VOLTCRAFT DL-200 T Temperature Datalogger Instruction Manual

VOLTCRAFT®

DATA LOGGER
OPERATING INSTRUCTIONS
Item No.
1435090 DL-200T Temperature
1435091 DL-210TH Temperature/Humidity
1435092 DL-220THP Temperature/Humidity/Air Pressure

CE **VERSION 05/17**

These Operating Instructions accompany this product. They contain important information on setting up and using the device. You should refer to these instructions, even if you are buying this product for someone else.
Please retain these Operating Instructions for future use! A list of the contents can be found in the Table of contents, with the corresponding page number, on page 53.

Contents

INTRODUCTION

Dear customer, By purchasing a Voltcraft® product, you have made an excellent decision, for which we wish to thank you.
Voltcraft® – This name stands for outstanding quality products in the fields of measurement, charging and network technology, products that stand out due to their professional competence, exceptional performance and permanent innovation.
Whether you are an ambitious electronics hobbyist or a professional in the field, with a product from the Voltcraft® family, you have the optimum solution at hand at all times, even for the most challenging tasks. And it gets even better: We make the sophisticated technology and reliable quality of our Voltcraft® products available to you at a nearly unbeatably low priceperformance ratio. In this way, we create the basis for lengthy, good and successful cooperation.
We hope you will enjoy your new Voltcraft® product!

If there are any technical questions, contact:

International:	www.conrad.com/contact
United Kingdom:	www.conrad-electronic.co.uk/contact

SYMBOL EXPLANATION, MARKINGS

⚠ An exclamation mark in a triangle indicates important notes in these operating instructions that must be strictly observed.

➔ The “arrow” symbol alerts the user to the presence of important tips and notes on using the device.

CE This device is CE compliant and fulfills all applicable European guidelines.

INTENDED USE

The battery-operated portable data logger DL-200T has an internal temperature sensor, DL-210TH has an internal temperature/humidity sensor and DL-220THP has an internal temperature/humidity/air pressure sensor.
Measuring data is recorded automatically at adjustable sampling rates from 1 minute to 24 hours. At most 40,020 measuring values can be saved. Measured values can be immediate read on the LC display. The data logger can be configured online or by the included software.
The product is connected to a computer like a regular USB memory stick and read out there. It automatically generates a graphical report in PDF format. A long-life lithium battery ensures a long recording time.
With attached protective cap, the product is dust tight and jet waterprotected and can be used indoors and outdoors. Do not use the device if the housing is not completely shut or if the protection cap is not attached properly.
Measuring under adverse ambient conditions like dust and flammable gasses, vapours or solvents is not admissible. The safety instructions must be followed unconditionally!
This product fulfils European and national requirements related to electromagnetic compatibility (EMC). CE conformity has been verified and the relevant statements and documents have been deposited at themanufacturer.
This product complies with the statutory, national and European requirements.
For safety and approval purposes, you must not rebuild and/or modify this product. If you use the product for purposes other than those described above, the product may be damaged. In addition, improper use can cause hazards such as short circuiting, fire, etc. Read the instructions carefully and keep them for future reference. Make this product available to third parties only together with its operating instructions.

DELIVERY CONTENT

- Data logger incl. USB protective cap
- 3 V button cell, type CR2450
- Software CD
- Operating instructions

Up-to-date Operating instructions
Download the latest operating instructions from our website **www.conrad.com/downloads** or scan the printed QR code. Follow the instructions on the website.

www.conrad.com/downloads

FEATURES AND FUNCTIONS

- Portable data logger with LC display
- Compact USB stick design
- IP65 ingress protection with attached protective cap
- Measurements and records of

– temperature (DL-200T)
– temperature and relative humidity (DL-210TH)
– temperature, relative humidity and air pressure (DL-220THP)

- Maximum and minimum readings
- Logging timer
- Configuration via website or by software
- Automatic generation of PDF report with graph
- Adjustable sampling rate from 1 minute to 24 hours

SAFETY INSTRUCTIONS

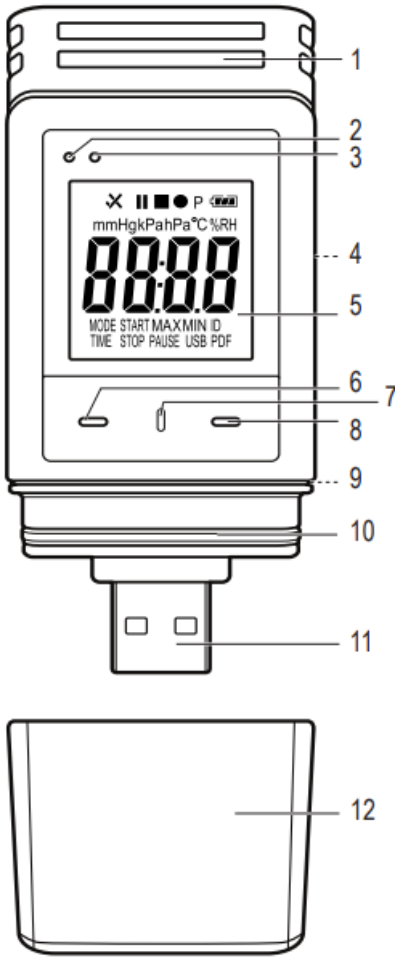
⚠ Read the operating instructions carefully and especially observe the safety information. If you do not follow the safety instructions and information on proper handling in these operating instructions, we assume no liability for any resulting personal injury or damage to property. Such cases will invalidate the warranty/guarantee.

- The device is not a toy. Keep it out of the reach of children and pets.
- Do not leave packaging material lying around carelessly.
  These may become dangerous playing material for children.
- Protect the product from extreme temperatures, direct sunlight, strong jolts, moisture, flammable gases, vapours and solvents.
- Do not place the product under any mechanical stress.
- If it is no longer possible to operate the product safely, take it out of operation and protect it from any accidental use.
  Safe operation can no longer be guaranteed if the product:
  – is visibly damaged,
  – is no longer working properly,
  – has been stored for extended periods in poor ambient conditions or
  – has been subjected to any serious transport-related stresses.
- Please handle the product carefully. Jolts, impacts or a fall even from a low height can damage the product.
- Also observe the safety and operating instructions of any other devices which are connected to the product.
- Do use the device in rooms or at unfavourable ambient conditions in which there may or could be combustible gases, vapours or dust. Avoid an operation near:
  – strong magnetic or electromagnetic fields
  – transmitting aerials or HF generators since this could affect the measurement.
- Do not cover the sensor openings during use. Do not insert any objects into the sensor openings.
- Only with properly attached protective cap and completely shut housing, the product is dust tight and jet waterprotected and can be used indoors and outdoors. The data logger must not be operated with an open battery compartment or without the protective cap.
- Battery must be kept out of reach of children. Do not leave battery lying around, as there is risk, that children or pets swallow it.
- Correct polarity must be observed while inserting the battery.
- Battery should be removed from the device if it is not used for a long period of time to avoid damage through leaking. Leaking or damaged battery might cause acid burns when in contact with skin, therefore use suitable protective gloves to handle corrupted battery.

- Do not disassemble, short-circuit or throw battery into fire. Never recharge non-rechargeable battery. There is a risk of explosion!
- Consult a professional if you require assistance with product operation, safety or connection.
- Maintenance work, adjustments and repairs may be carried out only by a professional or at a specialist workshop.

Should you have questions concerning correct product connection or operation, or should other questions arise that this user manual does not address, please do not hesitate to contact our technical support or a thirdparty professional.

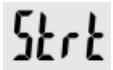
OPERATING ELEMENTS



1. Sensor openings
2. Red LED control light
3. Green LED control light
4. Battery compartment
5. LC display
6. Button DOWN
7. Button RELEASE BATTERY COMPARTMENT
8. Button ENTER
9. Rubber seal
10. Rubber seal
11. USB plug

12. Protective cap

Symbols in the LC display

Symbol	Meaning
✓	Alarm indicator: Measured values are within the limits defined during configuration.
	No high/low alarm is set.
✕	Alarm indicator: Measured values are exceeding the limits defined during configuration.
■	Recording has been stopped.
●	Recording in progress.
❚❚	Recording has been paused.
P	Device is ready to record: Device is configured, and recording not started yet. It will dis appear once the data logger records.
	Battery symbol: Full battery capacity
	Battery symbol: Sufficient battery capacity
	Battery symbol: Low battery capacity, replace the battery
ºC	Unit for temperature value
%RH	Unit for relative humidity value (DL-210TH, DL-220THP only)
hPa/ mmHg/ kPa	Unit for air pressure value (DL-220THP only)
ID	Logger ID
MAX/MIN	Maximum/minimum measurement
USB	Connected to computer.
USB PDF	Connected to computer and generating PDF report.
PAUSE	Indicates that the limit alarm pause function is enabled.
MODE START	Indicates that a start mode has been chosen. It will be shown before recording starts.
MODE STOP	Indicates that a stop mode has been chosen. It will be shown before recording ends.
TIME START	Indicates remaining time before start of recording.
TIME STOP	Indicates remaining time until end of recording.
	Ready to start recording by holding button ENTER (8) for few seconds. (Select “START UPON KEYPRESS” as “RECORD START CONDITION” during configuration.)
	Recording can be stopped by holding button ENTER (8) for few seconds. (Select “STO P BUTTON” as “STOP STYLE” during configuration.)

on	Ready to activate limit pause function by holding button ENTER (8) for few seconds.
oFF	Ready to deactivate limit pause function by holding button ENTER (8) for few seconds.
d	Days, unit for remaining time. (If the remaining time is below one day, remaining time is shown in HH:MM format.)
up	Ready to upgrade firmware.
oL	Measurement error
	Measured values are beyond the measuring range.
Err1	Configuration error. An error occurred during configuration. Repeat the configuration process.

LED STATUS DISPLAY

LED indicator	Description
Green LED control light (3) is flashing.	Measured value(s) are within the configured limits of low and high alarm.
Red LED control light (2) is flashing.	Memory is full.
	Measured value(s) are exceeding configured limits of low and high alarm.
	In mode “START UPON KEYPRESS” or “STOP TIME” recording has been terminated. (In order to start recording again, re-configure data logger.)
	In mode “START UPON KEYPRESS”, data logger is ready to start recording. (In order to start recording hold button ENTER (8) pressed for few seconds.)
Red LED control light (2) is continuously on.	Data logger is generating PDF report.
Green LED control light is flashing twice.	Configuration was successful.
	Firmware has been updated successfully.
No LED lightis on.	LED-alarm was disabled during configuration.

INITIAL OPERATION

a) Protective cap

⚠ The data logger is only dust tight and jet water protected with attached protective cap (12) and rubber seals (9, 10). This protection allows permanent logging operation in damp rooms and outdoors.

- Only remove the protective cap for replacing the battery or reading the data on the computer.

- Remove the protective cap by pulling it off from the data logger. The protective cap fits tightly due to the rubber seal (10).
- Place the protective cap tightly back onto the data logger.

b) Connect to the computer

- Remove the protective cap (12) from the data logger.
- Connect the data logger to an available USB port of your computer.
- The computer recognizes the new hardware. The model type of your data logger appears as a mass storage device on your computer.

c) Disconnect from the computer

- Eject the data logger from your computer and remove it.
- Place the protective cap back on the data logger.

d) Choose start/stop mode

- Choose start mode from “RECORD START CONDITION” during configuration.
- Choose stop mode from “STOP STYLE” during configuration.

e) Define date and time during configuration

- Select month, year and time with date picker and time sliders. The time will be shown as “TIME” in HH:MM:SS format. Confirm with “DONE”. Date and time settings are displayed in the corresponding fields.
- Alternatively, click “NOW”, if you require an immediate start of logging. Actual date and time – as per locally set on your computer – will be filled automatically into field “START TIME”/“STOP TIME”.

f) Button ENTER

- Press button ENTER to switch between maximum and minimum reading.
- Press and hold button ENTER for few seconds to start/stop logging or activate/deactivate pause function.

BEFORE FIRST USE

a) Protection foil

- Remove the protection foil from the LC display (5).

b) Insert/replace battery

- Install the battery before first-time use or replace the battery when the battery symbol “  “ appears in the LC display.

  → Removing and replacing batteries does not delete data or settings.

- Remove the protective cap from the data logger.
- Press and hold the button RELEASE BATTERY COMPARTMENT (7) and pull out the logger unit from the housing. The housing fits tightly due to the second rubber seal (9).
- Release the button RELEASE BATTERY COMPARTMENT.
- The battery compartment (4) is on the back of the logger unit. Insert a new and suitable battery (see “21. Technical data” on page 94) into the battery compartment observing correct polarity (positive/+ and negative/-).
- Slide the logger unit back into the housing. Ensure that the LC display matches to the LCD window of the housing.
- Place the protective cap back onto the data logger.

⚠ The data logger performs best at room temperature. If the item is used at extremely low temperatures, the battery life is reduced. In such case, you can reduce power consumption of the data logger in order to prolong the operation time as following

– disable LC display

– disable LED alarm

– set a longer sampling rate

For details refer to chapter “11. Configuration” on page 69.

CONFIGURATION

After inserting a battery, configure the data logger either by software or by website. Select logging parameters like sampling rate, start time, recording time, pause function, LED flash interval, enable/disable LC display and PDF report settings.

➔ Configuration terminologies and commands may differ between software and website.
The following instructions and explanations are based on the terminologies and commands found on the configuration website. After creating the configuration file, copy it to the data logger!

a) Install software

- Insert the software CD into the DVD drive of your computer.
- The installation will start automatically. If not, go to your DVD drive directory, and open the installation file “autorun.exe”.
- Select your desired language German, French or English.
- Follow the on-screen instructions to complete the installation. Depending on your operating system a restart may be required.
- For further information, refer to the operating instructions on the CD provided (section 3).
- The enclosed software is the Voltsoft standard edition. The professional version (Voltsoft Data Logger, No. 101333) is an optional item which you can purchase separately. If you purchase the professional version, you will receive a license key. Follow the steps in the Voltsoft operating instructions, to register and upgrade to the professional version.

b) Software functions overview

	Standard	Professional
User Management	X	√
Email Management	X	√
General Settings	√	√
Language Preference	√	√
Email Template	X	√
Device Management (Add/Remove)	√	√
Custom Graph	X	√

c) Create configuration file by software and load the configuration file created from software onto data logger

- Connect the data logger to your computer.
- Start the Voltsoft software and follow the operating instructions in the software manual (section 6 and choose your supported device).
- Disconnect the data logger from your computer.

d) Perform configuration setting on the website
There are 3 options to open the configuration website:

- Open **www.conrad.com** in a browser and navigate to the data logger product page by using the item number (e.g. 1435090 for DL-200T data logger). Click on the link for the configuration website to open the website.
- Open **http://datalogger.voltcraft.com/ConfigBuilder/index.jsp** in a browser.
- Connect the data logger to your computer. Open the data logger drive on your computer. Click on the link “Configuration Website.html” to open the configuration website.

Main Screen – Overview

General Settings	Choose the desired language for the website by clicking on the correspondin g flag.
	Select the model of your data logger. The model name is mentioned on the p ackaging and/or product. Chosen model type will be highlighted in red.
“MEASURE- MENT” options	Here you select the logging parameters for your data logger. For further instructions, please refer to ““MEASUREMENT” options – “BASIC SETTING”” on page 72 and ““MEASU REMENT” options – “ALARM SETTING”” on page 75.
“PDF REPORT OPTIONS”	Here you define the content and name of the PDF report. For further instructions, please refer to ““PDF REPORT OPTIONS”” on page 76.
Other settings	Here you can create the configuration file, load a previous setting or restore entries to default. For further instructions, please refer to “Other settings” on page 77.

“MEASUREMENT” options – “BASIC SETTING”
Select “MEASUREMENT” in the navigation bar and enter settings in “BASIC SETTING”.

“LOGGER ID”	Logger ID is a four digit identifier. Enter a number between 0000 and 9999 e. g. 0014. Use different logger IDs to identify data loggers with e.g. different configurati on file for different usage.
“RECORD START CONDITION”	Select one of the following options to determine when data logger starts reco rding. Each option has a default stop setting.
	“IMMEDIATELY UNTIL MEMORY FULL”: Data logger starts recording data i mmediately until the memory is full.
	“START UPON KEYPRESS”: Data logger starts recording after holding butto n ENTER (8) pressed for few seconds. Data logger stops recording until memory is full.
	“START UPON START TIME”: Data logger starts recording at a defined date and time until the memory is full.
	“STAR T/STOP TIME”: Data logger starts and stops recording data at a defin ed date and time.
“RECORD START CONDITION”	“CIRCULAR LOGGING”: Data logger starts recording immediately and circul arly. The newest data overwrites the oldest data. It stops recording/logging once the battery is depleted or “CI RCULAR LOGGING” has been replaced by another “RECORD START CONDITION” during configuration.
“STOP STYLE”	Select one of the following options to determine when data logger ends recor ding.
	“NONE”: No stop condition is specified. Data logger stops recording based o n the “RECORD START CONDITION” setting.
	“STOP BUTTON”: Data logger stops recording after holding button ENTER (8) pressed for few seconds.
	“AFTER PDF CREATED”: Data logger stops recording after PDF report is ge nerated.
“START TIME”	Define date and time when to start recording data.
“STOP TIME”	Define date and time when to stop recording data.
“START DELAY MINUTES”	Define delay time of immediate start of recording.
“SAMPLING RATE”	Define how frequent the data logger measures and records data in “MINUTE S” or “HOURS”. → When using the data logger at extremely low temperatures, choose a lo nger sampling rate to decrease power consumption and to prolong the batter y life.
“RECOR- DING TIME”	This value is automatically calculated based on the sampling rate and cannot be set by the user.

“LED FLASH INTERVAL”	Select how fast the LED control lights (2,3) shall flash. Choose an interval of 5, 10, 15, 20, 25 or 30 seconds.
“ENABLE DISPLAY”	Remove the checkmark from the check box to turn off the LC display, or check the checkbox to turn on the LC display. → When using the data logger at extremely low temperatures, choose a lo nger sampling rate to decrease power consumption and to prolong the batter y life.

“MEASUREMENT” options – “ALARM SETTING”
Configure alarm settings in the “Measurement” tab:

“ENABLE LED ALARM”	The LED alarm indicates when a measured value is outside the defined rang e. To disable the LED alarm, remove the checkmark in the checkbox. To enable the LED alarm, check the checkbox . → When using the data logger at extremely low temperatures, disable the LED alarm to decrease power consumption and to prolong the battery life.
“LIMIT PAUSE FUNCTION”	During recording, the limit alarm can be suspended. Select “ENABLE” or “DISABLE” to enable/disable the pause function. → Pause function will not stop the recording.
“LOW ALARM”/ “HIGH ALARM”	Select parameter(s) by checking parameter checkboxes and specify the low and high alarm in numbers. For air pressure, choose the desired unit from the drop menu (DL-220THP o nly). → The red LED control light (2) is flashing, when measured value is outsid e of the defined range of low and high alarm value.

“PDF REPORT OPTIONS”
Select “PDF REPORT OPTIONS” in the navigation bar and enter settings to define content of the PDF report.

“LANGUAGE”	Choose the language, in which the PDF report shall be shown, from the sele ction box.
“PDF FILE NAME”	Click on “INSERT NAME” to define the pattern of the file name. – A new window “PLEASE CHOOSE THE NAME PATTERN BELOW” opens. Choose the required elements (OWNER/SERIAL ID/ MODELNAME/ DATE/TIME/LOCATION) and their order. Up to 6 elements can be chosen. Chosen elements appear in the field “FILE NAME”. – Press “CLEAR” to delete all chosen elements. The field “FILE NAME” is e mpty again. – Press “X” to save the file name pattern and close this window.
“DATE FORMAT”	Select your preferred date format from menu.
“TIME FORMAT”	Select between 12 hour or 24 hour format.
“OWNER”	Key in the owner’s name.
“LOCATION”	Key in the location’s name e.g. the name of the location where you will recor d.
“REPORT TITLE”	Enter a report title, which will be shown on the PDF report.
“USER TEXT”	Enter some remarks or additional information if needed.

Other settings

“CREATE CONFIGU- RATION”	Create the configuration file and save it to your computer and install it to the data logger. For further instructions, please refer to”e) Create configuration fil e by website” on page 78 and “f) Load configuration file created on the website onto the data logger” on page 78) .
“LOAD SETTINGS”	Load a previous configuration file – if any – to check the details of that file on the website. – A new window pops up. – Choose a configuration file, which you have created and saved on the com puter earlier.
“DEFAULT”	Reset the settings to default values and setting.

e) Create configuration file by website

- After performing configuration settings, select “CREATE CONFIGURATION” to download the configuration file to your computer.
- A new window appears to change the configuration file name. Default name is “Setlog”. If needed, change the name of the file.
- Confirm the file name by clicking “CREATE CONFIGURATION”.
  Your configuration file has been downloaded/imported to your computer.

f) Load configuration file created on the website onto the data logger

- Remove protective cap from the data logger.
- Connect the data logger to your computer.

- Drag and drop the configuration file from the download folder of your computer to the data logger folder to execute the configuration.
- The green LED control light (3) flashes twice, when the configuration file is successfully installed on the data logger.
- When the data logger is configured, disconnect the data logger from your computer.

g) Review configuration settings

- Start mode is based on the configuration setting “RECORD START CONDITION”.
- Stop mode is based on the configuration “STOP STYLE”.
- You can check which start mode is active, by loading the existing configuration file into the web interface, in the PDF report or by entering the function menu of the data logger.
- You can check which stop mode is active, by loading the existing configuration file into the web interface or by entering the function menu of the data logger.
- For further instructions regarding loading the existing configuration settings, please refer to “Other settings” on page 77.
- For further instructions regarding entering the function menu, please refer to “a) Enter function menu” on page 87.

OVERVIEW OF OPERATION MODES, SETTINGS AND LC DISPLAY INDICATIONS

a) Operation modes and settings
For performing following configuration settings, please refer to ““MEASUREMENT” options – “BASIC SETTING”” on page 72.

Mode 1	
Function	Logging starts immediately. Logging stops when memory is full.
Setting	• Select “IMMEDIATELY UNTIL MEMORY FULL” as “RECORD START CONDITION”.
Mode 2	
Function	Logging starts immediately. Logging stops when button ENTER is pressed for few seconds.
Setting	• Select “IMMEDIATELY UNTIL MEMORY FULL” as “RECORD START CONDITION”. • Select “STOP BUTTON” as “STOP STYLE”.
Mode 3	
Function	Logging starts immediately. Logging stops after PDF report generation.
Setting	• Select “IMMEDIATELY UNTIL MEMORY FULL” as “RECORD START CONDITION”. • Select “AFTER PDF CREATED” as “STOP STYLE”.
Mode 4	

Function	Logging starts when button ENTER is pressed for few seconds. Logging stops when memory is full.
Setting	• Select “START UPON KEYPRESS” as “RECORD START CONDITION”.
Mode 5	
Function	Logging starts and stops when button ENTER is pressed for few seconds.
Setting	• Select “START UPON KEYPRESS” as “RECORD START CONDITION”. • Select “STOP BUTTON” as “STOP STYLE”.
Mode 6	
Function	Logging starts when button ENTER is pressed for few seconds. Logging stops after PDF report generation.
Setting	• Select “START UPON KEYPRESS” as “RECORD START CONDITION”. • Select “AFTER PDF CREATED” as “STOP STYLE”.
Mode 7	
Function	Logging starts at defined time. Logging stops when memory is full.
Setting	• Select “START UPON START TIME” as “RECORD START CONDITION” . • Define start recording date and time in field “START TIME”.
Mode 8	
Function	Logging starts at defined time. Logging stops when button ENTER is pressed for few seconds.
Setting	• Select “START UPON START TIME” as “RECORD START CONDITION”. • Define start recording date and time in field “START TIME”. • Select “STOP BUTTON” as “STOP STYLE”.
Mode 9	
Function	Logging starts at defined time. Logging stops after PDF report generation.
Setting	• Select “START UPON START TIME” as “RECORD START CONDITION”. • Define start recording date and time in field “START TIME”. • Select “AFTER PDF CREATED” as “STOP STYLE”.
Mode 10	
Function	Logging starts and stops at defined time.
Setting	• Select “START/STOP TIME” as “RECORD START CONDITION”. • Define start recording date and time in field “START TIME”. • Define stop recording date and time in field “STOP TIME”.
Mode 11	

Function	Logs data immediately and circularly. Logging stops once the battery is depleted or “CIRCULAR LOGGING” has been replaced by another “RECORD START CONDITION” during configuration.
Setting	• Select “CIRCULAR LOGGING” as “RECORD START CONDITION”.
Mode 12	
Function	Logs data immediately and circularly. Should you wish an additional stop mode you choose: Logging stops when button ENTER is pressed for few seconds
Setting	• Select “CIRCULAR LOGGING” as “RECORD START CONDITION”. • Select “STOP BUTTON” as “STOP STYLE”.
Mode 13	
Function	Logs data immediately and circularly. Should you wish an additional stop mode you choose: Logging stops after PDF report generation.
Setting	• Select “CIRCULAR LOGGING” as “RECORD START CONDITION”. • Select “AFTER PDF CREATED” as “STOP STYLE”.

- For mode 1 to 13, you can apply an additional function to delay the logging start time. Enter minute(s) value in “START DELAY MINUTES” during configuration setting.

  b) LC display indication
- Some settings do not have any indication on LC display. In order to review settings, please refer to “g) Review configuration settings” on page 78.
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If there is not any display indicator or once the data logger starts/stops recording, the latest measurement is shown on display.

Mode	Start mode	Stop mode	Remarks
1	no display indicator	not applicable	When memory is full, red LED c ontrol light (2) is flashing.
2	no display indicator		Stop recording by holding button ENTER pressed for few seconds.
3	no display indicator	no display indicator	

4		not applicable	When memory is full, red LED c ontrol light(2) is flashing. Start recording by holding button ENTER pressed for few seconds.
5			Start and stop recording by holding button ENTER pressed for few seconds.
6		no display indicator	Start recording by holding button ENTER pressed for few seconds.
7		not applicable	When memory is full, red LED c ontrol light (2) is flashing.
8			Stop recording by holding button ENTER pressed for few seconds.
9		no display indicator	
10			
11	no display indicator	not applicable	
12	no display indicator		Stop recording by holding button ENTER pressed for few seconds.
13	no display indicator	no display indicator	

“START DELAY MINUTES”			
		depending on mode 1-13	

LOGGING DATA

⚠ The data logger is dust tight and jet water protected with attached protective cap (12) and rubber seals (9, 10) only. This protection allows permanent logging operation in damp rooms and outdoors.
Before using ensure that the protective cap is tightly attached to the data logger and the housing is completely closed.
Do not immerse into water!
Avoid operation near strong magnetic fields.
Do not cover the sensor openings.

- Ensure that rubber seals are in the correct positions and that the cap is tightly put on the data logger.
- Place the data logger at the intended location.
- The protective cap must be removed for inserting/changing battery or reading the saved data via a computer. Pull the protective cap off the device.
- Attach the protective cap tightly to data logger before next recording.

a) Enter function menu
Press button DOWN (6) to enter the function menu. The latest recorded measurement, logger ID and selected start/stop mode during configuration appear in sequence by consecutive presses of the button DOWN.

b) Start recording

- Recording starts based on configuration setting “RECORD START CONDITION”.
- When the data logger starts recording, “ ● ” appears on the LC display.
- “P” indicates data logger is ready for recording and it disappears once the data logger records.

c) Stop recording

- Recording stops based on the configuration setting “STOP STYLE”.
  When the “NONE” stop style was selected, then the recording stops based on the setting “RECORD START CONDITION”.
- When the data logger stops recording, “ ■ ” appears on the LC display.

d) Show remaining time until start/end of recording

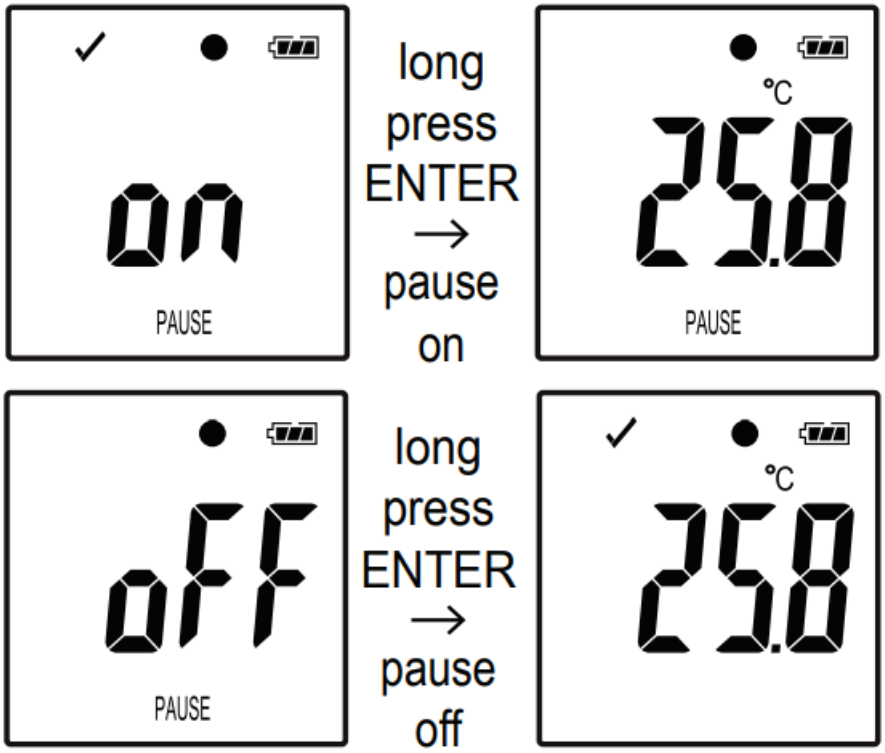
- Press button DOWN (6) to enter the function menu.
- Press button DOWN consecutive until “TIME START” and/or “TIME STOP” and remaining time (in hours/minutes or days) are shown in LC-display.

Time duration below 24 hours is in HH:MM format. If the remaining time exceeds 24 hours, it is shown as days “ d ”.

- Once the recording starts/stops, the latest measurement is shown in the display.
- Press button DOWN to return to function menu.

e) Activate/deactivate limit alarm pause function

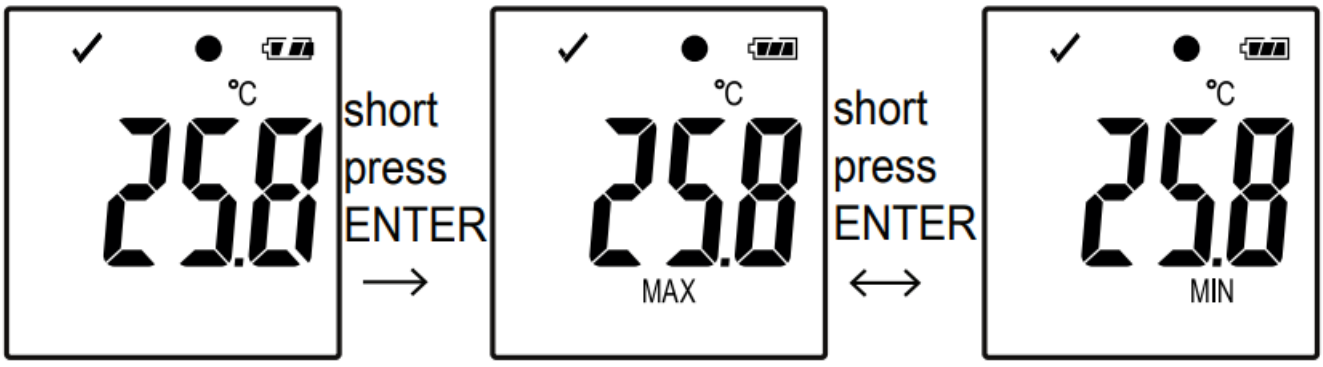
- In order to activate/deactivate the limit alarm pause function during recording, the limit alarm must be enabled during configuration (please refer to ““MEASUREMENT” options – “ALARM SETTING”” on page75).



Activate/deactivate limit pause function by holding and pressing button ENTER (8) for few seconds.
Once the alarm pause function is activated/deactivated, the latest measurement is shown in the display.

➔ Recorded values during activated pause function are shown in the report’s graph as usual. However, it is clearly indicated in the graph when and for how long the pause function was activated.
When the limit pause function is activated during recording, there will be not any alarm indicator “√” or “X”. LED-alarm status, maximum and Minimum values will not be updated.

f) Read maximum/minimum measurements



- Press button **DOWN** (6) in the function menu several times until you reach the record (e.g. temperature), from which you wish to read the maximum and minimum readings.
- Press button **ENTER** (8) to enter maximum and minimum reading mode.
- Press button **ENTER** to switch between maximum and minimum reading in that selected record.

- Press button **DOWN** to leave the maximum and minimum reading mode.

➔ “MAX” indicates maximum and “MIN” indicates minimum value.
Maximum and minimum measurements are recorded from the moment recording starts.
For latest readings, the data logger will sense and update the value on display, unless the limit pause function has been activated.
Maximum and minimum readings will stop updating once the device stops logging.

CREATE PDF REPORT

- Connect the data logger to your computer.
- A PDF report is produced automatically. Red LED control light (2) is on and “USB PDF” is shown in the LC display. Do not disconnect the data logger from your computer during this period.
- Open the data logger drive on your computer.
- Once the PDF file has been generated successfully, “PDF” disappears from the LC display (5). “USB” remains on the LC-display.
- Select and open the PDF file.
- The PDF report contains general device information, data logger settings, alarm statuses and a graph showing the measured values during the recorded time.
- Save the PDF file on your computer and close the file.
- Disconnect the data logger from your computer.

➔ Depending on the number of stored measurements, generating the PDF file may take up to approximately 30 seconds.
Only the maximum and minimum measurements during recording will be shown in the PDF report but not during the pause function.

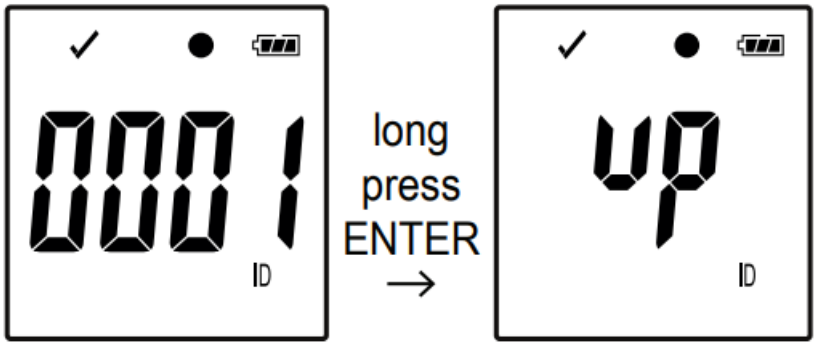
DELETE DATA

➔ Generate and save the PDF report before deleting measured data, if needed.
Deleting data does not affect the configuration settings.

- Press and hold buttons DOWN and ENTER and connect the data logger to your computer. “USB” is shown in the LC display. All data is deleted.
- Release the buttons.
- The data logger driver on your computer is empty, that means all data was successfully deleted. Disconnect data logger from your computer.

UPGRADE FIRMWARE

- Download the latest data logger firmware from the product page on **www.conrad.com**.



Press the button DOWN (6) several times until the 4 digit logger identifier and “ID” are shown on the display.

Press and hold the button ENTER (8) until the 4 digit logger ID is replaced by “  ”.

- Connect the data logger to your computer.
- Drag and drop the firmware to the data logger drive on your computer.
- Data logger starts upgrading. During this period the data logger shown as a mass storage device disappears for a short while from your computer. Do not disconnect data logger from your computer!
- Once the data logger appears as a mass storage device again, the upgrade is finished. Green LED control light flashes twice.
- Disconnect from your computer.

➔ The firmware version of the data logger can be checked in the left bottom corner of the PDF report.

RESET TO DEFAULT FIRMWARE

➔ Resetting the firmware deletes all configuration settings, but does not affect the stored measurement records.

- Remove the battery as mentioned in chapter “9. Initial operation” on page 67.
- Press and hold the button DOWN and connect the data logger to your computer. Once the green LED control light (3) is on, release the button DOWN.
- Wait for few minutes until the computer recognizes the data logger as a USB device. The firmware is reset.
- Configure the data logger as mentioned in “11. Configuration” on page 69.

TROUBLESHOOTING

Problem	Possible solution
The computer does not recognize t he data logger.	Check whether “USB” is shown on the data logger after plug in. If so, plug into an another USB port.
	Check whether the usage of USB mass storage device function on your c omputer is enabled.
No PDF file is generated.	Check whether data logger has been recognized by your computer.
	Check whether your computer is displaying the data logger as a new mas s storage device.
	Check whether data logger is upgrading the firmware (please refer to “16. Upgrade firmware” on page 91).
Unrealistic information on the LC di splay.	
Button ENTER/ DOWN does not re sponse although pressed.	Reset the data logger to firmware (please refer to “17. Reset to default fir mware” on page 92).
LC display is off.	Check whether the LC display is disabled during configuration (please ref er to “Other settings” on page 77).
	Replace the battery.
No LED alarm.	Check whether the LED alarm is disabled in the configuration file (please r efer to “Other settings” on page 77).
	Check whether the alarm has been paused (please refer to “e) Activate/de activate limit alarm pause function” on page 88).

MAINTENANCE AND CLEANING

- Besides occasional cleaning, the device is maintenance-free.
- Before cleaning, disconnect the device from the computer.
- Never submerge the product in water.
- Do not use any aggressive cleaning agents, rubbing alcohol or other chemical solutions. Use a dry, soft and clean antistatic cloth to clean the product exterior.

DISPOSAL

a) Product

 Electronic devices are recyclable waste and must not be disposed of in the household waste.
At the end of its service life, dispose of the product according to the relevant statutory regulations.
Remove any inserted (rechargeable) batteries and dispose of them separately from the product.

b) Batteries

You as the end user are required by law (Battery Ordinance) to return all used batteries. Disposing of them in the household waste is prohibited.

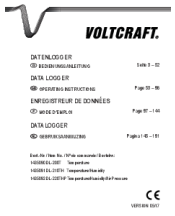
 Contaminated batteries are labelled with this symbol to indicate that disposal in the domestic waste is forbidden. The designations for the heavy metals involved are: Cd = Cadmium, Hg = Mercury, Pb = Lead (name on batteries, e.g. below the trash icon on the left).
Used batteries can be returned to collection points in your municipality, our stores or wherever batteries are sold. You thus fulfill your statutory obligations and contribute to the protection of the environment.

TECHNICAL DATA

a) All models
Power supply …… 1 x 3 V button cell, type CR2450
Battery life …….. 1 year (for sampling rate 1 time/min)
Protection type ……. IP65
Connector type …… USB 2.0
Sampling rate …….. 1 minute – 24 hours
Dimensions (W x H x D) ……. approx. 37 x 86 x 19 mm
Weight ……. approx. 42 g (including button cell)
b) Item no. 1435090, model no. DL-200T
Measured value …….. temperature
Memory capacity …… 40020 for temperature data
Resolution …….. 0,1 ºC
Temperature measuring range …… -30 to +60 ºC
Temperature accuracy ……. +/- 0,5 °C (>0 to +60 ºC) +/- 1 °C (-30 to +0 ºC)
c) Item no. 1435091, model no. DL-210TH
Measured value …….. temperature, relative humidity
Memory capacity …… 20010 for temperature data
20010 for relative humidity data
Resolution …….. 0,1 ºC / 0,1 % RH
Temperature measuring range …… -30 to +60 ºC
Temperature accuracy ……. +/- 0,5 °C (>0 to +60 ºC) +/- 1 °C (-30 to +0 ºC)
Relative humidity measuring range .. 0 – 100 %
Relative humidity accuracy …… +/- 5.0 % (0 – 20 %, 80- 100%)
+/- 3.5 % (>20 – 40 %, 60 – <80%)
+/- 3.0 % (>40 – <60 %)
d) Item no. 1435092, model no. DL-220THP
Measured value …….. temperature, relative humidity, air pressure
Memory capacity …… 13340 for temperature data
13340 for relative humidity data
13340 for air pressure data
Resolution …….. 0,1 ºC / 0,1 % RH / 1 hPa
Temperature measuring range …… -30 to +60 ºC
Temperature accuracy ……. +/- 0,5 °C (>0 to +60 ºC)
+/- 1 °C (-30 to +0 ºC)
Relative humidity measuring range .. 0 – 100 %
Relative humidity accuracy …… +/- 5.0 % (0 – 20 %, 80- 100%)
+/- 3.5 % (>20 – 40 %, 60 – <80%)
+/- 3.0 % (>40 – <60 %)
Air pressure measuring range ……. 300 – 1200 hPa
Air pressure accuracy …….. +/- 3 hPa
(700 – 1100 hPa,
-20 to 0 °C, +50 to 70 °C)
+/- 2 hPa
(700 – 1100 hPa, >0 to <+50 °C)
Legal notice

V5_0517_02-LS

Documents / Resources

	VOLTCRAFT DL-200 T Temperature Datalogger [pdf] Instruction Manual DL-200T, DL-210TH, DL-220THP, DL-200 T Temperature Datalogger, Temperature Datalogger, Datalogger

References

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