

MANUAL tempmate®-M2

The multi-use datalogger for temperature & rel. humidity



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1. Intended Use & Important Information

The tempmate-M2 is an easy-to-use data logger that records all relevant temperature (and humidity) data during its usage. This information can then easily be read out as comprehensive and detailed PDF- or CSV-report without requiring any additional hard- or software.

The tempmate-M2 can be used for all kinds of applications where monitoring and recording temperature and humidity is required.

The data logger is provided ready-to-use in a default configuration and offers further possibilities through its free configuration software tempbase-2 (available on www.tempmate.com)

Quick Notes & Important Information:

The tempmate-M2 is available as pure temperature-device (M2T) and as temperature & humidity combination (M2TH); only the tempmate-M2 TH can measure and record humidity.

The tempmate-M2 is a multi-use data logger; as such, it can be started and stopped without limitation.

The data logger runs for up to 180 days with its default configuration and if kept under optimal storage conditions (room temperatures) before. During the activity it measures temperature between -30°C and +70°C (-22°F to 158°F) every 10 minutes.

The user can optionally configure the tempmate-M2 (through tempbase-2) before the logger was started.

Start, stop, activity and status are indicated by the built-in display as well as LEDs, which allows a fast and easy evaluation.

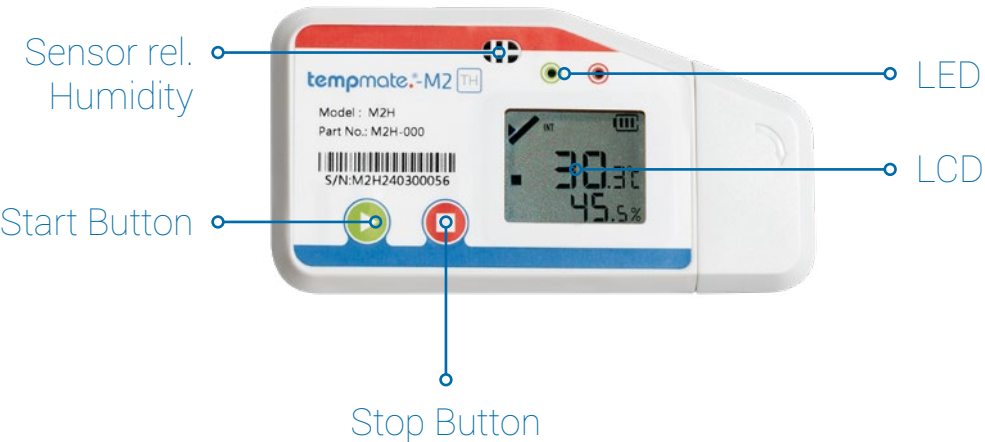
A full data report will be created once the data logger has been stopped and plugged in through USB. It is possible to create a temporary report while the data logger is active; while the data logger is connected, no data points are recorded.

The tempmate-M2 has no shelf-life; information on the added Validation Certificate is applicable for 2 years.

2. Disposal Instructions

The tempmate-M2 has a built-in CR2450 Lithium metal button cell next to electronic parts and raw materials, and therefore requires the data logger to be disposed of by a waste or recycling service provider.

3. Device Description



LED Indication

Descriptions:

- Start Button: used to start the data logger, switch through display pages and set a marked event
- Stop Button: used to stop the data logger
- LCD: display shows current temperature, status, battery level, etc
- LED Indicator: confirm start / stop, show current status and activity on request
- Relative Humidity Sensor: gap to measure relative humidity (only for tempmate-M2 TH)

LED-Indications and display:

The built-in LEDs and display on the front inform the user about every activity and status of the data logger; the current status can always be requested by pushing the start or stop button once (one short click). Depending on the status, the LEDs blink in a certain way.

	Not started	
	Low battery	
1 time	Recording-OK	
	Recording-Alarm	
	Stopped-OK	
	Stopped-Alarm	

While the data logger is actively recording, the green RECORD LED will flash every 5 seconds automatically.

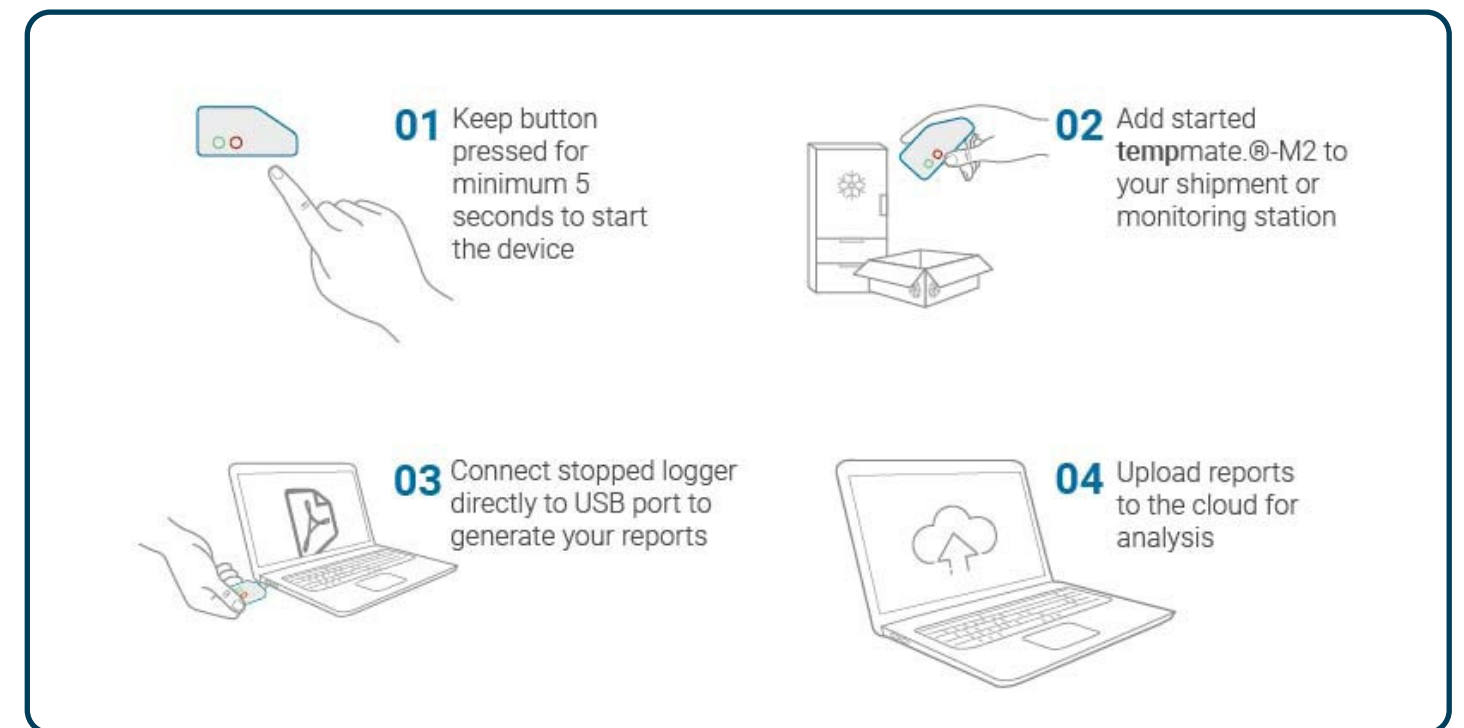
4. Equipment & Software

The tempmate-M2 is provided ready-to-use in single units and does not need any additional hard- or software.

It is possible to install an external temperature/humidity sensor. The data logger must be configured to use the external sensor through tempbase-2.

Optionally, the tempmate-M2 can be configured and evaluated through tempbase-2, which allows the user to change every setting and adapt it to their application, as well as comprehensive possibilities to archive and work with recorded data. tempbase-2 can be downloaded for free on www.tempmate.com

5. Quick Start Guide



- 1.** To start, keep the green Start Button pushed for minimum 5 seconds, until the RECORD LED blinks 10 times and the PLAY sign appears on the display
- 2.** Place the data logger and record the ambient temperature (and humidity)
- 3.** To stop, keep the red Stop Button pushed for minimum 5 seconds, until the STATUS LED blinks 10 times and the STOP sign appears on the display
- 4.** Plug-in the data logger via USB and receive the full report as PDF & CSV file

6. Operation Instructions

1st STEP PREPARATION

- No further preparation is necessary, as the data logger is provided ready-to-use;
- Optionally, the user can configure the data logger through tempbase-2 before it is started;
- Important: the use of an external sensor must be configured through tempbase-2 first, before the data logger is started;
- The tempmate-M2 can be kept outside of room temperature conditions (~21°C / 70°F), but this can potentially have an impact on the installed battery;

We recommend keeping the data logger in room temperature and conditioning it only shortly before the usage.
The battery must be replaced regularly.

2nd STEP START, USAGE, STOP

Starting the data logger

- To start the data logger, keep the green Start Stop Button  pushed for a minimum of 5 seconds
- A successful start is indicated by the LEDs on the front side, the green RECORD LED will blink 10 times in a row

- Once started, the activated display will show a PLAY sign next to the current temperature; after 15 seconds inactivity, the display will shut down



- The data logger is now activated and will record the near ambient temperature (and humidity)
- If no start delay was set, the first temperature data point will be saved after the first measurement interval is due
- If a start delay was set, the first data point will be recorded after the delay is due, and then follow the set measurement interval

Important: if the red STATUS LED flashes for 3 seconds while the data logger is started, a problem with the installed battery is indicated. After a new battery is installed, the data logger can be started.

Usage while active

- Once the data logger is started, the green RECORD LED will blink every 5 seconds to indicate its activity.
- The data logger should be placed as close as possible to the place of use; it should not be placed in-between or under heavy storages

Status Request:

The status can always be requested by pushing the Start or Stop button once (one short click).
The built-in RECORD and STATUS LEDs will blink in a certain way depending on the device's status:

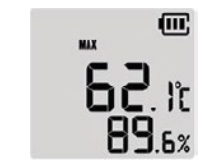
- Data logger has not been started:
STATUS LED + RECORD LED flash 1 time 
- Installed battery is depleted or very low:
STATUS LED flashes for 3 seconds 
- Data logger is recording, and no alarm has been triggered:
RECORD LED flashes 1 time 
- Data logger is recording, and one alarm threshold has been triggered:
STATUS LED flashes 1 time 
- Data logger was stopped, and no alarm has been triggered:
RECORD LED flashes 2 times 
- Data Logger was stopped, and one alarm threshold has been triggered:
STATUS LED flashes 2 times 

The built-in display is automatically activated when the status is requested and shows further details.



- If the tempmate-M2 has not been started yet, it only shows the current surrounding temperature (and humidity) as well as the battery level
- Once started, the display shows a PLAY sign next to the temperature
- If a Start Delay has been set up, the PLAY sign will flash until the delay is due
- Once stopped, the display shows a STOP sign next to the temperature

By pushing the Start or Stop button repeatedly (not constantly), the user can switch to different pages:

	► Page 1: shows activity, current temperature/humidity, and battery level		► Page 5: Average of all measured values ("AVR")
	► Page 2: Number of currently saved readings ("LOG")		► Page 6: Mean Kinetic Temperature value ("MKT")
	► Page 3: Highest measured value ("MAX")		► Page 7: Time & Date
	► Page 4: Lowest measured value ("MIN")		

Mark event:

Certain events during the measurement can be marked manually and are reflected on the PDF/CSV-report later. In total, 10 marks are possible.

To place a mark:

- Briefly press the green start button twice in succession to set a mark
- A successfully set mark is indicated by the word „MARK“ and "SUCC", showing the numbers of set marks during the current recording

Stopping the data logger

- To stop the data logger, keep the red Stop Button  pushed for a minimum of 5 seconds
- A successful stop is indicated by the LEDs on the front side, the red STATUS LED will blink 10 times in a row

The display will additionally show a STOP sign on the left side
- The data logger is now stopped

Important:

- Recorded data will be kept until the data logger is started again
- We recommend to read-out and save the recorded data as soon as the data logger is stopped
- Deleted data cannot be restored

If the data logger was read-out through tempbase-2, all data will be kept in the user database

3rd STEP EVALUATION
Evaluation on device level

Per status request (see "Usage") the user can check if an alarm threshold has been breached during the recording:

- If no alarm has been triggered, the green RECORD LED will blink 2 times: ■ ■
Additionally, the display will show a CHECK MARK symbol on the upper left side of the display.
- If an alarm has been triggered, the red STATUS LED will blink 2 times: ■ ■
Additionally, the display will show an X symbol on the upper left side of the display.

This gives an easy first information about the status of the whole recording.

Creating PDF or CSV report

The recorded data points are primarily presented as PDF report, which lists all important information about the measurement.

- Remove the protection cap and plug-in the data logger via USB
- Once plugged in, the STATUS and RECORD LED will start blinking alternately and the display will show "PDF" and "CSV"; during this, all recorded data is processed into a readable format and depending on the number of data points, this process can take up to 2 minutes.
- Please do not unplug the data logger during this process!
- Once all data is processed, the data logger will be recognized as flash-drive and will list all available files, including the report as PDF file.
- The report(s) can be saved locally via drag & drop, or by opening the files and save them through their application (Adobe Acrobat Reader recommended)

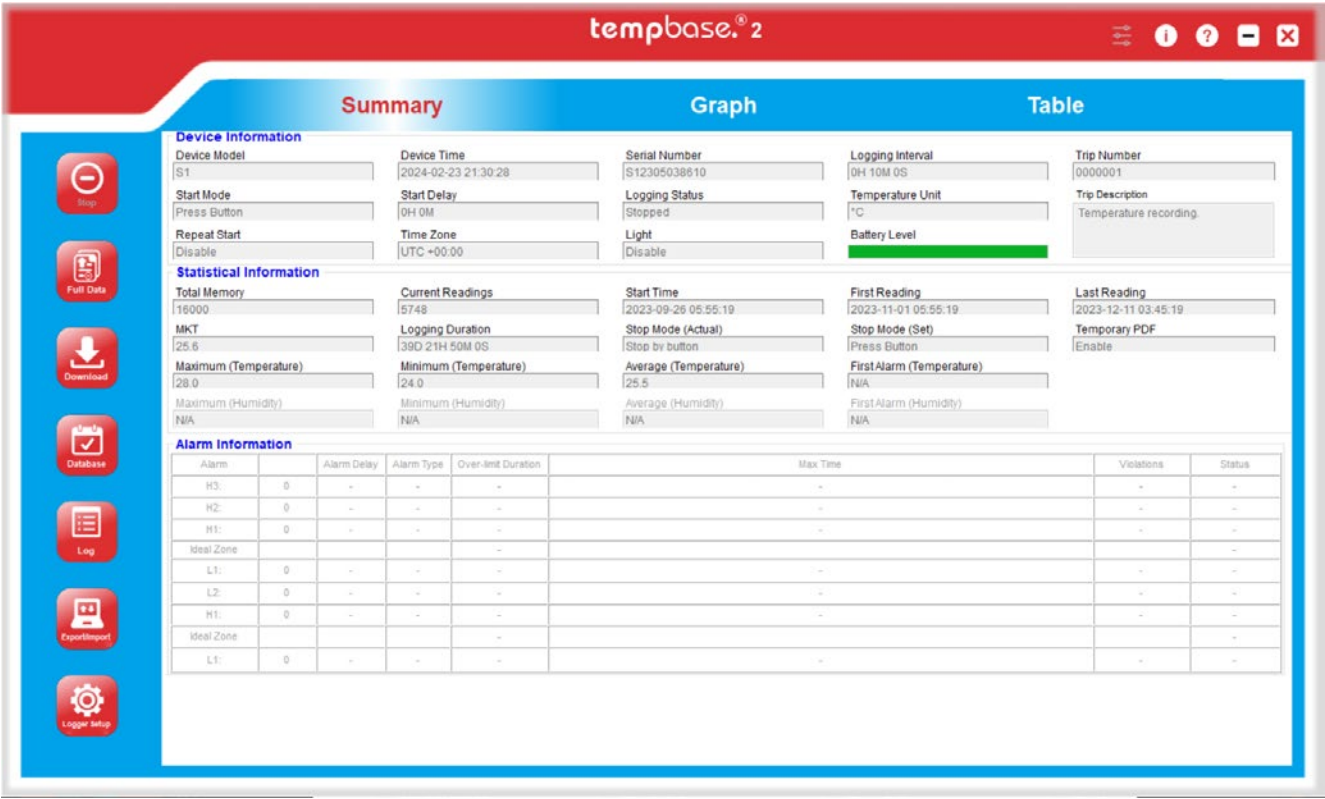
Important:

- The PDF/CSV reports are only created momentarily; once the data logger is unplugged, they must be created again
- The files on the data logger cannot be deleted completely, and deletion is not recommended; if they were deleted by the user on the device, they could be re-created by connecting them to USB again

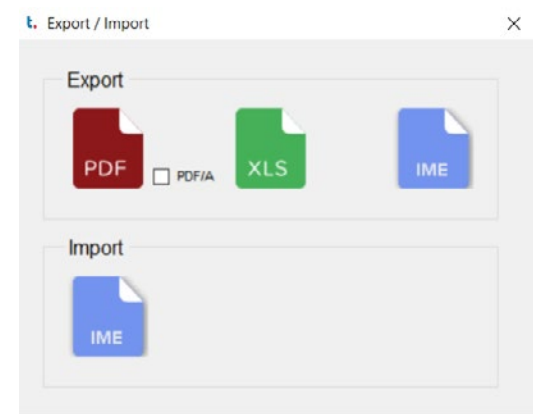
Evaluation on software level

Optionally or additionally to the PDF report, the recorded data can also be loaded into tempbase-2. This gives the user the ability to see the data of plugged-in devices, export them into different formats, create an archive of already installed devices, and more.

- Plug-in data logger via USB and wait until all data is processed
- Start tempbase-2
- tempbase-2 will load all data from the installed unit into its database and will open the "Summary"
- Graph will show the temperature process as graph
- Table will show all recorded data as list



- All data can optionally be exported as PDF or XLS file



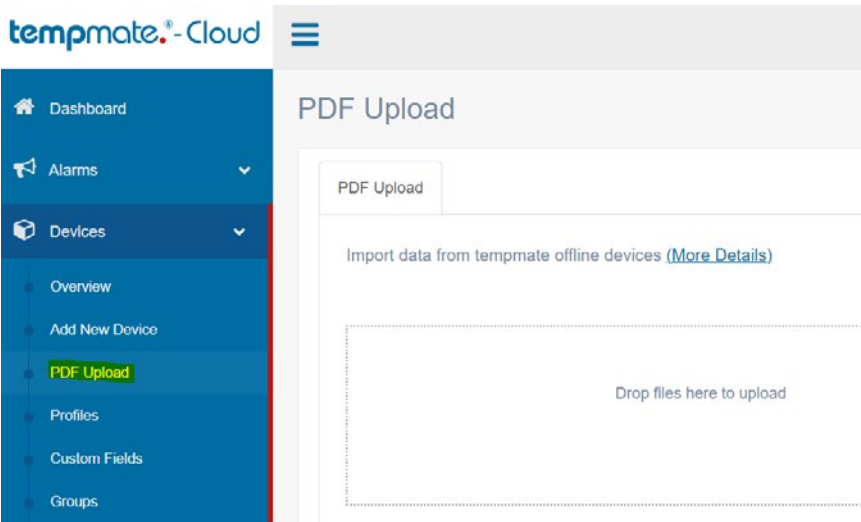
- Each data logger plugged in will automatically create an entry in the local Database and can be accessed later

[1]	Status	Data ID	Start Time	Current Readings	S1 (Max)	S1 (Min)	S2 (Max)	S2 (Min)
	✓	M2T231000137_20240223122917	2024-02-08 09:40:49	2171	25.9 °C	21.8 °C	N/A	N/A
	✓	M2T231000137_20240222150134	2024-02-08 09:40:49	2043	25.9 °C	21.8 °C	N/A	N/A
✓	✓	S12305038610_20240220094513	2023-09-26 05:55:19	5748	28.0 °C	24.0 °C	N/A	N/A
	✓	S12305038610_20240220093633	2023-09-26 05:55:19	5663	44.9 °C	11.2 °C	N/A	N/A
	✓	M2T231000137_20240214110349	2024-02-08 09:40:49	867	25.5 °C	22.1 °C	N/A	N/A
	✓	S2T2301029002_20240202114812	2023-12-15 12:09:23	553	9.0 °C	5.0 °C	N/A	N/A
	✓	S2T2211024310_20240202114642	2024-01-25 07:26:48	12	21.1 °C	20.9 °C	N/A	N/A
	✓	S2T2301029001_20240202114332	2023-12-15 12:09:42	553	8.4 °C	5.0 °C	N/A	N/A
	✓	S12308008120_20240131102312	2023-10-05 07:14:20	16000	25.4 °C	17.7 °C	N/A	N/A
	✓	TMM230400666_20240130113258	2024-01-02 14:14:50	8044	27.9 °C	18.7 °C	N/A	N/A
	✓	TMM230400666_20240130113242	2024-01-02 14:14:50	8044	27.9 °C	18.7 °C	N/A	N/A
	✓	TMM230400666_20240130112815	2024-01-02 14:14:50	8043	27.9 °C	18.7 °C	N/A	N/A
	✓	TMM230400666_20240130110519	2024-01-02 14:14:50	8038	27.9 °C	18.7 °C	N/A	N/A

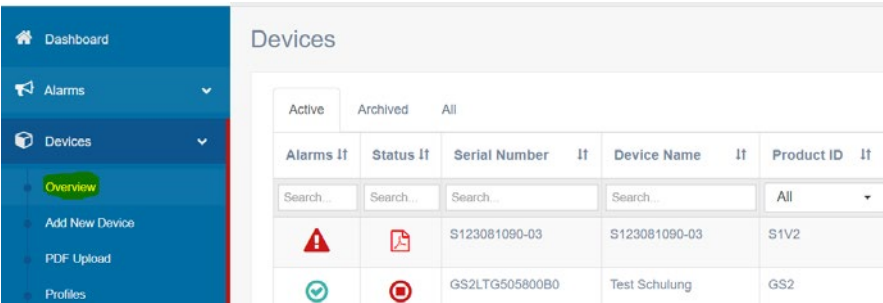
Please refer to the tempbase-2 manual for a full description of each function

Evaluation on cloud level

To save and share the recorded data, the PDF-report can be uploaded to an existing account in the tempmate-Cloud optionally or additionally.



Uploaded data reports can then be found within the user's device-overview, from there they can be evaluated later or shared externally.



Currently it is only possible to upload PDF reports directly from the data logger, not those exported through tempbase-2!

7. FAQ – Frequently Asked Questions

Q: How often can the M2 be restarted?

A: As a multi-use device, the usage of the tempmate-M2 is not limited.

Q: How long does the battery last and when does it have to be replaced?

A: A new and fully loaded lithium coin battery allows a running time of ca. 180 days when used in room temperature conditions. Very low or very high temperatures can have a negative effect on the battery capacity and lower the running time. It is recommended to replace the battery depending on the usage, latest when the battery level on the display shows it as (almost) depleted.

Q: What happens if the data logger is not stopped?

A: The tempmate-M2 has an internal memory capacity of 60.000 data points. If this capacity is reached, the measurement stops, and no further temperature is recorded.

A "Ring Buffer" can be set up optionally through tempbase-2; with this configuration, the oldest data points will be overwritten once the memory capacity is reached.

Q: Does the M2 have an expiry date?

A: The tempmate-M2 does not have an expiry date or shelf-life.

Q: I need the calibration certificate of this data logger, where can I receive it?

A: As batch-calibrated device each data logger comes with a permanently stored validation certificate in PDF format, which informs about the calibration process during the production. The validation certificate valid for 2 years after production date.

Q: Does the M2 need to be (re-)calibrated?

A: The accuracy of the internal digital sensor should be re-calibrated regularly as per user requirement. The information about the batch-calibration on the validation certificate is valid for 2 years after production date.

Q: The PDF-report is unreadable, it shows unusual symbols.

A: The recorded data can optionally be exported through tempbase-2. This will create a new PDF-file and can potentially fix errors in the report.

Additionally, the CSV-report can be consulted to compare measurement results.



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