

# Operating Manual

LogBox-RHT-LCD

Temperature and Humidity Data Logger

**0568 0038-01**

V1.1x F



# LogBox-RHT-LCD

## Temperature and Humidity Data Logger

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## 1 FOREWORD

Dear customer,

We thank you for having purchased the **LogBox RHT-LCD Temperature and Humidity Data Logger** and are very glad that you decided in favour of a product of B+B Thermo-Technik GmbH. We hope this product will fully satisfy you and will assist you effectively in your work. This Device has been developed to be technically highly up-to date. This product has been designed in accordance with the regnant European and German national directives and rules. For a proper and effective usage of the product the customer shall observe the following Operating Instructions. In the case that against one's expectations any troubles occur which you cannot resolve yourself, please contact our service centers or your salesperson. We go after giving you rapid and competent help to minimize the risk of long-time outfalls.



The following operating Instruction is an indispensable part of this Product. It contains important advices for the starting up and further use of the device

## 2 GENERAL ADVICE

This documentation contains information which must be paid in attention to assure a highly effective and secure use of the supplied product Please read through the following instructions and make yourself familiar with the handling of the product before you insert it in your processes. Keep this document always readily to hand so you can consult it by need.

### 2.1. Labels

Symbol	Meaning	Description
	Advice	It is necessary to read the following advice before beginning the operations. The used symbols in the manual acts first as eye catcher for security risks. The symbols do not replace the security advice. The text must be read to the end
	Necessary to observe	This symbol designates important advice and tips that are necessary for the success a work step. They must be followed to get good results

### 2.1 Warning Advice

Symbol	Meaning	Symbol	Meaning
	This symbol advises the user of danger for persons, material, or environment. The text gives information that must be necessarily followed to avoid any risks		Caution against electromagnetic fields (BGV A8, GUV-V A8/W12)
	Caution against hot surfaces (BGV A8, GUV-V A8/W26) and hot liquids or substances		Caution against severe cold (BGV A8, GUV-V A8/W17)
	Caution against liquids and hot substances		Caution against dangerous high electrical voltage (BGV A8, GUV-V A8/W08)
	Caution against dangerous ex-plosive substances (BGV A8, GUV-V A8/W02)		Caution against dangerous ex-plosive atmosphere (BGV A8, GUV-V A8/W21)
	Caution against mobile engines (W29) Caution against moving parts		Electronic waste

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### 2.2 Security Advices

B+B Thermo-Technik GmbH assume no liability for damages occurred through failure to observe these security advices. A usage non conform to the instructions given in this manual can damage the device

#### BODY AND PROPERTY DAMAGES

-  The national and local standards for electrical installations must be strictly observed.  
The use of the device is strictly reserved / restricted to properly schooled / qualified operators.
-  The system is not adequate for use in atmosphere with explosion danger.
-  Do not use the system in a high electric or magnetic field area

#### ENSURING OF PRODUCT SECURITY

-  The system must be operated only within the limits given in the technical Data  
Exposing the system to hot temperatures (higher than the operating temperature) will cause damages in the electronic circuits and also damage the housing

#### USAGE ACCORDING TO PURPOSE

-  Please use the product only for the purposes for which it is conceived. In case of doubt, please first contact B+B Thermo-Technik GmbH

#### DISOPOSAL

-  Please return the device to B+B Thermo-Technik GmbH after expiration of its lifetime

## 3 INTRODUCTION

The **LogBox-RHT-LCD** is an electronic logger of temperature and relative humidity. There are sensors that measure such data and values (data) obtained are displayed in an LCD screen and stored in an electronic memory. Data can be later viewed and analyzed on a PC where they can be opened in tabular and graphical forms. The humidity output can be configured to display Relative Humidity values or the temperature value of Dew Point.

The **NXperience** and the **LogChart II** configurator software are the tools used to configure the operating mode and to view the downloaded data. Parameters such as start and end times of logs and log interval, for example, are easily defined through the **NXperience** and the **LogChart II** software.

Measurements can be exported to and opened in other applications, such as spreadsheet programs.

### 3.1 Identification

The identification label is on the logger body. Check if the features described are in accordance with your order. The **RHT-LCD** model is designed to measure temperature and relative humidity. The following elements are shown in the logger front:

**START / STOP button:** Can be configured to start or stop logging when pressed. It can also be used to browse and change screens.

**Status indicator (LOG):** Indicates when the device is logging.

-  When logs are finished or not started, the indicator remains deactivated.

**Alarm Indicator (AL1 and/or AL2):** Warns the user as to alarm conditions. It remains active whenever an alarm condition occurs, until a new configuration is applied to the logger.

**IR Communication Window (COM):** Activated when there is a communication attempt or when communication between logger and PC is activated.

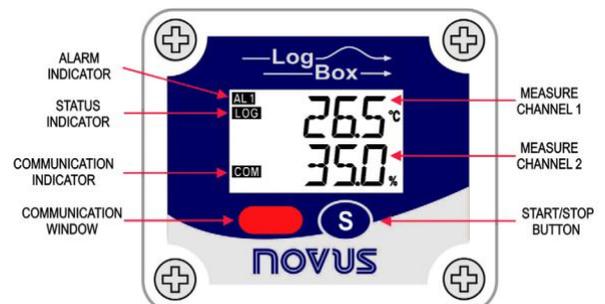


Figure 1 Logger Front

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**Channel Indicator:** Indicates the channel selected.

**Battery Indicator:** The battery symbol is shown when the battery voltage is low.

**MIN / MAX values indicator:** Minimum and maximum value of each channel during readings.

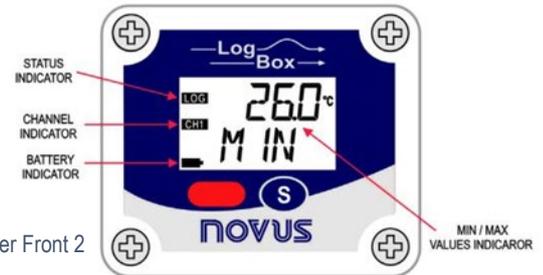


Figure 2 Logger Front 2

## 4 TECHNICAL SPECIFICATIONS

Feature	Description
Operating temperature	-40 °C to 70 °C
Sensor measure range	Temperature: -40.0 °C to 80.0 °C Relative Humidity: 0.0 to 100.0 %RH, without condensation. Dew Point: -40.0 °C to 100.0 °C
Accuracy	See Fig. 3.  A measure error can be compensated using the <b>OFFSET</b> parameter in the NXperience or LogChart II software
Measurement resolutions	Temperature: 0.1 °C. 14 bits (16383 levels) Relative Humidity: 0.1 %RH, 12 bits (4095 levels)
Response time	Temperature: up to 30 seconds with fairly still air. Humidity: up to 8 seconds with fairly still air (20 to 80 %RH).
Memory capacity	32.000 (32 k) logs: Half for each channel or total when one of the channels is not enabled
Measurement interval	1 second min. 18 hours max.
Supply	3.6 Vdc lithium battery (1/2 AA), built-in
Estimated autonomy	Higher than 200 days, with weekly data reading. Frequent logged data readings may shorten battery life and the interval between acquisitions is too short.
Case	Polycarbonate
Protection	IP40
Dimensions	60 x 70 x 35 mm
Logger-PC data transfer time	According to the number of logs. 40 seconds for 16.000 logs.
PC interface	Interface IR/USB or IR/Serial.
NXperience software Operation environment	Configurator software for Windows ® 10, 8, 7, and XP. Menus in Portuguese, English, French or Spanish. Sets up, reads and displays data on the screen.
LogChart II software Operation environment	Configurator software for Windows ® 10, 8, 7, and XP. Menus in Portuguese, English, or Spanish. Sets up, reads and displays data on the screen.

### 4.1 Measurement Accuracies

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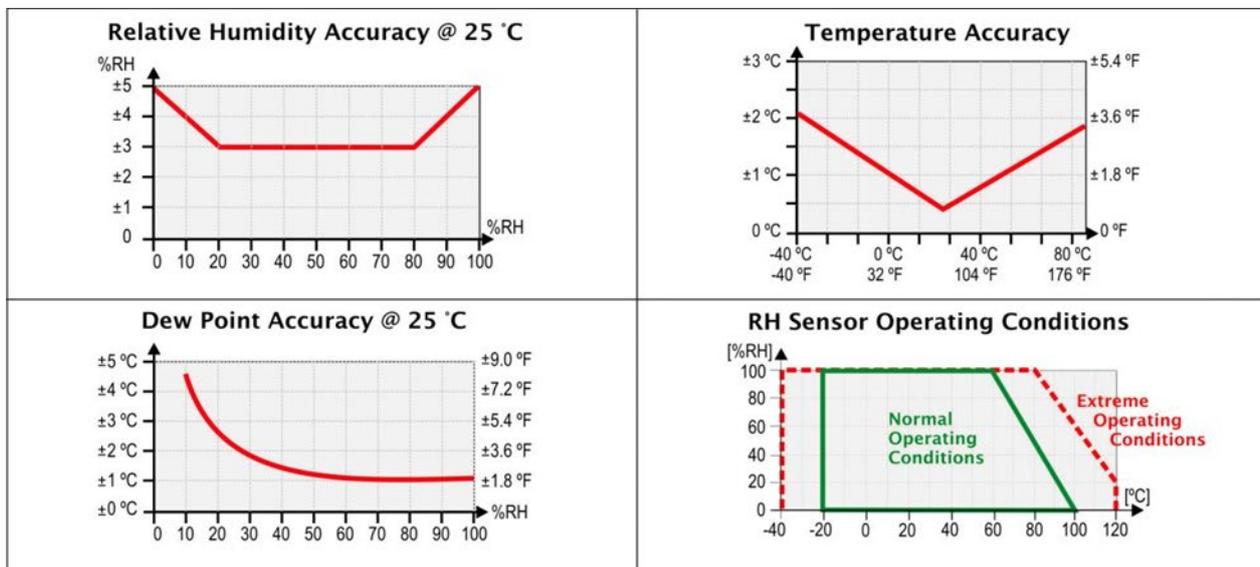


Figure 3 Measurement Accuracies

## 5 OPERATION

It is only possible to operate the device after the **NXperience** or **LogChart II** software are installed to a PC, according to the steps described in the corresponding chapters of this manual.

The communication between logger and PC is performed with the use of the **IR-Link3** Interface.

The logger operation mode set up is defined in advance by using **NXperience** or **LogChart II** software. The configuration is sent to the logger through the **IR-Link3** Interface.

The logger starts and stops logging as defined in the setup.

### 5.1 Registers Screens

#### 5.1.1 Battery Saving Mode - IDLE

In the low battery consumption mode (IDLE), the register does not communicate. It always stays in this mode after reset; register does not make acquisitions and does not update screen measures. For skipping IDLE mode, press the **S** button for activating communication temporarily. After an acquisition configuration has been sent, it will definitely be out of IDLE mode.



Figure 4 IDLE Mode

#### 5.1.2 Main Screen

Indication screen for values measured by the register:

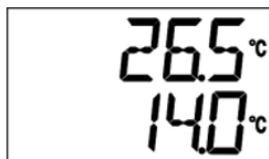


Figure 6 Temperature and Dew Point

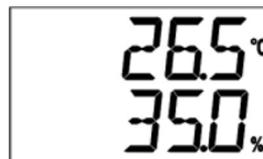


Figure 6 Temperature and Humidity

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### 5.1.3 Min / Max Indication

It indicates the minimum and maximum value during the acquisitions. The Channel for which the values are just displayed is indicated on the screen on the left side as CH1 or CH2



Figure 7 Min Max Indication Screen

### 5.1.4 Communication Screen IR-COM

It sets IR communication to automatic or to manual:

- In the automatic mode (AUT), communication will be always active. For communicating, just direct the IrLink3 interface and use NXperience or LogChart II software. It always stays in this mode after reset.
- In the manual mode (MAN) communication will be active 20 seconds, after pressing the button. During this time, a communication shall be initiated for keeping the IR Communication active.



Figure 8 IR COMM Screens

### 5.1.5 Display Updating Interval Screen (DISP)

It sets the reading time of the sensor for the display updating. When selected by LO6, it performs the sensor reading and the display updating, according to the interval set for acquisition.

When selected by 10 S, 30 S or 60 S it performs sensor reading for display updating every 10, 30 or 60 seconds. In this mode if the acquisition interval is shorter than the time set in the screen DISP, display will be updated according to the acquisition interval

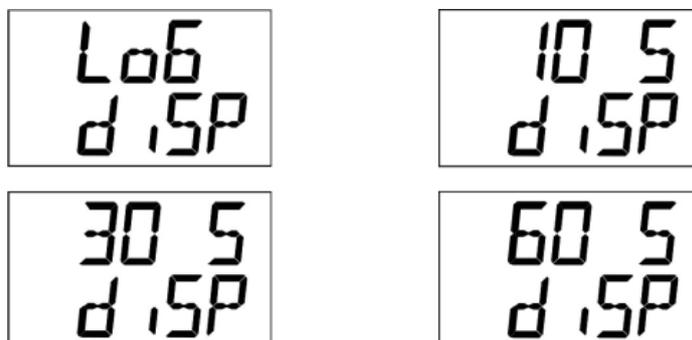


Figure 9 Display Updating Screen

## 6 BATTERY AUTONOMY

The estimated battery autonomy is above 200 days. This autonomy is directly related to the register using mode. The shorter is the interval of the sensor reading, the smaller will be the autonomy, and it can last only 30 days, in the worst case.

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For saving battery energy it has to set the longest interval possible between acquisitions, as well as for display updating.

### Examples:

**Ex. 1:** Acquisitions interval equal to 10 minutes and **DISP** screen in LO6 mode. In this case register remains sleeping and activates only in every 10 minutes to read the sensor, update the display and save the acquisitions to the memory.

**Ex. 2:** Acquisitions interval equal to 10 minutes and **DISP** screen in 60 S (60 seconds). In this case, register remains sleeping and activates in every 1 minute to measure the sensor and update the display. And every 10 minutes, it activates and measures the sensor for making the acquisitions.

Comparing the **Ex. 1** and the **Ex. 2** with same acquisitions interval, the second example consumes 10 times more battery in comparison to the first one, due to the constant sensor reading for display updating.

**Ex. 3:** Medium, minimum and maximum mode.

When one of these acquisition modes is used, 10 sensor readings are performed to make one acquisition. If the acquisition interval is equal to 10 minutes and **DISP** screen is in LO6 mode, in every 1 minute a measure will be made to make the 10 necessary measures for an acquisition. In this case consumption will be same as Ex. 2.

**Ex. 4:** Starting and ending of acquisitions.

It must observe the best start and end acquisitions mode to save battery, due to necessity of the application

If the process in which the measuring is performed, only a short interval happens. The best is to use start and end of acquisitions by button.

If the process occurs daily at fixed times, the best way is to use the start and end by date and daily repetition.

## 7 IRLINK3 INTERFACE INSTALLATION

In the IR-Link3 / RS232 model there is a RSR232 / Ir communication interface. It must be connected to the serial port at the PC. In the IR -Link3 / USB model there is a USB / Ir communication interface, which must be connected to the available USB port. Windows will request the proper driver installation. Drivers for the IrLink3 interface are part of the Software **LogChart II** or **NXperience**, or can be downloaded from our home page.

### 7.1 USB Drivers Installation

The drivers installation steps may vary according to the machine, even with the same version of an operating system. The following screenshots and steps are only to provide guidance.

1. Run the driver file available on our web site or included in the software paket.
2. Connect the serial communication interface IrLink-3 to the PC USB port. Windows® will acknowledge the presence of new hardware and a few seconds later it will start the driver's installation process.
3. The found new hardware wizard will be displayed, and you will be asked if you want to install the driver from the Windows Update website. Select "No, not this time", and then click Next
4. Select "Install from a list or specific location (Advanced)" and click "Next".
5. Select "Search for the best driver in these locations" and check "Search removable media". Click "Next". If installation files are not in a CD, check "Include this location in the search" and show the file path
6. If a prompt warns you that it does not support Windows® XP, click "Continue anyway".
7. The interface driver files will be copied to the computer and after a few seconds a screen is displayed informing that the software installation has been concluded. Click "Finish".
8. In some situations, the steps described above may be repeated. Follow the same procedures.

In later uses of the interface, Windows® may require the driver installation again. In this case, the same installation wizard will be displayed, and you will have to select the option "Install software automatically (recommended), as the driver may already be in the computer.

The following screenshots show examples of Windows XP® installation wizard. The screens in Windows 2000® are slightly different, but the content is basically the same

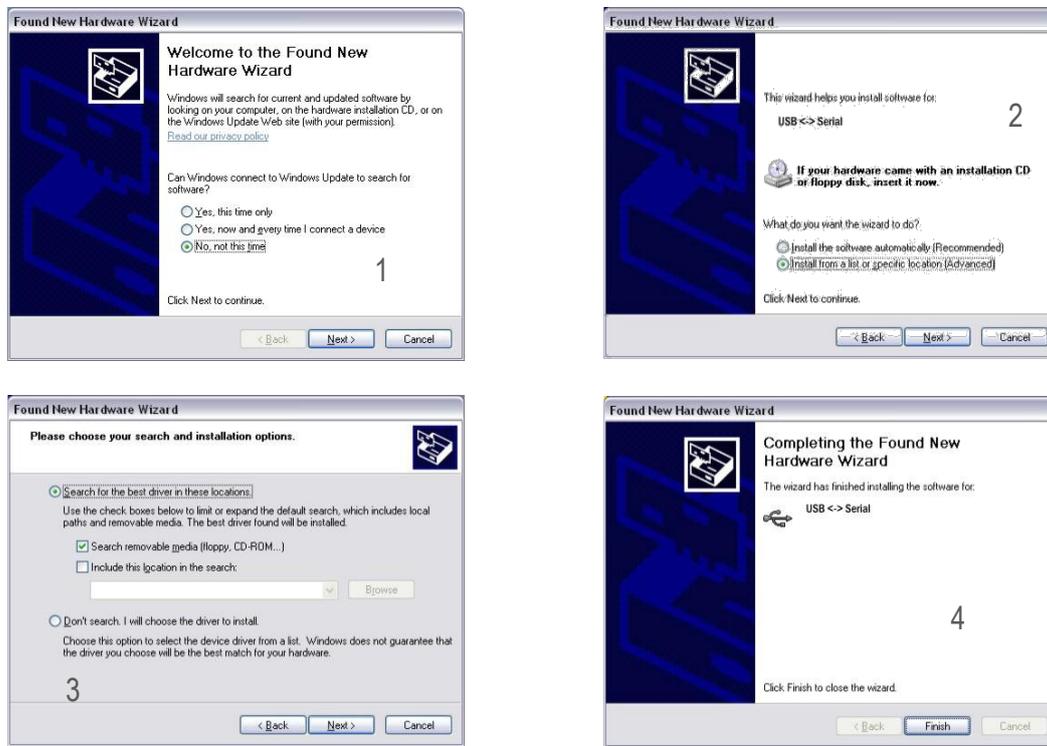


Figure 10 Driver Installation

## 7.2 Communicating with Logger

You can communicate with the LogBox-RHT-LCD using **NXperience** or **LogChart II** software. To do so, however, the Communication Interface must be connected to the computer.

The interface must be constantly directed towards the front part of the logger (communication window) at a maximum distance of 50 cm, as shown in Fig 11.

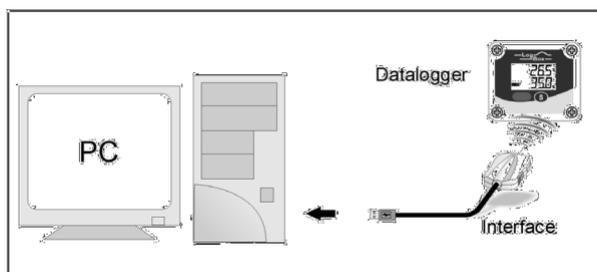


Figure 11 Infrared communication interface position

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## 8 NXPERIENCE SOFTWARE

### 8.1 Installation

**NXperience** software allows you to explore all the features of the device by communicating through its USB interface. It is also a complete tool to perform the analysis of the data logged.

To install **NXperience**, just execute the **NXperienceSetup.exe** file, available from our website.

### 8.2 Running NXperience

When you open **NXperience**, the main window is displayed as shown in Fig 3

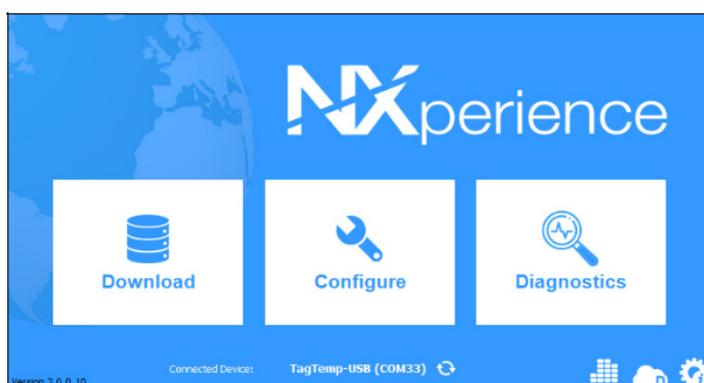


Figure 12 NXperience Main Window

You should click Configure, and then click Read Device

#### 8.2.1 General Parameters



Figure 13 General Informations

#### INFORMATION

- **Device Tag:** Allows you to set a name for the digital channel. The field accepts up to 16 characters.
- **Serial Number:** Shows the device unique identification number.
- **Model:** Shows the device model name.
- **Firmware Version:** Shows the firmware version recorded in the device.
- **Memory Capacity:** Shows memory space still available for new logs.
- **Logging Status:** Informs if the device is registering or not.
- **Battery Level:** Shows the device's battery charge level.

#### CLOCK

- **PC Date/Time:** Shows the date and time of the computer.
- **Date/Time:** Shows the date and time of the device when it was read by NXperience.

### 8.2.2 Channels Parameters

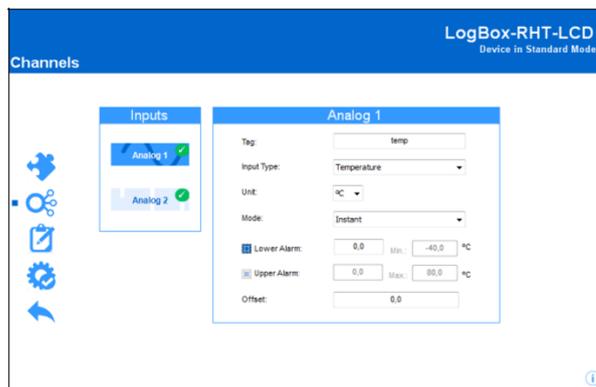


Figure 14 Channel parameters

- **Tag:** Allows you to set a name, which will be used as channel identification during a download, for the channel. The field allows up to 16 characters.
- **Input Type:** Shows the type of sensor supported by the device.
- **Unit:** Allows you to define the unit °C or °F
- **Mode:** Allows you to define how the value measured will be registered. Options are:
  - **Instant:** The value logged will be exactly the value measured at each interval defined. Measurement is taken at the end of the defined interval. The minimum interval between measurements is 5 seconds.
  - **Maximum:** The value logged will be the maximum value found within ten consecutive measurements taken within a predefined interval. The minimum interval between measurements is 50 seconds
  - **Minimum:** The value logged will be the minimum value found within ten consecutive measurements taken within a predefined interval. The minimum interval between measurements is 50 seconds.
  - **Medium:** The registered value will be the average of ten measurements made on logging interval. The minimum time between each record is 50 seconds.
- **Lower Alarm:** Allows you to enable and configure a lower alarm setpoint (option available only if the log Start Mode is set to "Immediate Start" or "Date/Time").
  - **Minimum:** Displays the minimum temperature supported by the device.
- **Upper Alarm:** Allows you to enable and configure a higher alarm setpoint (option available only if the log Start Mode is set to "Immediate Start" or "Date/Time").
  - **Maximum:** Displays the maximum temperature supported by the device.
- **Lower Setpoint:** When the measured temperature is lower than the value set in this parameter, the device will start the logs (option available only if the log Start Mode is set to "Setpoint").
  - **Minimum:** Displays the minimum temperature supported by the device.
- **Upper Setpoint:** When the measured temperature is higher than the value set in this parameter, the device will start the logs (option available only if the log Start Mode is set to "Setpoint").
  - **Maximum:** Displays the maximum temperature supported by the device.
- **Offset:** Allows you to make small adjustments to the channel readings. The configured offset will be added to all readings performed. An offset up to  $\pm 3^{\circ}\text{C}$  ( $\pm 5.4^{\circ}\text{F}$ ) can be set for temperature setting. This allows to decrease (and even zero) the temperature measurement error

### 8.2.3 Configuration of LOG Register

#### LOG

- **Log Interval:** Allows you to select the frequency (in hours, minutes or seconds) with which a log must be made and logged in the memory.
- **Estimated Time:** Based on the value set in the **Log Interval**, shows the estimated time for the memory to fill.

#### MEMORY MODE

- **Circular Memory:** Logs are continuous, replacing old logs with new ones as the number of logs overpasses the memory capacity.
- **Full Memory:** Logs can be stored up to the full memory capacity is reached.

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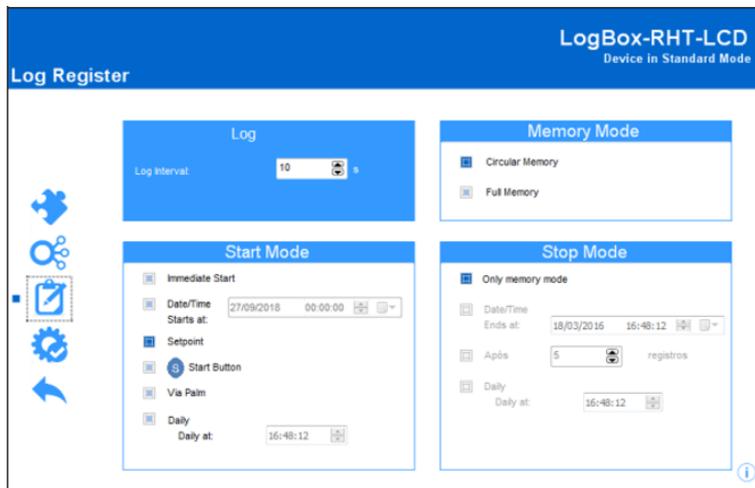


Figure 15 Log register

### START MODE

- **Immediate Start:** Start as soon as set up is ready and sent (OK) to the device.
- **Date/Time:** Logs start at predefined date and time.
- **Setpoint:** Logs start when a certain temperature value is reached. In this option, the setpoint value is set in the **Channels** field, in the **Upper Setpoint** and **Lower Setpoint** parameters (these options appear only when this log mode is selected)
- **Start Button:** Logging starts with pressing the Button
- **Daily:** Logging starts every day at a predefined time

### STOP MODE

- **Only Memory Mode:** when checked the memory mode is used to terminate the logging process
- **Date/time:** Logging stops at a predefined Date and time
- **Logs:** Logging stops after the execution of a predefined number of Logs
- **Daily:** Logging stops daily at a predefined time (to combine with Start Mode "Daily")

### 8.2.4 Finalization

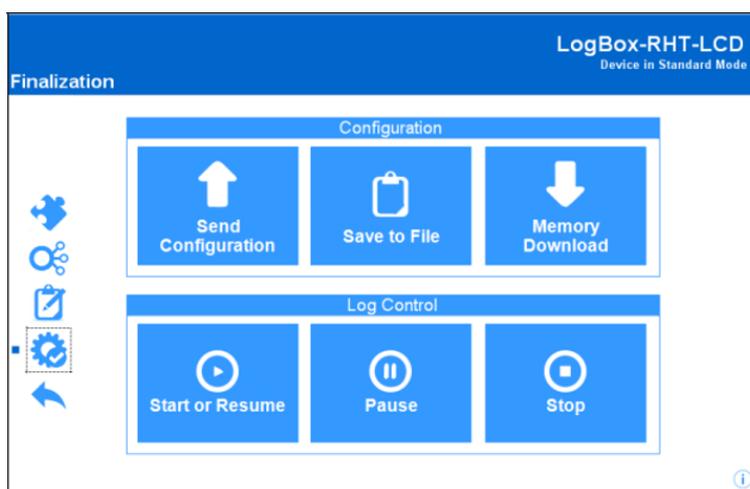


Figure 16 Finalization

### CONFIGURATION

- **Send Configurations:** Allows you to send the configuration to the device.
- **Save to File:** Allows you to save the configuration to a file that can later be used.
- **Memory Download:** Allows you to download logs from memory.

### LOG CONTROL

- **Start or Resume:** Allows you to start or resume logs that have been interrupted by the Pause command, without discarding logs that are in the device's memory, using the configured parameters.
- **Pause:** Allows you to stop logs, allowing them to be resumed in the future using the Start button.
- **Stop:** Allows you to permanently stop logs, so that the device will only re-register when it receives a new configuration

## 8.3 Downloading and Data Visualization

Data downloaded are send from device to PC.

Data can be downloaded any time: at the end of the registering process or while they are being acquired. If data download takes place during the registering process, the process will not be interrupted, following the device configuration.

### 8.3.1 Downloading Data

Data download is accomplished by clicking the button Download Logs in the Download screen from NXperience.

During data transference, a status bar indicates remaining data to be transferred. Data downloading time is proportional to the number of readings logged

### 8.3.2 Visualization of Data

At the end of values transfer, the data will be displayed in a graphical form

#### 8.3.2.1 Chart Window

See Figure 17. It is possible to select a region of the chart to zoom in. Zoom commands can be accessed through zoom icons from the task bar. It is also possible to select an area from the chart to zoom in by clicking and dragging the mouse, thus creating a zoom region starting from the upper left corner on the chart area.

The graphic curves can be vertically dragged with a right-click and dragging the mouse up and down

#### 8.3.2.2 Data View Table

Values are presented in a tabular form, listing the measurement time and value. See Figure 18

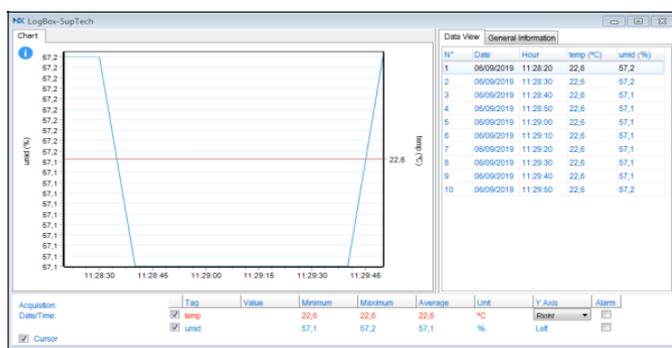


Figure 19 NXperience chart window

N°	Date	Hour	temp (°C)	umid (%)
1	06/09/2019	11:28:20	22,6	57,2
2	06/09/2019	11:28:30	22,6	57,2
3	06/09/2019	11:28:40	22,6	57,1
4	06/09/2019	11:28:50	22,6	57,1
5	06/09/2019	11:29:00	22,6	57,1
6	06/09/2019	11:29:10	22,6	57,1
7	06/09/2019	11:29:20	22,6	57,1
8	06/09/2019	11:29:30	22,6	57,1
9	06/09/2019	11:29:40	22,6	57,1
10	06/09/2019	11:29:50	22,6	57,2

Figure 19 Data View Table

Data View	General Information
Data Logger	
Model	LogBox-RHT-LCD
Serial Number	11134371
Firmware Version	1.10
Memory Capacity	32768 Samples
temp (°C)	
Input	NTC 10K
Mode	Instantaneous
Offset	0,0
Lower Alarm	N/D
Upper Alarm	N/D
umid (%)	
Input	NTC 10K
Mode	Instantaneous
Offset	0,0
Lower Alarm	N/D
Upper Alarm	N/D
Download Information	
Title	LogBox-SupTech
Log Interval	10 s
Total Logs	10
Logs Start	None
Memory Mode	None
Logs Stop	None
Time of Download	06/10/2019 07:40:34
First Log	06/09/2019 11:28:20

Figure 19 General Informations

### 8.3.2.3 General Informations Table

This window shows some information about the device whose data were just read and its configuration

### 8.3.3 Other Features

Check the NXperience Operations Manual for more information on the other features offered by the software, such as exporting to other formats, filter logs, chart junction, etc

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## 9 LOGCHART II SOFTWARE

### 9.1 Installing LogChart II

The LogChart II is the software provided with the logger to allow for configuration and data collection. To install the LogChart II, execute the LC\_II\_Setup.exe program available on our website. The installation wizard will then guide you throughout the installation process.

### 9.2 Running LogChart II

Start the program. The main window will appear on the screen, as in Fig. 3.

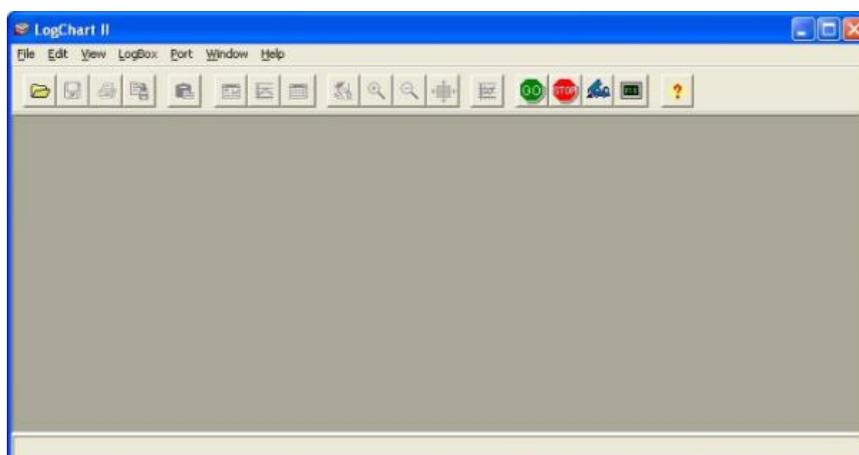


Figure 20 LogChart Main Window

The LogChart II requires a communication port to talk to the logger. Select one and connect the corresponding wand IR-LINK3 to it. Click on the menu Port. Clicking on the menu Port, all free communication ports available in the computer will be listed. The chosen port will be remembered next times the LogChart II is initiated.

When the selected port is successfully opened, the LogChart II initial screen is opened, enabling the buttons below



Figure 21

In case the user wants to stop the process while data logging is running, the button "Stop" must be pressed



### 9.3 Configuring the Logger

Make sure the IR-LINK3 wand is connected to the PC port selected. The interface must be pointed towards the logger communication window (see Figure below) at a distance of about 15 cm.

Click the button  to start the communication between the logger and the software; the Parameters Configuration window is then displayed (Fig. 6), showing the current configuration and information about the logger. New configuration parameters defining the operation mode for a new application can be entered. The user can also obtain general information about the device.

The fields of the configuration window are described below

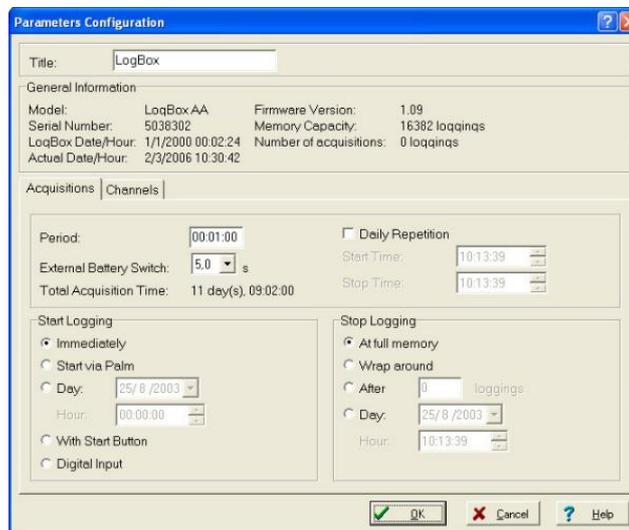


Figure 23 Acquisition Parameters

### 9.3.1 General Information Field

General information on the top of the screen informs the model, serial number, logger current date/time, PC date/time, firmware version (logger model version), memory capacity and used memory. This information is displayed in the upper part of the LogChart-II configuration screen. The time is constantly updated in this screen, provided that the logger and the PC are communicating

### 9.3.2 Acquisition Field

- **Period:** It determines the interval between readings in the hh:mm:ss format. New data is stored in the logger memory after each time interval. In the **Instantaneous** reading mode, the value of the interval between acquisitions is the same as the time interval between measurements. For **Average**, **Minimum** and **Maximum** readings, the logger executes 10 readings within this interval.
- **External Battery Switch time:** Defines the time when the logger turns on the power supply, before proceeding with any reading. This time is limited to 10 seconds and must be less than half of the interval between readings.
- **Estimated time:** It informs the estimated time for the accomplishment of programmed readings based on the logging "Interval" and on the number of programmed readings.
- **Daily Repetition:** Allows loggings to be repeated every day, for example, recording data from 8 AM to 5 PM day after day. The start and stop times are defined in the fields "Start time" and "Stop time."

### 9.3.3 Start Logging Field

- **Immediately:** The logger starts logging as soon as the configuration is applied. Not valid when the option 'Daily Repetition' is selected.
- **Day / Hour:** Logging starts at a defined date and time. The date defined is used for the Daily Repetitions option as well.
- **With Start Button:** Starts and stops logging by pressing the Star button for two seconds.
- **Digital Input:** Starts readings when the digital input is activated (closed) and stops readings when the digital input is deactivated (open).

### 9.3.4 Stop Loggings

- **At Full Memory:** Loggings can be stored up to the full memory capacity is reached.
- **Wrap around:** Logging never stops. The LogBox-AA will keep on recording the readings and when the memory is full it will overwrite the oldest record in a circular or wrap around manner.
- **After a defined number of readings:** The logger will stop logging after the number of readings here defined is reached. Not valid when the option 'Daily Repetition' is selected
- **Day / Hour:** The LogBox-AA will stop logging at the user-defined date and time. Not valid when the option 'Daily Repetition' is selected.

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### 9.3.5 Channels Field

By selecting the “Channels” option, the user is able to choose the individual settings for each input channel, as Fig. 7 shows

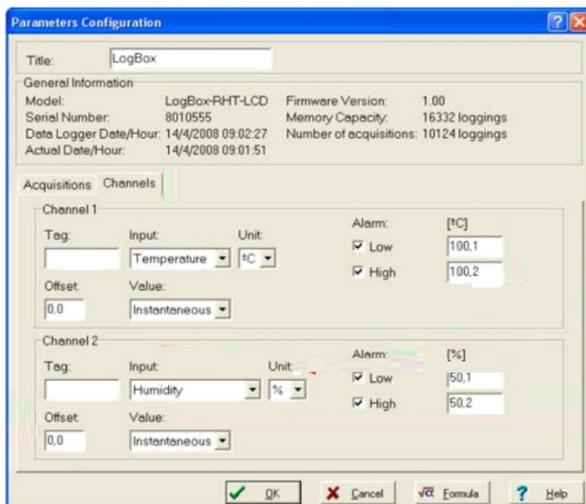


Figure 24 Channels Configuration

The Parameters are:

- **Tag:** Defines a name (up to 8 characters) for identifying the variable to be measured.
- **Input:** The signal applied to the logger input is defined here. The list shows all the input options available. The selected option must be in accordance with the internal configuration of the jumper, as Table 1 shows.
- **Unit:** Defines the variable unit.
- **Offset:** Allows fine offset corrections on the measured value.
- **Value:** Defines readings recording mode. The following Options are available:
  - **Instantaneous:** The instant value read at the logging time.
  - **Average:** Ten readings at each reading interval. The average value of readings is the value recorded.
  - **Minimum:** Ten readings at each reading interval. The lowest value found is recorded.
  - **Maximum:** Ten readings at each reading interval. The highest value found is recorded.
- **Alarm:** defines a limit range of variables measured that, once exceeded, trigger the alarm. Once activated, the alarm LED indicator stays so even after the alarm-triggering situation has ceased.
  - **LOW** defines the minimum value under which the alarm is triggered.
  - **HIGH** defines the maximum value above which the alarm sensor is triggered.

After filling all the fields, send the configuration to the logger by clicking on the button



New settings and PC current date/time are then sent to the logger.

## 9.4 Data Download and Visualization

The transference of data to a PC is accomplished by using the LogChart II software. Data can be collected anytime and saved in files for future analysis (menu “File Save” or “File Save as”). Help can be accessed from the LogChart-II software when necessary.

Offloading data: data offload is accomplished by clicking on the button



Or using the LogChart -II menu. During data transfer, a status bar indicates remaining data to be transferred. Data downloading time is proportional to the number of readings logged. At the end of data transference, the Graph window is displayed.

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### 9.4.1 Graph window

The Graph is a convenient tool for analysis. It enables the logger acquisitions to be read in the form of a “values x time” graph. As one moves the mouse in the chart area, the time, and the value of the records of each channel are shown in the field located in the bottom of the window. Zooming in and out are implemented. It is possible to select an area by clicking and dragging the mouse, thus creating a zoom region, starting at the upper left position of the region of interest

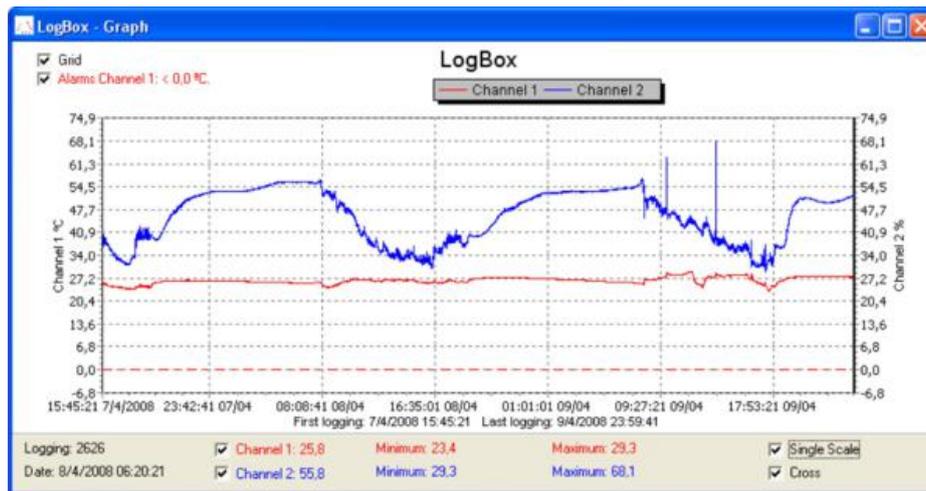


Figure 25 Graph Window



The command **DOWNLOAD** acquisitions does not interrupt the process of data logging and reading.

Other two windows can be easily opened: General information window and Tables window

### 9.4.2 General information table

Displays information about the logger that registered data: its features and configurations, and details about data acquired

General Information	
<b>Data Logger</b>	
Model:	LogBox-RHT-LCD
Serial Number:	8010555
Firmware Version:	1.00
Memory Capacity:	16332 loggings
<b>Oven 1 [°C]</b>	
Input:	Temperature
Value:	Instantaneous Value
Offset:	0.0
Alarm Low:	101.1
Alarm High:	101.2
<b>Oven 2 [%]</b>	
Input:	Humidity
Value:	Instantaneous Value
Offset:	0.0
Alarm Low:	50.1
Alarm High:	50.2
<b>Logging Information</b>	
Title:	LogBox
Interval between readings:	20 sec
Total Number of Loggings:	162
Start Logging:	Day: 4/14/2008 Hour: 10:06:00 AM
Stop Logging:	Day: 4/14/2008 Hour: 11:00:00 AM
Download Time:	Monday, April 14, 2008 at 11:28:23 AM
First logging:	Monday, April 14, 2008 at 10:06:00 AM
Last logging:	Monday, April 14, 2008 at 10:59:40 AM
Place here a comment to identify the downloaded data.	

Figure 26 General Informations

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### 9.4.3 Acquisitions Table Window

Data acquired by one or both input channels (user-defined) are displayed in engineering units in a table format. The table displays register number, date/time and the record values

### 9.4.4 Exporting the Data

Three windows supporting data visualization: Graph, Acquisitions Table and General Information windows. Data can be originated from direct reading from the logger or from a file previously recorded in a computer.

Once the windows are open, data can be saved in a file (.lch), printed on a graph or exported to a text file (.txt or .dat).

Logging Nr.	Time	Date	Oven 1 [°C]	Oven 2 [%]
00001	10:06:00	14/4/2008	24,5	41,7
00002	10:06:20	14/4/2008	24,6	41,1
00003	10:06:40	14/4/2008	24,6	41,7
00004	10:07:00	14/4/2008	24,6	41,4
00005	10:07:20	14/4/2008	24,6	41,0

Figure 27 Table window

## 10 SPECIAL CARE



The logger is an electronic device and some basic care is required:

- When opening the device for battery replacement or connecting sensors avoid touching the circuit for not causing damages resulting from static electricity.
- When the device is opened, avoid liquid and/or dust contact.
- Use a screwdriver to open the case cover.
- Pay attention to batteries polarity: The positive terminal should be placed directed towards the center of the device.
- Worn batteries should not be recharged, dismantled or incinerated. After use, batteries must be disposed according to local legal rules.
- After placing batteries back to the logger, make sure the cover is firmly attached to the socket.

## 11 MOST FREQUENTLY PROBLEMS

### Communication with the logger fails

- Make sure the COMM port is selected correctly and there is no other program using the same port during communication attempts
- Make sure there is no physical obstacle blocking the infrared signal; Make sure the cable is well connected to the PC port
- Make sure the port selected does not present any problem

### Logger Reset

When the user is not sure about the real condition of the logger operation, it is possible to perform an enforced Reset by removing the battery and waiting for 2 seconds to replace it. The logger will return to the stand-by mode. If measurements were being made, it will interrupt the process and start measurements again only when a new set up is made. Implemented setup remains the same after reset.

## 12 QUESTIONS?

For further information about this or other products of B+B Thermo-Technik GmbH please do not hesitate to contact us at:

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