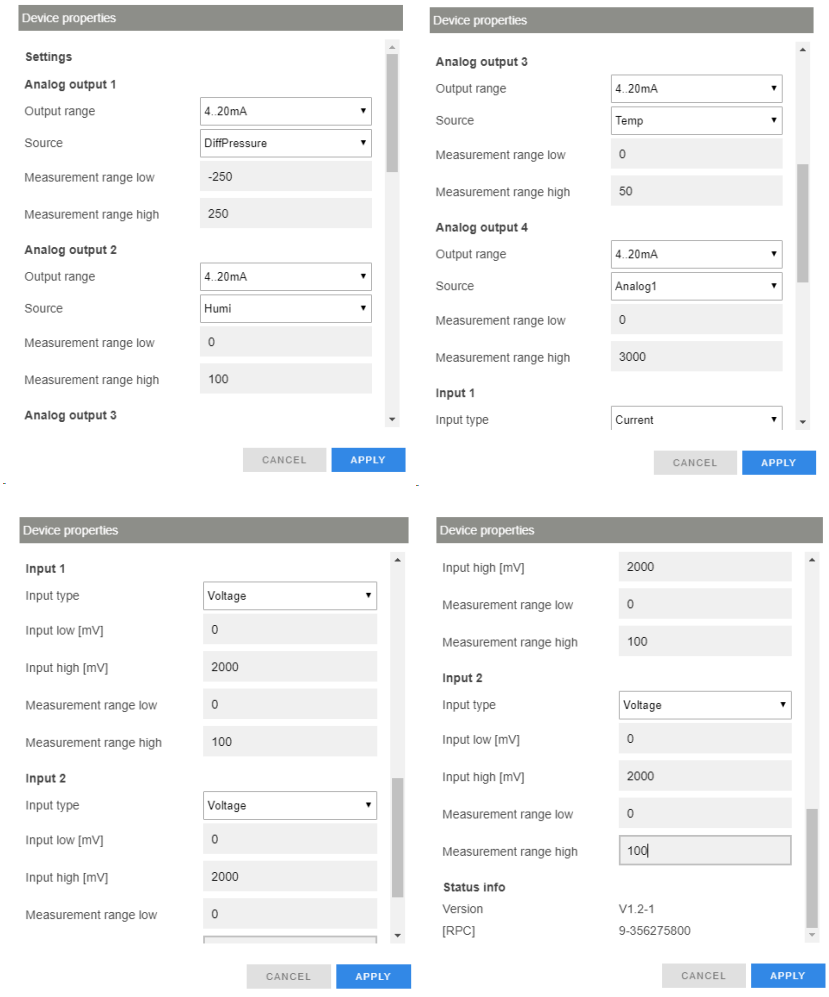
Device settings: log into the RMS software. Select Tools > Setup > Devices. Select the device.



Status: the device can be disabled/enabled. When disabled, the RMS-CONVERTER will not send any requests.

Settings: Any settings can be changed and confirmed by clicking on <Save>.

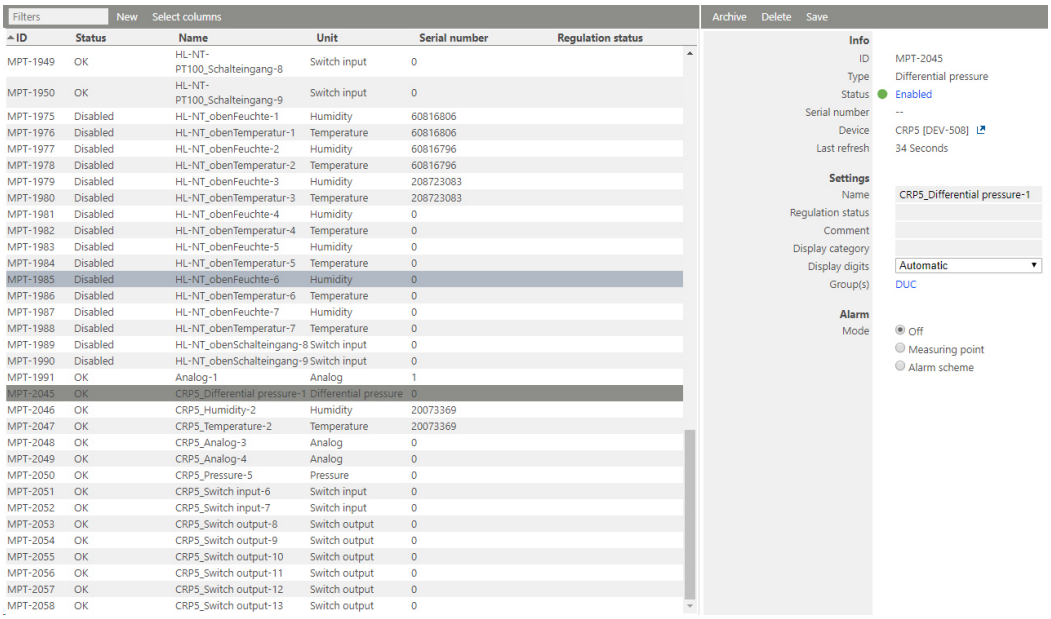
Properties: Show. The settings can be shown and configured.



IMPORTANT: Under options, the firmware update, import firmware file, import device definition and device inventory are not supported for this device.

IMPORTANT: The output range, the sources and the measurement ranges of the analog outputs 1 and 2, can be scaled and stored within the device clicking <Apply>.

Step 2	Measurement point settings: log into the RMS software. Select Tools > Setup > Measuring point. Select the measuring point. Status: the measuring point can be disabled/enabled. Settings: Any settings can be changed and confirmed by clicking on <Save>.

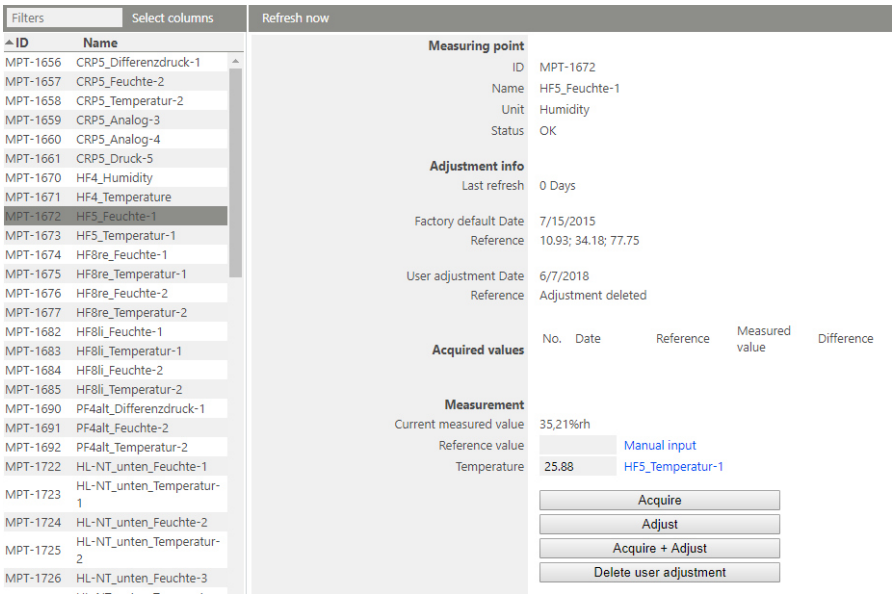


Step 3

Adjustment: log into the RMS software. Select Tools > Adjustment. Select the measuring point. Click on <Refresh now>.

General procedure:

- Type the humidity reference value and click <Acquire>
- Repeat until the desired number of adjustment points are acquired.
  Note: The user of this feature must take care about sufficient stable circumstances for a data acquisition. Please take the interval into account. One value after every 60 seconds does not detect short term changes of the value.
- Click <Adjust> to finish.
- Use the button <Acquire + Adjust> for one point adjustment.
- Click <Delete user adjustment> to delete the last customer adjustment.



The CRP5 has different adjustment scenarios for differential pressure.

Common adjustment

The CRP5 can be adjusted at multiple reference pressure values.

Note: Any differential pressure adjustment overwrites the previous customer adjustment.

0-Point compensation

To compensate long term drift, a 0-Point compensation is recommended.

3. Type in 0 as the reference value and click <Acquire + Adjust> (*or <Acquire> and than <Adjust>*)

4. A valve closes the “+” and “-“ connectors of the sensor internally and defines a new 0-point. This procedure needs app. 10sec. The CRP5 will not be able to send measurement values out during this time.

Note: A new 0-Point compensation overwrites the previous 0-Point compensation, but doesn’t overwrites the current One point (≠0Pa) adjustment (see below).

Note: Do not use a reference value of e. g. 0.1Pa. The CRP5 would interpret it as a “One point adjustment” as follows. In this case, the CRP5 would display a strong measurement error for higher pressure values.

Note: The real date and reference value cannot be shown due to missing compatibility of these systems.

One point (≠0Pa) adjustment

The CRP5 can be adjusted at an applied pressure (≠0Pa) by the customer. Rotronic recommends to apply a pressure around the end of the measurement range.

One point (≠0Pa) adjustment at the RMS:

1. Type xxPa as the reference value and click <Acquire + Adjust> (*or <Acquire> and than <Adjust>*)

Note: Rotronic recommends to perform a 0-Point compensation before.

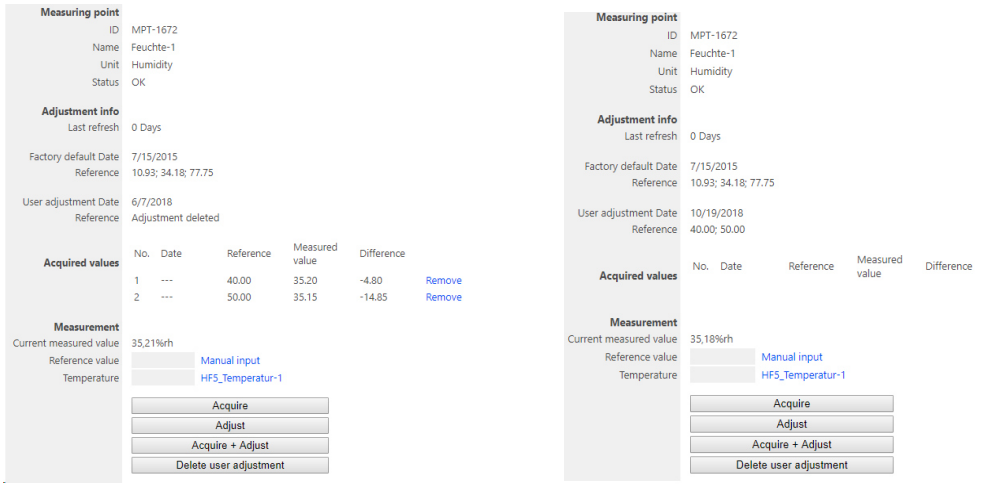
Note: In case of the CRP5, a customer adjustment with more than one pressure reference value is not possible. The CRP5 accepts only these two adjustment procedures.

Note: The real date and reference value cannot be shown due to missing compatibility of these systems.

Note: A new One point (≠0Pa) adjustment overwrites the last One point (≠0Pa) adjustment, but doesn’t overwrites the current 0-point compensation (see above).

For relative humidity and temperature:

Humidity 2 points acquired Humidity 2 points adjusted

	 **Note: For humidity multiple points can be acquired and adjusted. For temperature 1 or 2 points.**
Step 4	Data logging: the CRP5 has no internal memory, the CRP5 is not battery powered. So the CRP5cannot log during a power interruption. In case of a communication interruption to the RMS Server, the RMS Converter logs the data of the CRP5. After the interruption, RMS requests the data from the RMS Converter. In case of a communication interruption between the RMS Converter and the CRP5, the CRP5 would not log the data.
Step 5	Sensor errors within the HygroClip will not be transmitted to RMS.
Step 6	Measurement alarm: Alarms linked to the measurement limits and programmed within the HC2 will not be transmitted to RMS. However if the device has a display and the display is configured correctly, the alarm will show on the display.
Step 7	Fix values on the HC2: fixed measurement values programmed within the HC2 are not displayed as simulators within RMS.

6.7 *Integration of the HL-NT data logger into RMS*

6.7.1 Device description

The HL-NT is a data logger, combined with the HL-DS docking station can be integrated either as a stand alone device or as a network of devices with various inputs and outputs. The following devices can be integrated: HL-NT3, the HL-DS-PT4, HL-DS-U4 and the HL-DS-U4-420.

Important: Please consult the HL-NT and HL-DS user manual as well as the HW4 manual for HL-NT and HL-DS devices for further details.

6.7.2 Network configuration of the device

To add the HL-NT into the RMS, it is necessary to setup the individual network configuration of the device as:

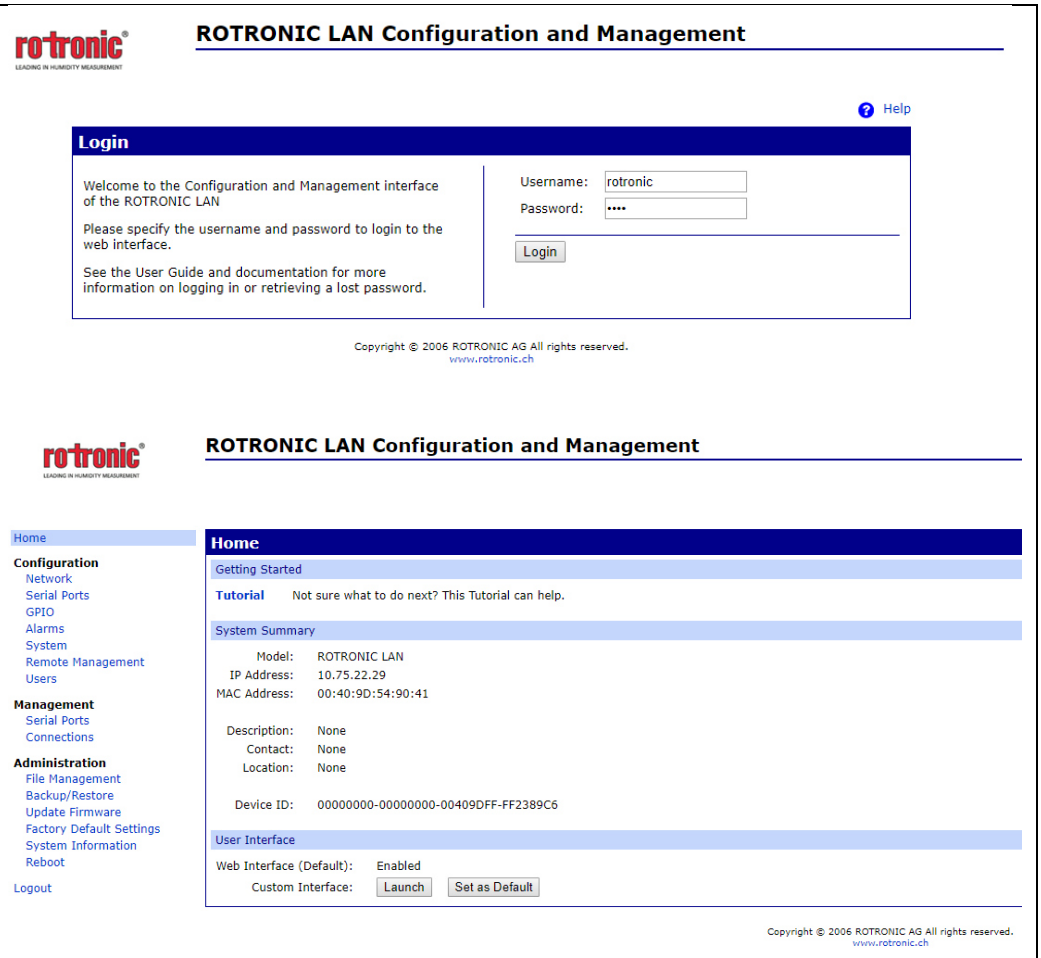
- DHCP active or fixed IP address
- Host name

The HL-NT default settings are:

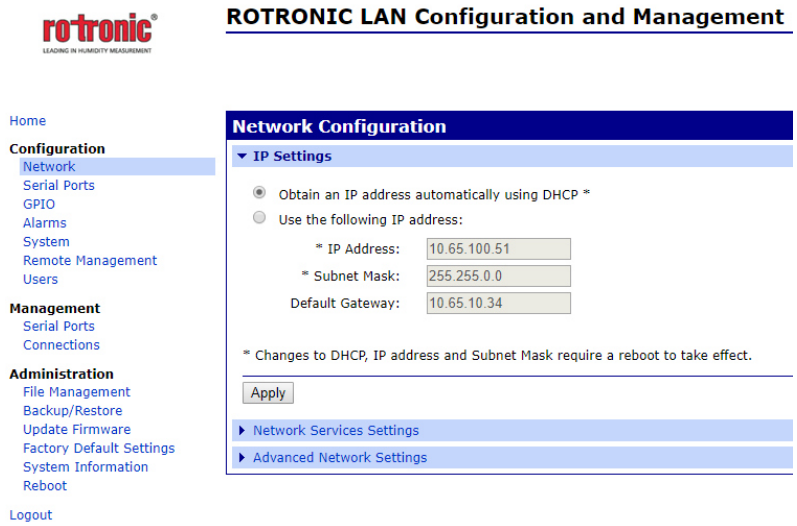
- Fix IP address 192.168.1.1
- Host name not defined

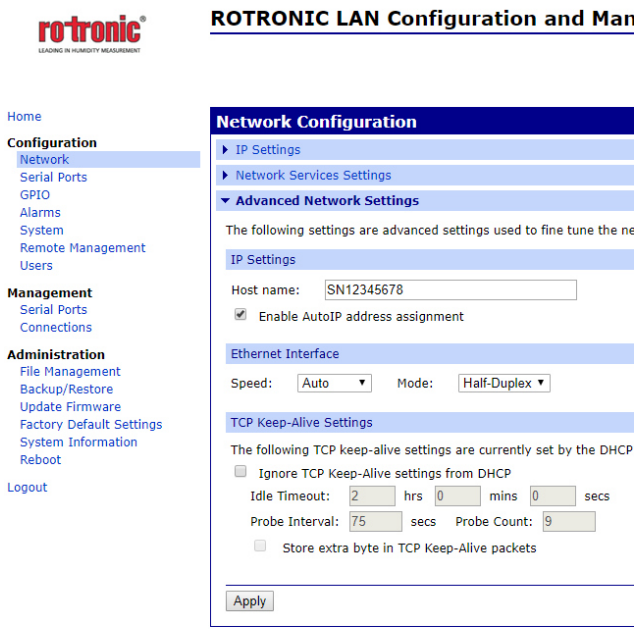
To find and configure the network settings of the device, please connect the device into the LAN and use the Digi Device Discovery Tool. (https://www.rotronic.com/en/productattachments/index/download?id=1531).

Step 1	Discover the IP address- Open and execute DigiDeviceDiscovery.exe. The device search starts automatically. Double click on the device: a web browser opens-	If the IP address or the host name device is known, please type into the address bar of the web browser: http://ipaddress (e. g. http://192.178.1.1) or http://hostname (e. g. http://SN12345678).
Step 2	Log in for further network configuration: (default username: rotronic / default password: wlan)	



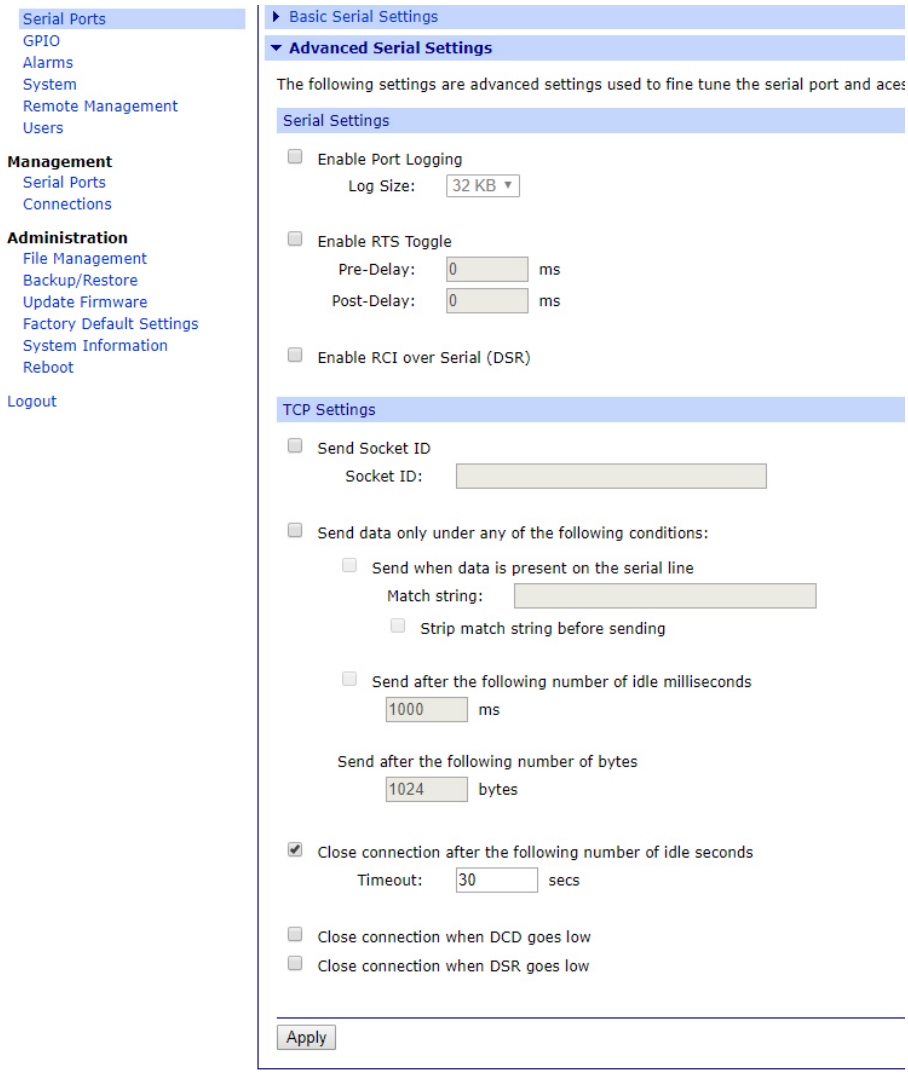
Step 3 Check or change the network settings:



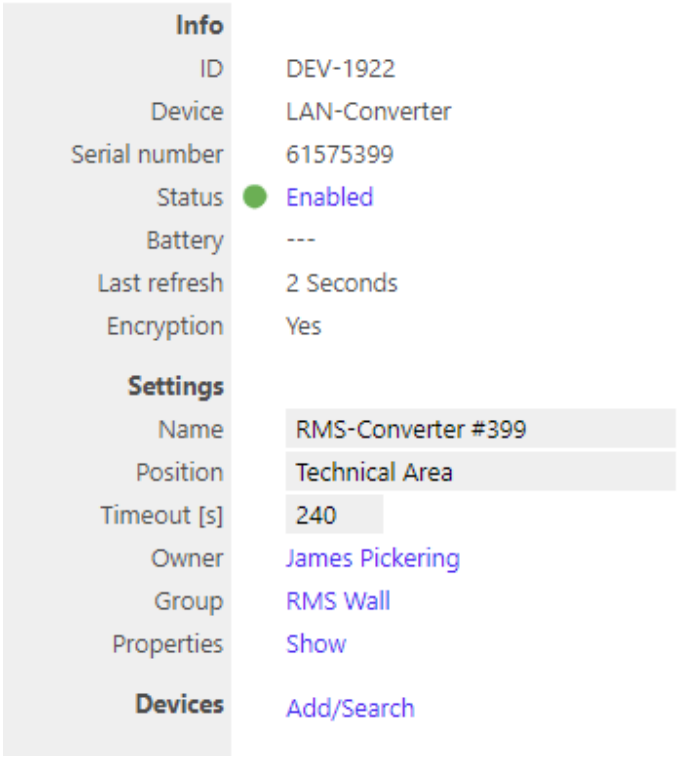
	IMPORTANT: Rotronic recommends using a fix IP address for the RMS-CONVERTER as well as for the digital devices. The reason being the support of the log function within the RMS-CONVERTER in case of any interruption to the RMS server.
Step 4	Check or change the hostname and set the check mark for “Enable AutoIP address assignment:  If a DNS is active within the network, the RMS / RMS Converter can communicate based on the host name instead of the IP address.
Step 5	Disable the discovery mode: The device search function of HW4 and the Discovery tool uses a Device Discovery function (ADDP). At the end of the configuration, it is meaningful to disable this feature. • Network>Network Services Settings>remove the checkmark of “Enable Device Discovery (ADDP)”. **IMPORTANT: Parallel and unwished communication due to the opening of HW4 will be avoided. A side effect is, that this device will not automatically be found by HW4 or the Discovery tool anymore. To access the device via HW4, the IP address must be added manually.**
Step 6	Close connection after the following number of idle seconds: Unwished parallel communication/requests to the Ethernet address of the Rotronic device can cause an unwished blocking of the devices internal access to the Ethernet port. For that reason the following setting can be done: • Serial Ports>Advanced serial settings>TCP Settings>Set a checkmark to “Close connection after the following number of idle seconds”.

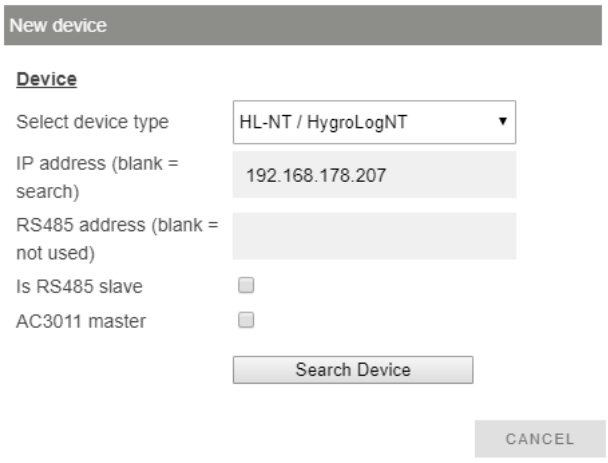
- >Serial Ports> Advanced serial settings> TCP Settings> Timeout: xx seconds.

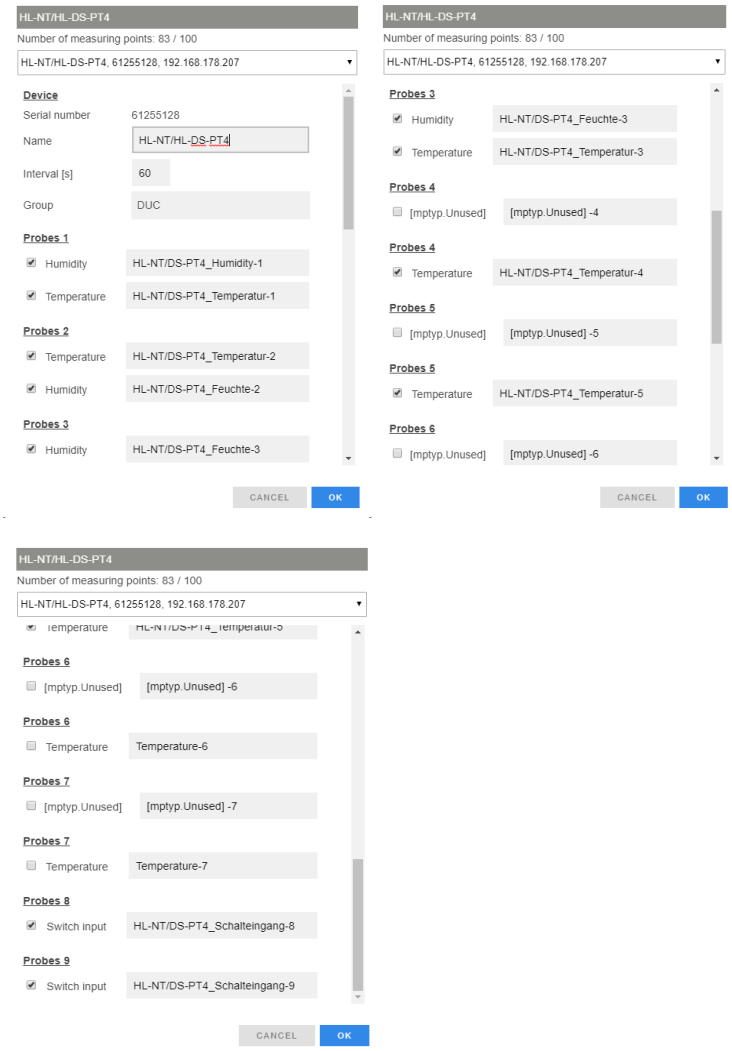
If the port is blocked then the device will renew/unblock the port by itself after the chosen timeout. This way a permanent timeout of the device will be avoided. The loss of data will be reduced significantly. For an RMS-CONVERTER interval of 60 seconds, a timeout of 10 to 30 seconds would be meaningful.

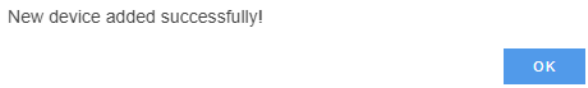


6.7.3 Integration into RMS via the RMS-CONVERTER

Step 1	Log into the RMS software. Select Tools > Setup > Devices. Select the RMS-CONVERTER and click on <Add/Search> devices: 

Step 2	Select the device type in the drop down menu. It is possible to type the IP address or host name into the field *IP address.* **IMPORTANT:** If the field stays empty, RMS searches automatically. If the automatic search function is disabled, an IP address or a host name has to be typed into the field. 

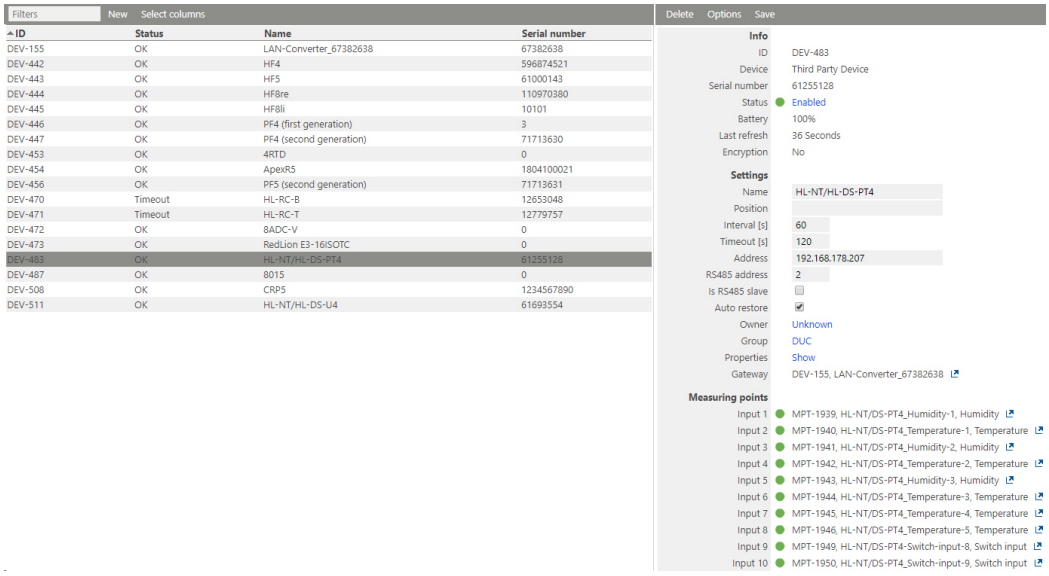
Step 3	The device appears: configure accordingly.  **Note: Probes 1 to 3 are the probes of the HL-NT. Probes 4 to 7 are the probes of the HL-DS Probes 8 and 9 are the switch inputs of the HL-DS.** **Note: The interval cannot be shorter than the interval of the RMS Converter.** **Note: For the HL-DS-PT4, please set a checkmark for temperature on probes 4 and 5. The other probes 6 and 7 are not working and would display a measurement without function. A checkmark cannot be set for the probes 6 and 7 because the hardware interfaces for these probes don't exist for this device version. The RMS would display measurement points without function. These notes are related to the limited compatibility of RMS and the HL-NT technology.**

	Note: For the HL-DS-U4 and HL-DS-U4-420, if the analog inputs of the HL-DS are required, the configuration of the HL-DS can be changed via HW4 and the devices must be integrated again into RMS or the settings can also be changed via the RMS (Tools>Setup>Devices>Properties>Show, a window appears where the settings can be changed. After clicking <Apply> the device need to be deleted from RMS and reintegrated again to show the new input settings. **IMPORTANT: If not all checkmarks for measurement points are set and it is wished to expand it later then the same device needs to be added again with the same identification and IP address (there is no need to delete the device before adding it). The desired check marks can be set. And afterwards, the added or updated measurement points will appear.**
Step 4	The device is added. 
Step 5	**IMPORTANT: Overwritten settings.** By adding the device to RMS via the RMS-CONVERTER, the following configuration will be overwritten on the device: • Alarm settings: will not be overwritten, but ignored by RMS. Meaning that local alarms can be set and the HL-NT will alarm via the display and buzzer. • Log file format: .LOG • Delete old log files: disabled • Relais settings: off • Write protection: off • Current time: UTC • Log interval: 1 min • Create new file: every day • Relative humidity: on • Temperature: on • Calculated value: off • Start time: 1.1.2000 • Stop time: 1.1.2050 • All .XLS files will be deleted. • All .LOG files older than 7 day will be deleted **Note: if one of the settings above is changed with HW4 further to the initial installation into RMS, then RMS will not note the change. However, such a change would cause RMS to not work correctly. The changes will however be overwritten should the RMS-CONVERTER reboot (due to a short power interrupt).**

6.7.4 Functionality within RMS

Step 1

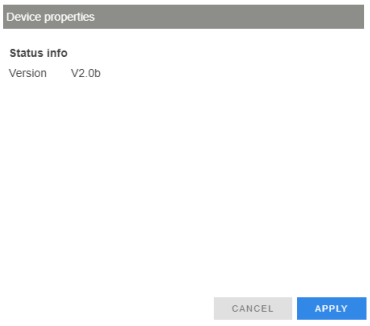
Device settings: log into the RMS software. Select Tools > Setup > Devices. Select the device.



Status: the device can be disabled/enabled. When disabled, the RMS-CONVERTER will not send any requests.

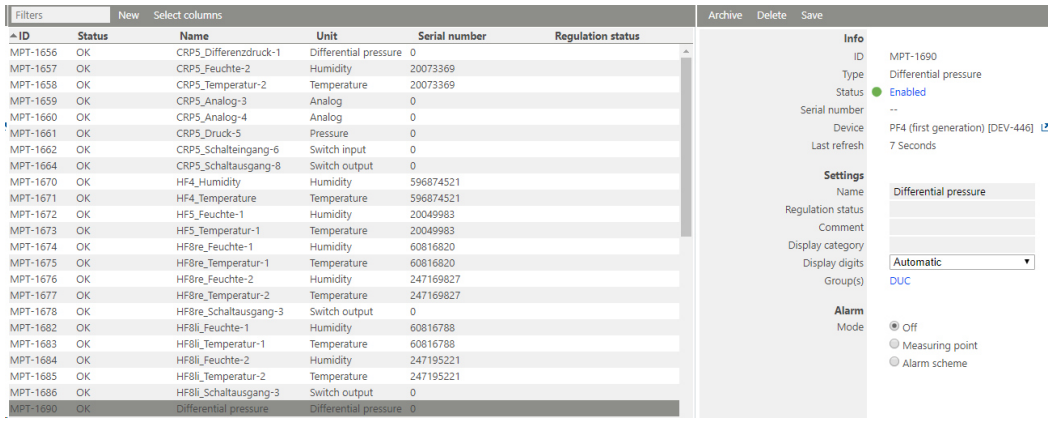
Settings: Any settings can be changed and confirmed by clicking on <Save>.

Properties: Show. The firmware version is shown.



IMPORTANT: Under options, the firmware update, import firmware file, import device definition and device inventory are not supported for this device.

IMPORTANT: The output range, the sources and the measurement ranges of the analog outputs 1 and 2, can be scaled and stored within the device clicking <Apply>.

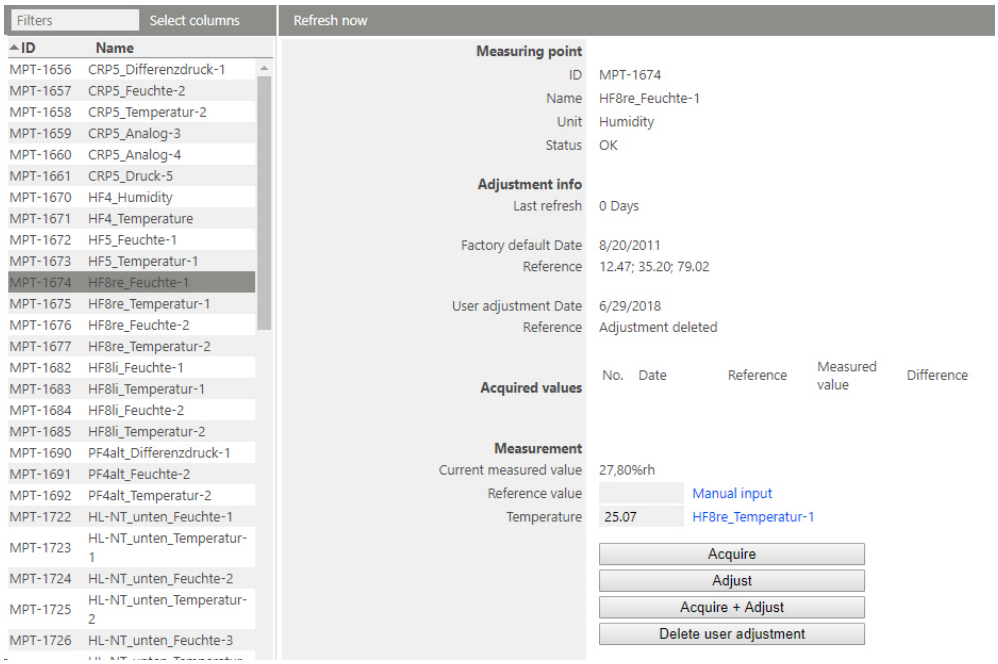
Step 2	Measurement point settings: log into the RMS software. Select Tools > Setup > Measuring point. Select the measuring point. Status: the measuring point can be disabled/enabled. Settings: Any settings can be changed and confirmed by clicking on <Save>. 

Step 3

Adjustment: log into the RMS software. Select Tools > Adjustment. Select the measuring point. Click on <Refresh now>.

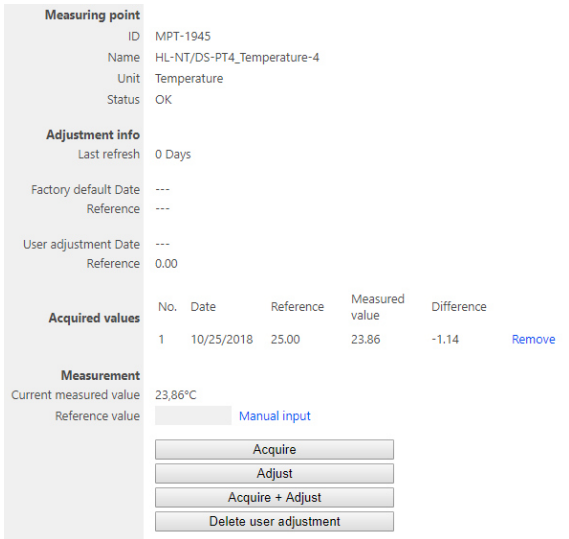
General procedure:

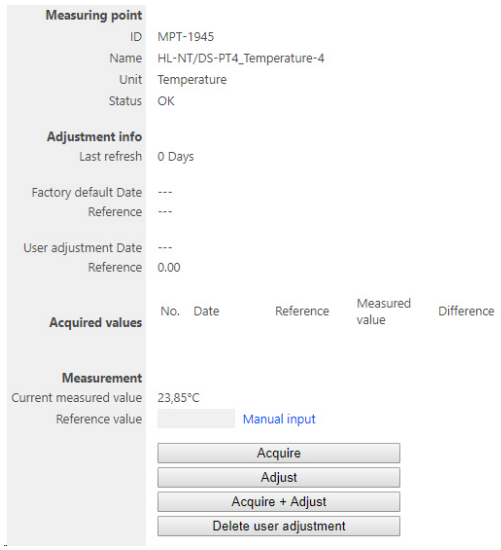
- Type the humidity reference value and click <Acquire>
- Repeat until the desired number of adjustment points are acquired.
  Note: The user of this feature must take care about sufficient stable circumstances for a data acquisition. Please take the interval into account. One value after every 60 seconds does not detect short term changes of the value.
- Click <Adjust> to finish.
- Use the button <Acquire + Adjust> for one point adjustment.
- Click <Delete user adjustment> to delete the last customer adjustment.



Note: For humidity multiple points can be acquired and adjusted. For temperature only 1 or 2 points.

For Temperature only (HL-NT/HL-DS-PT4 → Pt100 on input 4 and 5)





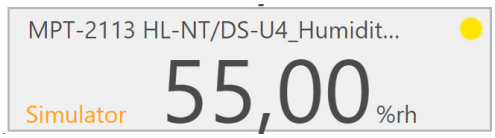
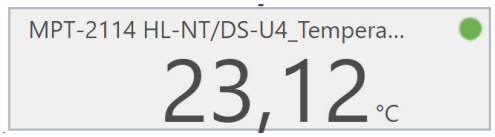
Note:

Only a one point adjustment is possible.

“User adjustment Date” will always display as “---“.

“Reference” will always display “000”.

The real date and reference cannot be shown due to missing compatibility of these systems.

Step 4	Data logging: the HL-NT has an internal memory, the HL-NT is battery powered. So the HL-NT can log during a power interruption. In case of a communication interruption to the RMS Server, the RMS Converter logs the data of the HL-NT. After the interruption, RMS requests the data from the RMS Converter. In case of a communication interruption between the RMS Converter and the HL-NT, the HL-NT would log the data. **IMPORTANT: The HL-NT can log for a certain number of days. However, only the log values of the past 7 days can be added into RMS via the RMS-CONVERTER, all other data will be deleted!**
Step 5	Sensor error: In case of one sensor error out of the two, RMS displays a sensor error for both measurement values. MPT-1672 Sensor error HF5_Feuchte-1 Humidity MPT-1673 Sensor error HF5_Temperatur-1 Temperature 
Step 6	Measurement alarm: Alarms linked to the measurement limits and programmed within the HC2 will not be transmitted to RMS. However if the device has a display and the display is configured correctly, the alarm will show on the display.
Step 7	Fix measurement values programmed within the Hygroclip are displayed as "Simulator" within RMS. Chart (e. g. fix value for humidity)  (Temperature of the same Hygroclip is not marked as a Simulator)  MPT-2113 Simulator connected HL-NT/DS-U4_Humidity-2 Humidity MPT-2114 OK HL-NT/DS-U4_Temperature-2 Temperature

7 Integration of third party products into RMS

7.1 *General*

Third party products can be integrated into RMS if the communication protocol is available. The digital communication may however be limited.

7.1.1 Limitations

RMS is designed for IoT devices as well as networks where each device has an integrated memory and power supply to bridge power and/or communication interrupts. This postulates a strict architecture in terms of communication, timing and other various points to ensure an uninterrupted monitoring.

The RMS-CONVERTER enables digital devices to be integrated into RMS, these digital devices may be stand alone, but also part of another network or system with another design. As such limitations exist in terms of device features and functions for communication stability and overall performance.

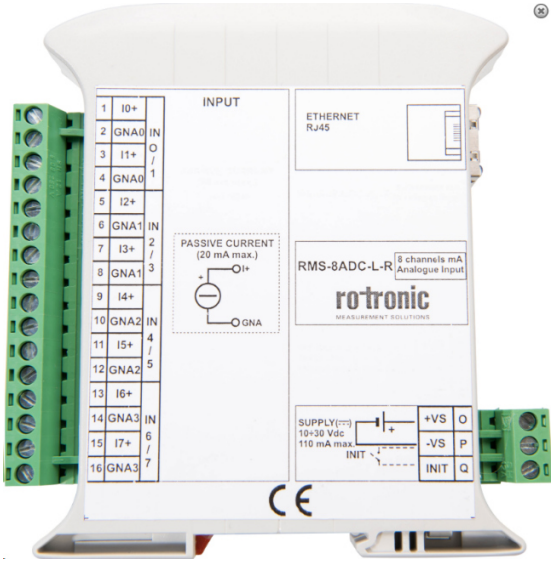
IMPORTANT: Time outs and data gaps can occur due to mismatching systems and limited compatibility!

7.1.2 Compatible devices with an Ethernet connection

Device name	Order code	Function	Parameter measured
RMS-8ADC-L-R-A	RMS-8ADC-L-R-A	Transmitter with 8 analog inputs	mA
RMS-8ADC-L-R-V	RMS-8ADC-L-R-V	Transmitter with 8 analog inputs	V
RMS-4RTD-L-R	RMS-4RTD-L-R	Transmitter with 4 RTD inputs	Pt100, Pt1000, Ni100, Ni1000
HL-RC	HL-RC-B HTL-RC-T	Data logger with 1 interchangeable probe input or fixed Pt1000	Temperature and relative humidity or temperature only
Lighthouse Apex R5	N/A	Transmitter with integrated particle counting	Particles

7.2 *Integration of the RMS-8ADC/4RTD transmitters into RMS*

7.2.1 Device description



- The RMS-8ADC/4RTD are DIN rail transmitters with an Ethernet port and various inputs. The RMS-8ADC-L-R-A has 8 analog inputs (mA), the RMS-8ADC-L-R-V has 8 analog inputs (V), the RMS-4RTD-L-R has 4 RTD inputs.

Important: Please consult the RMS-8ADC/4RTD user manual a for further details.

7.2.2 Network configuration of the device

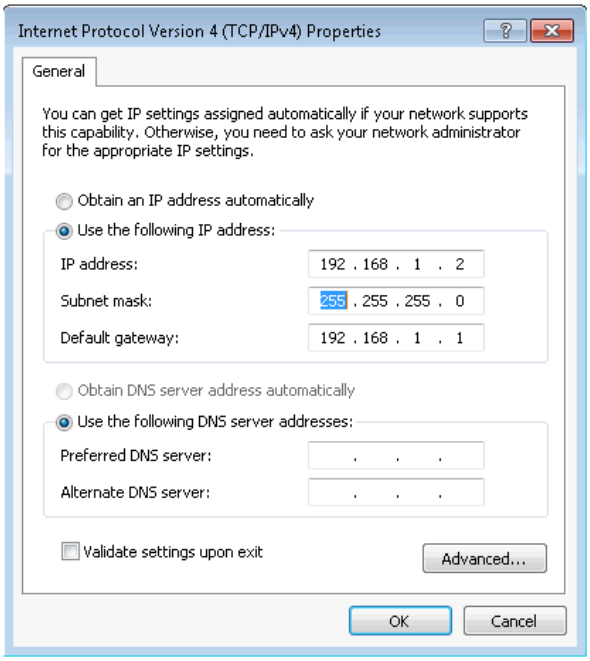
The RMS-8ADC/4RTD is connected via Ethernet to the network.

To add the RMS-8ADC/4RTD into the RMS, it is necessary to discover the individual network configuration of the device as

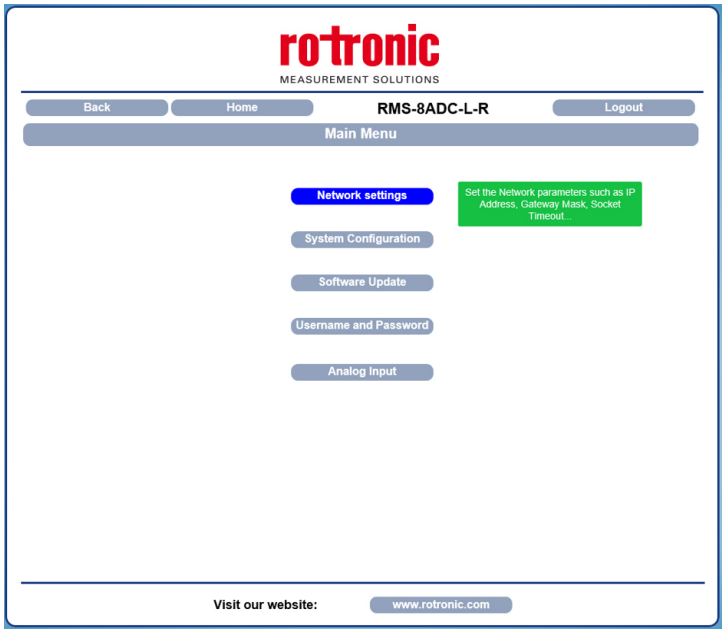
- Fix IP address

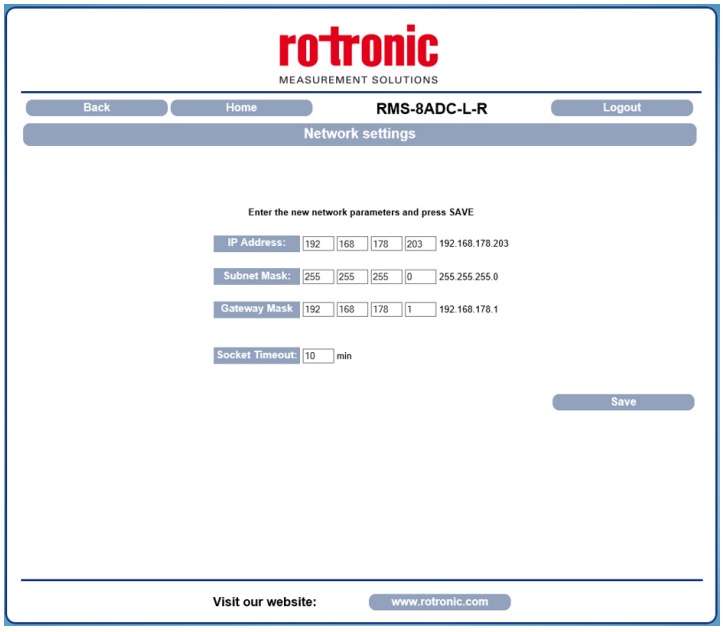
Note: RMS-8ADC/4RTD has no DHCP function and no host name. It can be addressed only by the fix IP address.

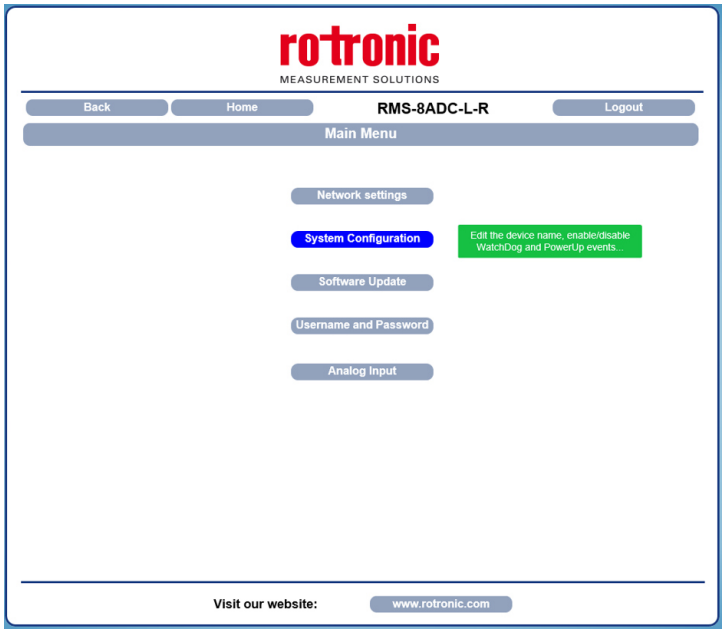
Note: The Digi Device Discovery Tool does not work for the RMS-8ADC/4RTD.

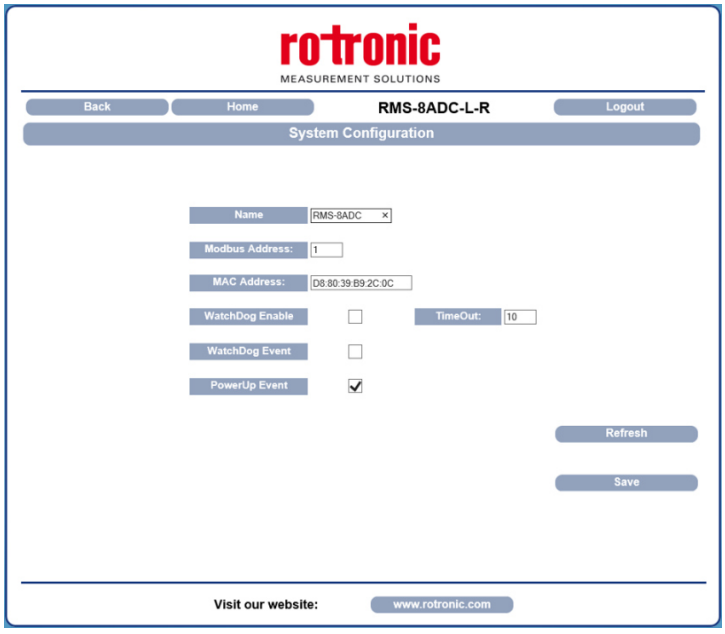
Step 1	To configure the RMS-8ADC/4RTD IP address> • Setup a point to point Ethernet connection from the device to a PC using an Ethernet cable. • Change the IP settings of the PC (network adapter settings IP4) as follows.  • Open the transparent front cover of the RMS-8ADC/4RTD and press the tiny button for approximately 10 seconds until the LED changes the light. • Open a web browser and type in http://192.168.1.100 (the default IP address is 192.168.1.100)

Step 2	Default log in: Username: **Fact_user** Password: Ract_pwd  Set the language:  Network settings and system configuration:

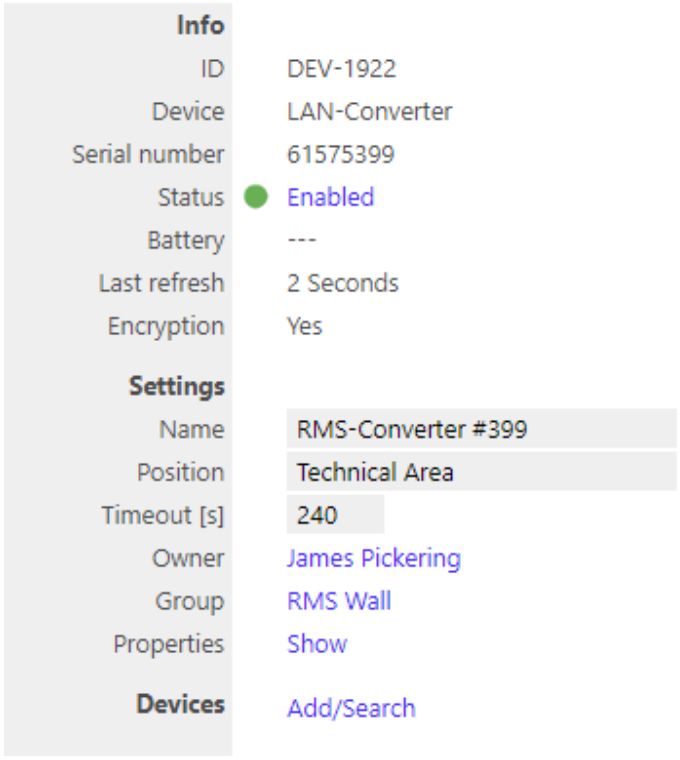

rotronic
MEASUREMENT SOLUTIONS
Back
Home
RMS-8ADC-L-R
Logout
Main Menu
Network settings
Set the Network parameters such as IP Address, Gateway Mask, Socket Timeout...
System Configuration
Software Update
Username and Password
Analog Input
Visit our website:
www.rotronic.com

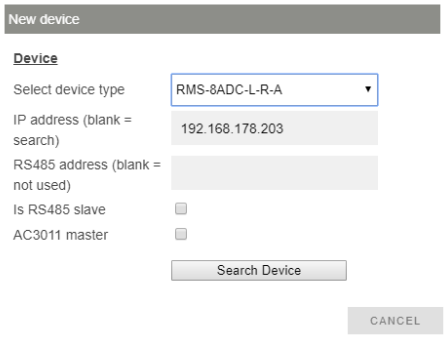
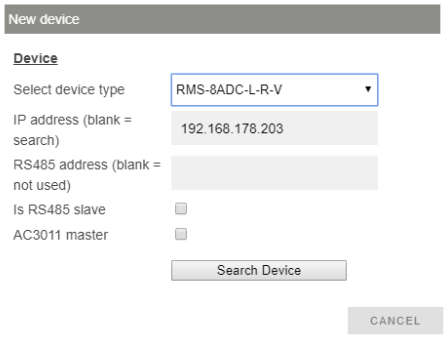

rotronic
MEASUREMENT SOLUTIONS
Back
Home
RMS-8ADC-L-R
Logout
Network settings
Enter the new network parameters and press SAVE
IP Address: 192 168 178 203 192.168.178.203
Subnet Mask: 255 255 255 0 255.255.255.0
Gateway Mask 192 168 178 1 192.168.178.1
Socket Timeout: 10 min
Save
Visit our website:
www.rotronic.com


rotronic
MEASUREMENT SOLUTIONS
Back
Home
RMS-8ADC-L-R
Logout
Main Menu
Network settings
System Configuration
Edit the device name, enable/disable WatchDog and PowerUp events...
Software Update
Username and Password
Analog Input
Visit our website:
www.rotronic.com

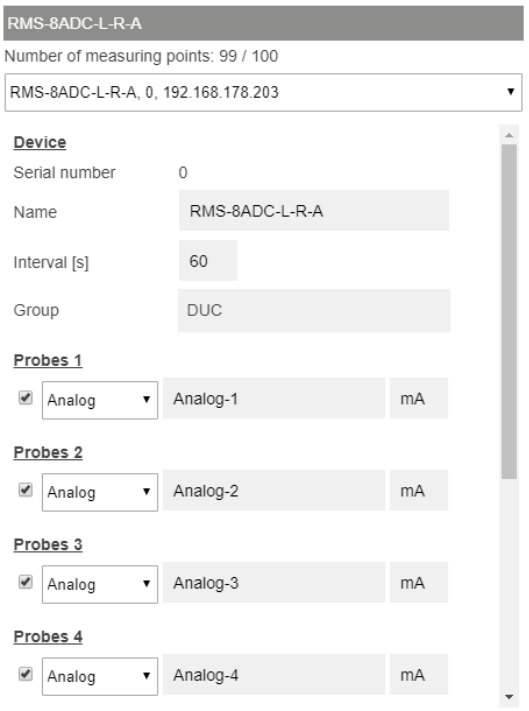

rotronic
MEASUREMENT SOLUTIONS
Back
Home
RMS-8ADC-L-R
Logout
System Configuration
Name
RMS-8ADC
Modbus Address:
1
MAC Address:
D8:80:39:B9:2C:0C
WatchDog Enable
TimeOut:
10
WatchDog Event
PowerUp Event
Refresh
Save
Visit our website:
www.rotronic.com

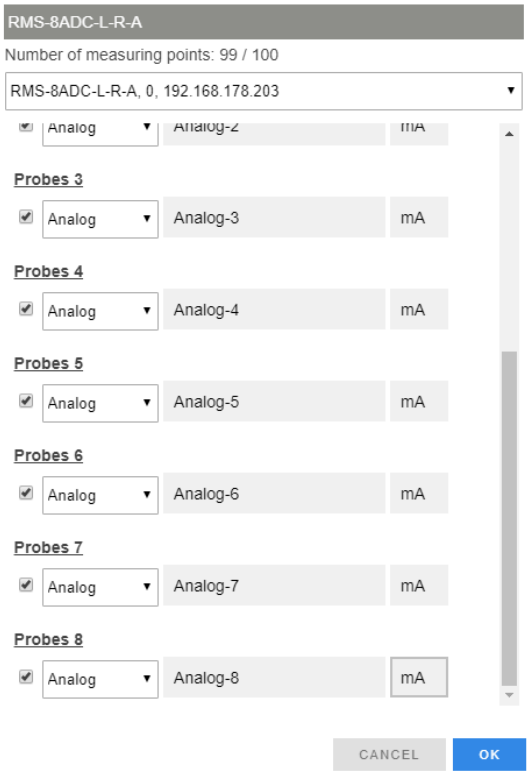
7.2.3 Integration into RMS via the RMS-CONVERTER

Step 1	Log into the RMS software. Select Tools > Setup > Devices. Select the RMS-CONVERTER and click on <Add/Search> devices: 

Step 2	Select the device type in the drop down menu. It is possible to type the IP address or host name into the field *IP address*. **IMPORTANT: If the field stays empty, RMS will not search automatically.**   **Note: Please take care that the correct device type is chosen. Because a current input type of the device can be added as a voltage input type (the opposite as well).**

Step 3	The device appears: configure accordingly.


RMS-8ADC-L-R-A
Number of measuring points: 99 / 100
RMS-8ADC-L-R-A, 0, 192.168.178.203
Device
Serial number
0
Name
RMS-8ADC-L-R-A
Interval [s]
60
Group
DUC
Probes 1
Analog
Analog-1
mA
Probes 2
Analog
Analog-2
mA
Probes 3
Analog
Analog-3
mA
Probes 4
Analog
Analog-4
mA
CANCEL
OK

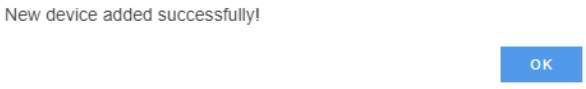


Note: The interval cannot be shorter than the interval of the RMS Converter.

Note: The serial number information of the device is not provided to RMS.

IMPORTANT: If not all checkmarks for measurement points are set and it is wished to expand it later than please add the same device via the RMS-CONVERTER (with the same identification/IP address) again and set the new wished checkmarks. The added or updated measurement points will appear afterwards.

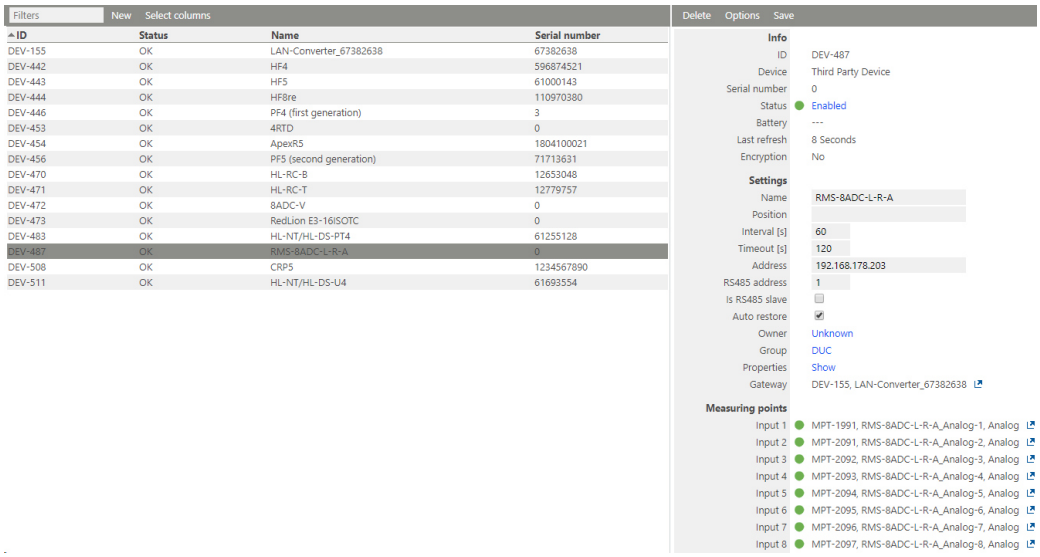
Note: if settings are changed with another software further to the initial installation into RMS, then RMS will not note the change. However, such a change would cause RMS to not work correctly.

Step 4	The device is added. 

7.2.4 Functionality within RMS

Step 1

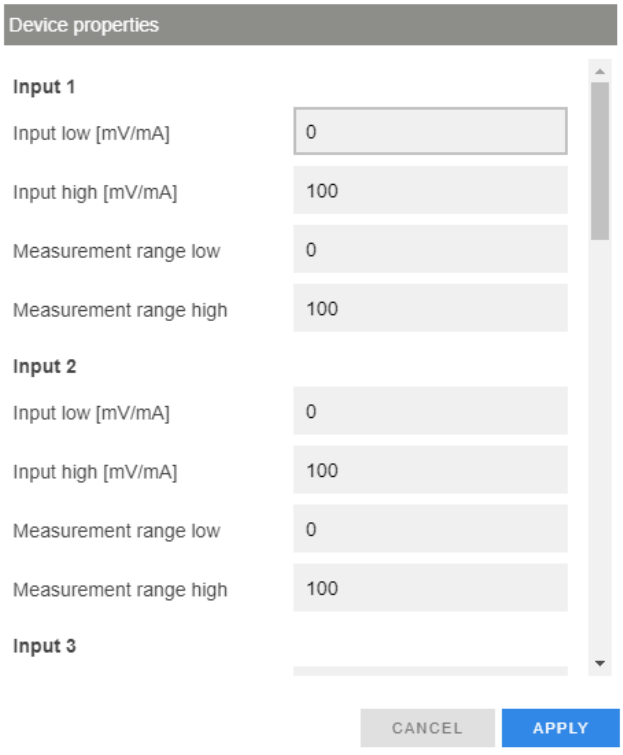
Device settings: log into the RMS software. Select Tools > Setup > Devices. Select the device.

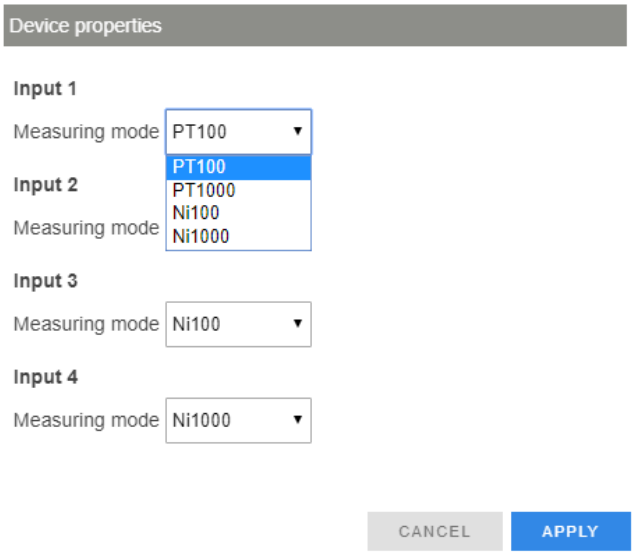


Status: the device can be disabled/enabled. When disabled, the RMS-CONVERTER will not send any requests.

Settings: Any settings can be changed and confirmed by clicking on <Save>.

Properties: Show. The device settings can be displayed and changed.





IMPORTANT: Under options, the firmware update, import firmware file, import device definition and device inventory are not supported for this device.

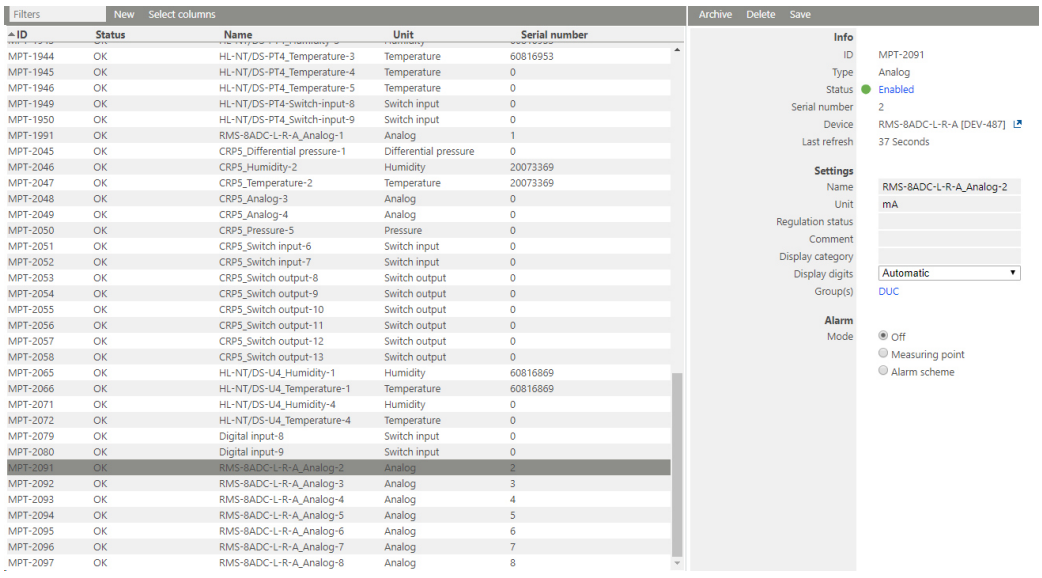
Step 2

Measurement point settings: log into the RMS software. Select Tools > Setup > Measuring point.

Select the measuring point.

Status: the measuring point can be disabled/enabled.

Settings: Any settings can be changed and confirmed by clicking on <Save>.



Step 3	Adjustment: an adjustment of the RMS-8ADC/4RTD is not possible.

Step 4	Data logging: the RMS-8ADC/4RTD has no internal memory, the RMS-8ADC/4RTD is not battery powered. So the RMS-8ADC/4RTD cannot log during a power interruption. In case of a communication interruption to the RMS Server, the RMS Converter logs the data of the RMS-8ADC/4RTD. After the interruption, RMS requests the data from the RMS Converter. In case of a communication interruption between the RMS Converter and the RMS-8ADC/4RTD, the RMS-8ADC/4RTD would not log the data.
Step 5	Sensor error cannot be detected, if nothing is connected to the ADC, the measured value is 0.00.

7.3 *Integration of the HL-RC data logger into RMS*

7.3.1 Device description

The HL-RC is a wireless data logger and combined with the HL-LAN-INTERFACE gateway can be integrated into RMS. To integrate the HL-NT into RMS the device version with Ethernet or RS485 is necessary. The following devices can be integrated: HL-LAN-INTERFACE, HL-RC-B and HL-RC-T.

Important: Please consult the HL-RC user manual as well as the HW4 manual for the HL-RC devices for further details.

7.3.2 Network configuration of the device

The HL-LAN-INTERFACE is connected via Ethernet to the network.

To add the LAN-INTERFACE into the RMS, it is necessary to discover the individual network configuration of the device as

- DHCP active or fixed IP address.
- Host name.

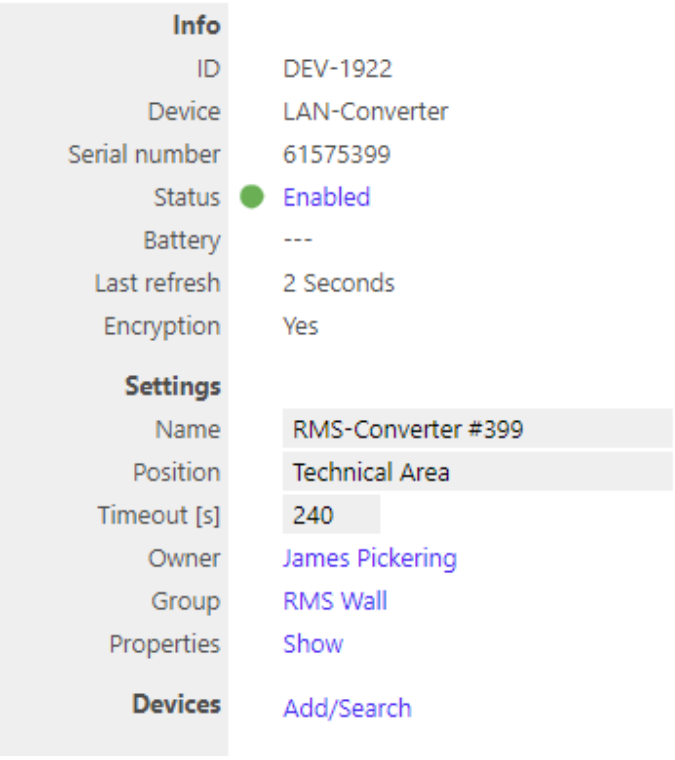
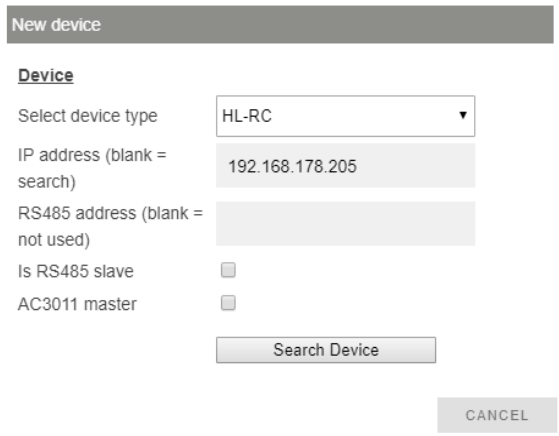
Only the HW4 can be used to get / edit this network information.

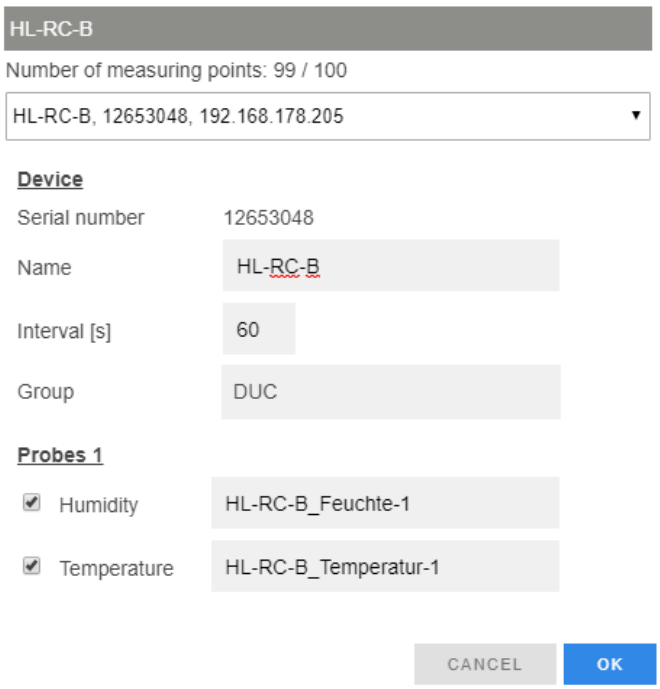
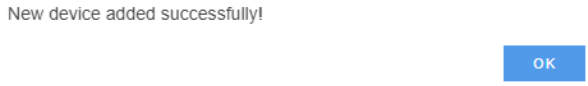
Note: Rotronic strongly recommends avoiding running the HW4 parallel to RMS (e.g. on a PC within the same local Ethernet as for of the RMS Converter and the integrated devices). It will cause timeouts, data gaps or other errors due to communication failures.

Note: The Digi Device Discovery Tool does not work for the HL-LAN-INTERFACE.

Note: Rotronic recommends to use fix IP addresses for the RMS Converter as well as for the devices. The reason is the logging function of the RMS Converter in case of any interruption to the RMS.

7.3.3 Integration into RMS via the RMS-CONVERTER

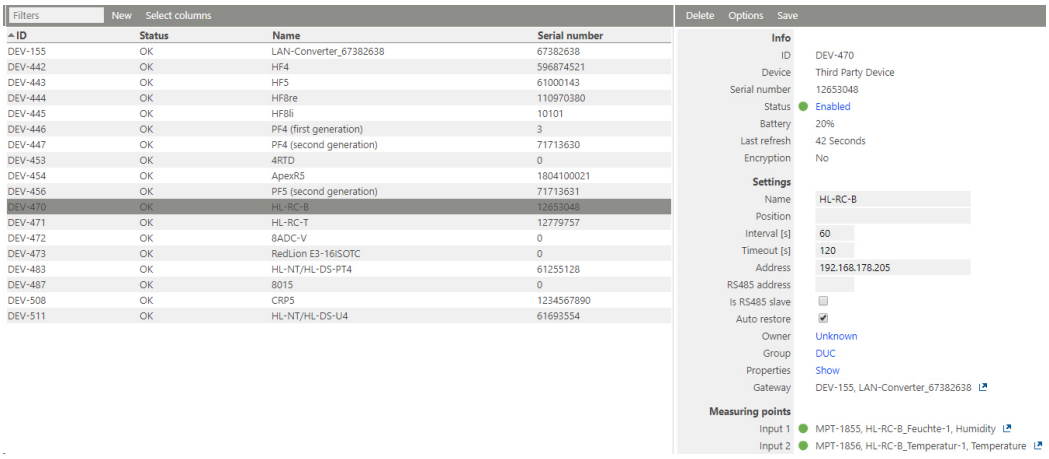
Step 1	Log into the RMS software. Select Tools > Setup > Devices. Select the RMS-CONVERTER and click on <Add/Search> devices: 
Step 2	Select the device type in the drop down menu. It is possible to type the IP address or host name into the field *IP address.* **IMPORTANT: If the field stays empty, RMS will not search automatically.** 

Step 3	The device appears: configure accordingly.  **Note: The interval cannot be shorter than the interval of the RMS Converter.** **IMPORTANT: If not all checkmarks for measurement points are set and it is wished to expand it later than please add the same device via the RMS-CONVERTER (with the same identification/IP address) again and set the new wished checkmarks. The added or updated measurement points will appear afterwards.** **Note: if settings are changed with another software further to the initial installation into RMS, then RMS will not note the change. However, such a change would cause RMS to not work correctly.**
Step 4	The device is added. 

7.3.4 Functionality within RMS

Step 1

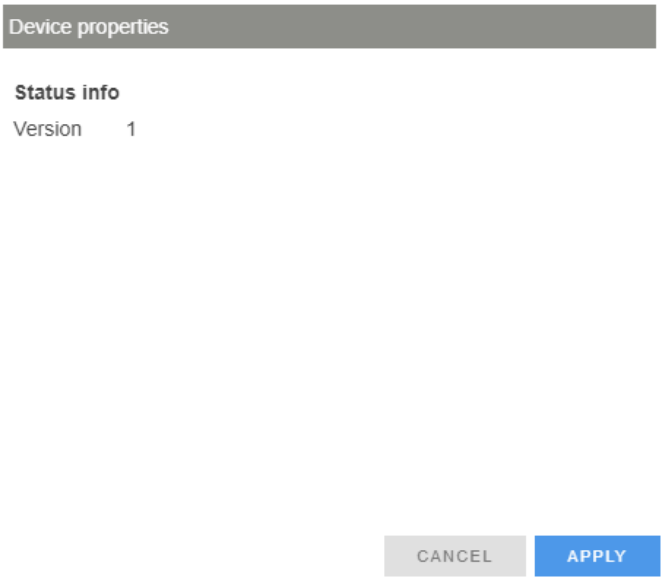
Device settings: log into the RMS software. Select Tools > Setup > Devices. Select the device.



Status: the device can be disabled/enabled. When disabled, the RMS-CONVERTER will not send any requests.

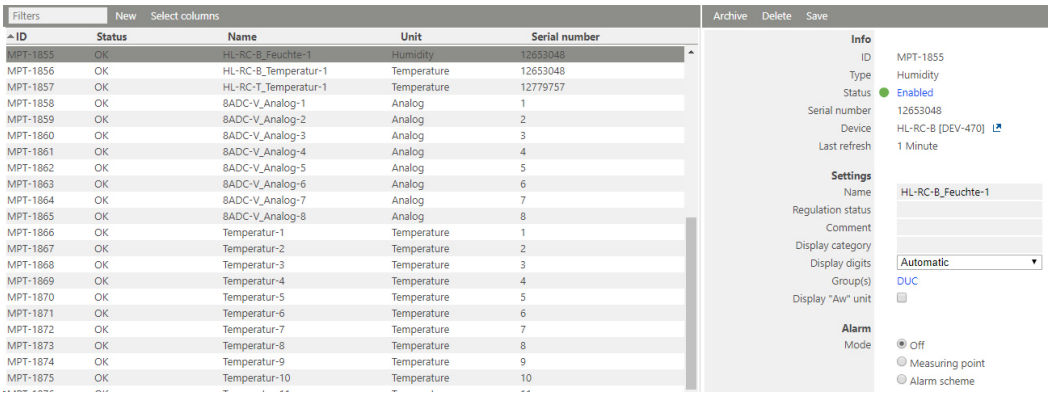
Settings: Any settings can be changed and confirmed by clicking on <Save>.

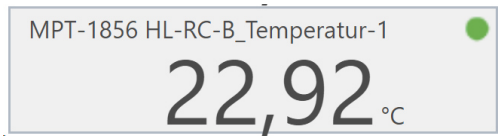
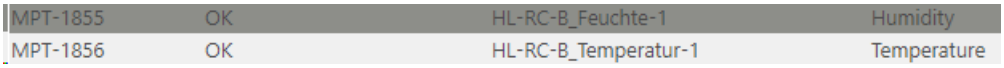
Properties: Show. The firmware version is shown.



IMPORTANT: Under options, the firmware update, import firmware file, import device definition and device inventory are not supported for this device.

IMPORTANT: The output range, the sources and the measurement ranges of the analog outputs 1 and 2, can be scaled and stored within the device clicking <Apply>.

Step 2	Measurement point settings: log into the RMS software. Select Tools > Setup > Measuring point. Select the measuring point. Status: the measuring point can be disabled/enabled. Settings: Any settings can be changed and confirmed by clicking on <Save>. 
Step 3	Adjustment: an adjustment of the HL-RC is not possible.
Step 4	Data logging: the HL-RC has an internal memory, the HL-RC is battery powered. So the HL-RC can log during a power interruption. In case of a communication interruption to the RMS Server, the RMS Converter logs the data of the HL-RC. After the interruption, RMS requests the data from the RMS Converter. In case of a communication interruption between the RMS Converter and the HL-RC, the HL-RC would log the data.
Step 5	Sensor error within the HC2 will not be transmitted to RMS
Step 6	Measurement alarm: Alarms linked to the measurement limits and programmed within the HC2 will not be transmitted to RMS.

Step 7	Fix measurement values programmed within the Hygroclip are not displayed as "Simulator" within RMS. Chart (e. g. fix value for humidity)  (Temperature keeps at normal operation)  Tools → Setup → Measurement points 

7.4 *Integration of the Lighthouse Apex R5 data logger into RMS*

7.4.1 Device description

The Lighthouse Apex R5 is a particle counter that measures particle concentration with two channels and two measurement ranges.

Important: Please consult the Apex R5 user manual for further details.

7.4.2 Network configuration of the device

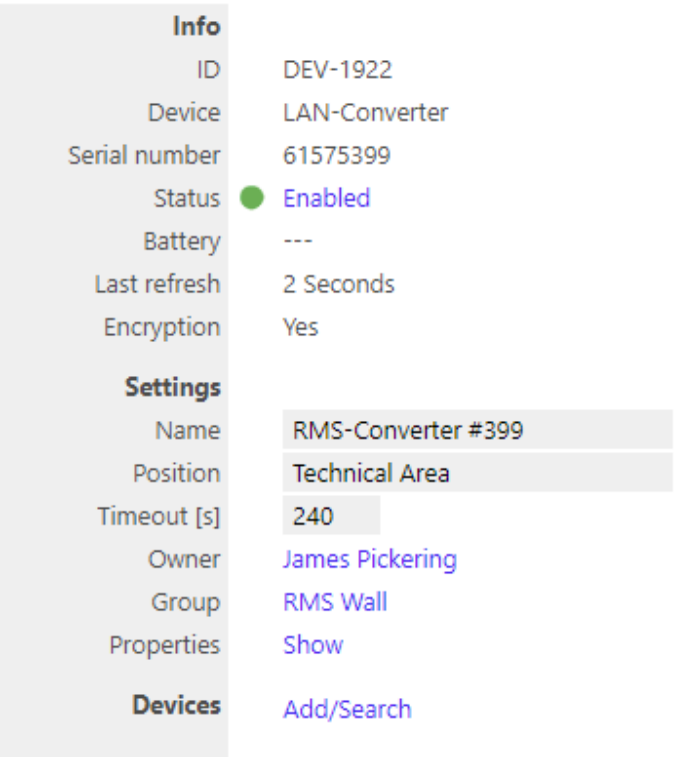
The Lighthouse Apex R5 is to be connected via Ethernet connection to the network.

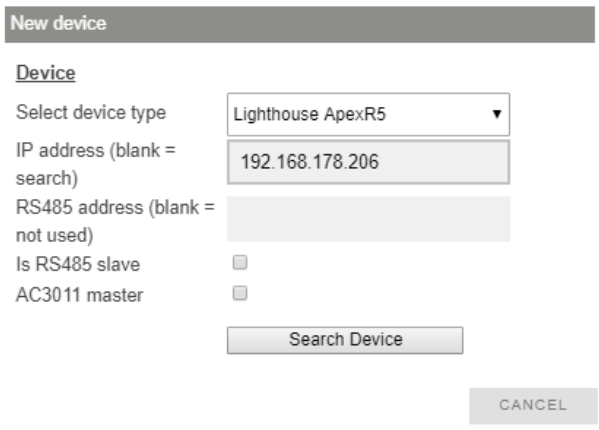
To add the Lighthouse ApexR5 into the RMS, it is necessary to know the individual network configuration of the device

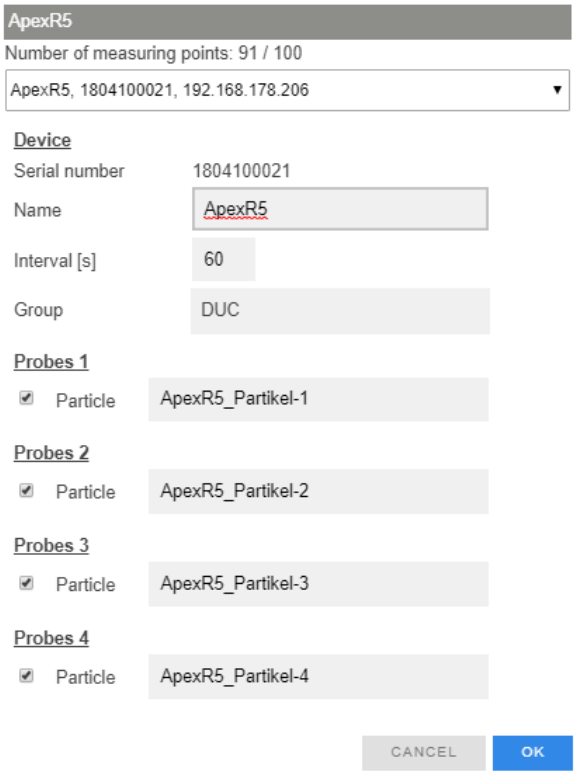
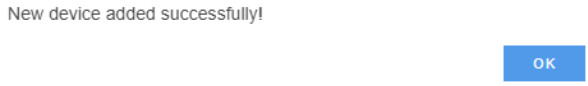
- IP address (fix or DHCP)
- Host name is not supported for this device

Note: A software and a separate service cable are required for network configuration. Be aware that a host name is not provided. DHCP would only work permanently if the IP address would never be changed by the DHCP server. Rotronic recommends strongly to use the fix IP address for the device as well as for the RMS Converter.

7.4.3 Integration into RMS via the RMS-CONVERTER

Step 1	Log into the RMS software. Select Tools > Setup > Devices. Select the RMS-CONVERTER and click on <Add/Search> devices:  **Info** ID DEV-1922 Device LAN-Converter Serial number 61575399 Status Enabled Battery --- Last refresh 2 Seconds Encryption Yes **Settings** Name RMS-Converter #399 Position Technical Area Timeout [s] 240 Owner James Pickering Group RMS Wall Properties Show **Devices** Add/Search

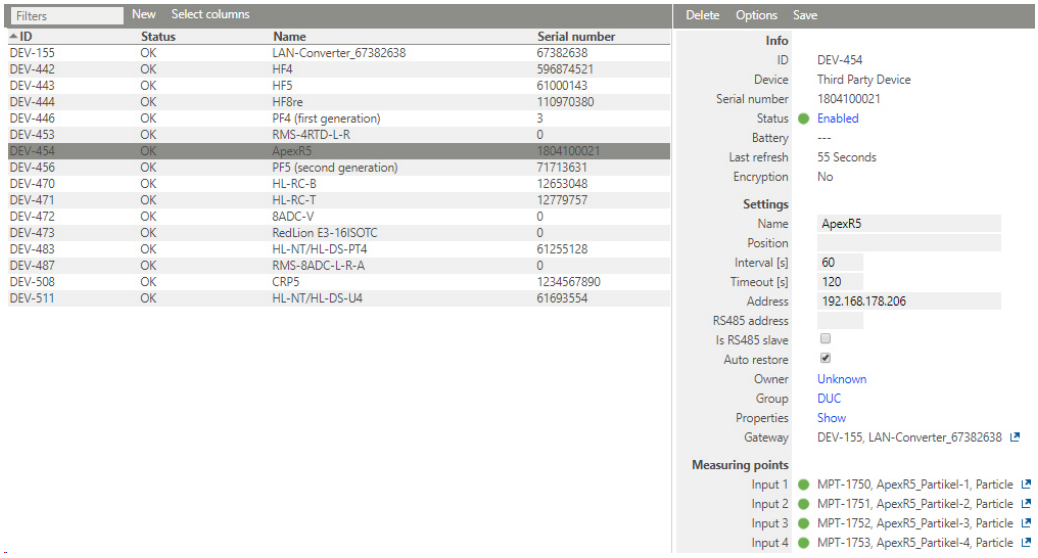
Step 2	Select the device type in the drop down menu. It is possible to type the IP address or host name into the field *IP address.* **IMPORTANT: If the field stays empty, RMS will not search automatically.** 

Step 3	The device appears: configure accordingly.  **Note: The interval cannot be shorter than the interval of the RMS Converter.** **IMPORTANT: If not all checkmarks for measurement points are set and it is wished to expand it later than please add the same device via the RMS-CONVERTER (with the same identification/IP address) again and set the new wished checkmarks. The added or updated measurement points will appear afterwards.** **Note: if settings are changed with another software further to the initial installation into RMS, then RMS will not note the change. However, such a change would cause RMS to not work correctly.**
Step 4	The device is added. 

7.4.4 Functionality within RMS

Step 1

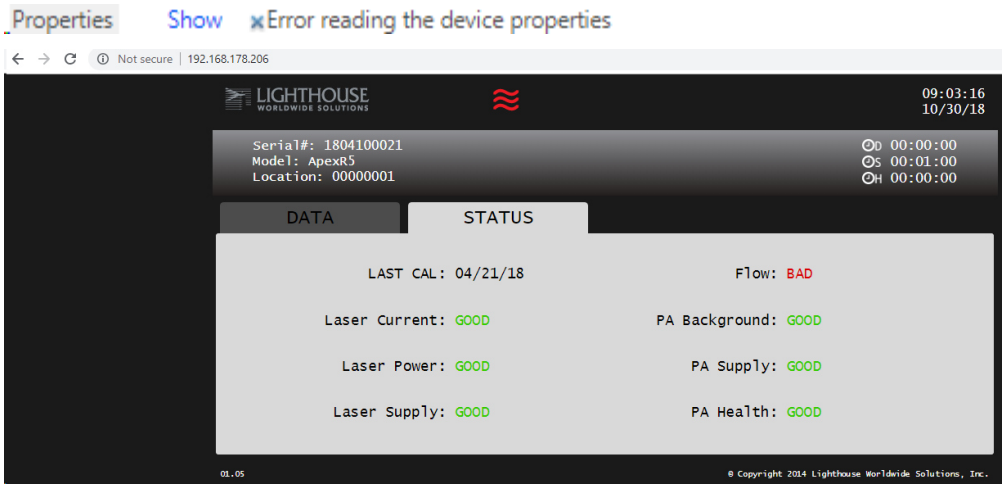
Device settings: log into the RMS software. Select Tools > Setup > Devices. Select the device.



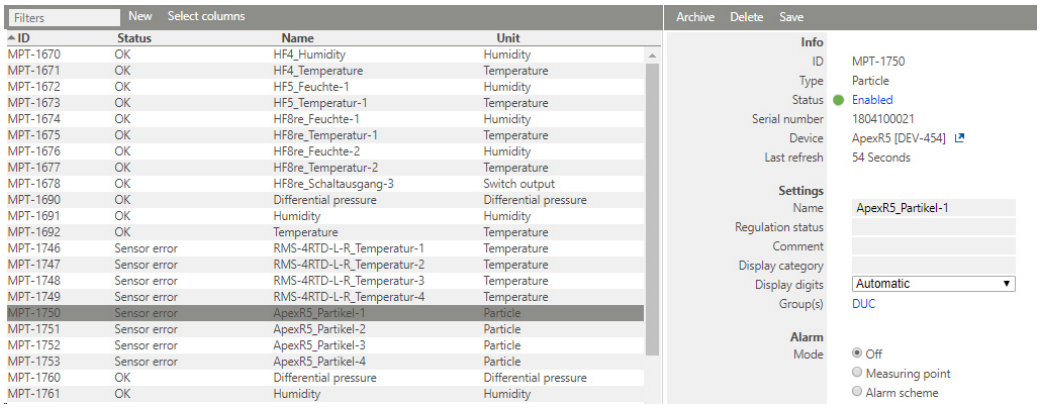
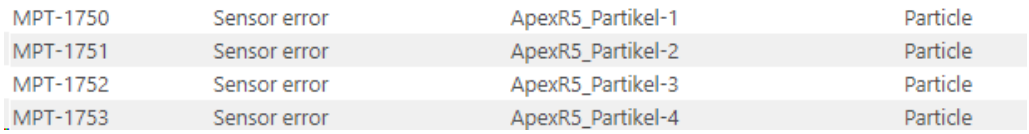
Status: the device can be disabled/enabled. When disabled, the RMS-CONVERTER will not send any requests.

Settings: Any settings can be changed and confirmed by clicking on <Save>.

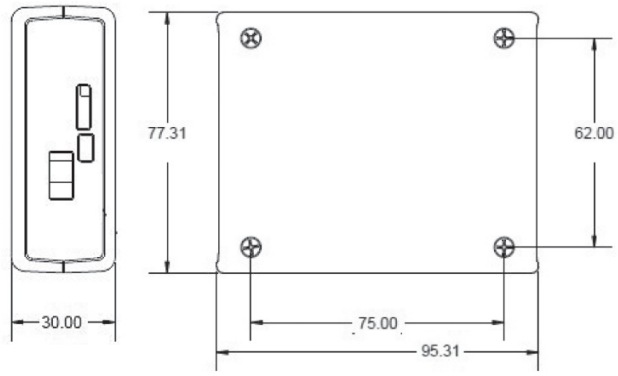
Properties: Show. The device properties cannot be display by RMS: This function is not provided. Some device properties can be displayed using the webbrowser. Please type the IP address into the address bar of the webbrowser and it appears:



IMPORTANT: Under options, the firmware update, import firmware file, import device definition and device inventory are not supported for this device.

Step 2	Measurement point settings: log into the RMS software. Select Tools > Setup > Measuring point. Select the measuring point. Status: the measuring point can be disabled/enabled. Settings: Any settings can be changed and confirmed by clicking on <Save>.  Note: if the measurement values are out of range RMS displays a sensor error!
Step 3	Adjustment: an adjustment of the Lighthouse Apex R5 is not possible.
Step 4	Data logging: The Lighthouse Apex R5 has no device memory supported by RMS. The Lighthouse Apex R5 has no internal memory, the Lighthouse Apex R5 is not battery powered. So the Lighthouse Apex R5 cannot log during a power interruption. In case of a communication interruption to the RMS Server, the RMS Converter logs the data of the Lighthouse Apex R5. After the interruption, RMS requests the data from the RMS Converter. In case of a communication interruption between the RMS Converter and the Lighthouse Apex R5, the Lighthouse Apex R5 would not log the data.
Step 5	Sensor error: If the particle concentration of the air is out of range of the device, RMS displays "Sensor error". 

8 Technical specifications

General	
Dimensions	96 x 78 x 30 mm 
Number of measuring points	RMS-CONVERTER-100: 100 measuring points
Compatible products	• HF5, • HF8, • HL-NT and HL-DS • PF4 (first generation), • PF4/5 (second generation), • CRP5, • RMS-8ADC-L-R-A/V • RMS-4RTD-L-R, • Lighthouse ApexR5
Log interval	Minimum interval is 60 sec.
Power supply and plug	
Power supply voltage	5 VDC
Electrical connection	Via 230AC/5VDC power supply
Digital interface	
Interface type	Ethernet
Conformity	
EMC directive	EMC-directive: 2004/108/EC
Soldering material	Lead free (RoHS-directive 2011/65/EU)
FDA / GAMP- directives	FDA CFR21 Part 11 / GAMP5
Operating conditions	
Storage- and transport	0...50 °C / 0...90 %rF, not condensing
Operation	0...50 °C / 0...90 %rF, not condensing

9 Additional Documents

Document Name	Contents
E-IM-RMS-WEB	Instruction Manual: System Installation
E-SM-RMS-WEB	Instruction Manual: System Startup
E-OM-RMS-WEB	Instruction Manual: System Operation

10 Document Version

Version	Date	Notes
V1_0	August 2017	First version
V1_1	February2018	Revision
V1_2	April 2018	1.6 Input / Outputs
V1_3	October 2018	Complete review and update of the manual.
V1_4	June 2018	RS485 network compatibility update (mainly Chapter 6.1.5).