tempmate.®

User Manual
➔ For tempmate.®-M1 Multiple-Use PDF Temperature Data Logger

Product: tempmate.®-M1 Data Logger
Scope: Operations Instructions

Summary

This data logger is mainly used to detect the temperature of food, pharmaceuticals, chemicals and other products during transportation or storage. The main features of this product: multiple use, automatically generated PDF report, high waterproof level, battery exchangeable.

01. Technical data

◉ Technical Specifications

Temperature sensor	NTC internal and external optional	**Alarm settings**	Adjustable up to 5 alarm limits
Measuring range	–30 °C to +70 °C	**Alarm type**	Single alarm or cumulative
Accuracy	±0.5 °C (at –20 °C to + 40 °C)	**Battery**	CR2032 / replaceable by customer
Resolution	0.1 °C	**Dimensions**	79 mm x 33 mm x 14 mm (L x W x D)
Data storage	32,000 values	**Weight**	25 g
Display	Multifunction LCD	**Protection class**	IP67
Start setting	Manually by pressing a button or automatically on programmed start time	**System Requirements**	PDF Reader
		Certification	12830, calibration certificate, CE, RoHS
Recording time	Freely programmable by customer/ up to 12 months	**Software**	TempBase Lite 1.0 software / free download
Interval	10 sec. - up to 24 hours	**Interface to PC**	Integrated USB port
		Automatic PDF Reporting	Yes

02. Device operation instruction

(1) Install tempbase.exe software, insert the **temp**mate.®-M1 logger to the computer via USB port, finish USB driver installation directly.

(2) Open **temp**base.® data management software, after connection the logger with your computer, the data information will be automatically uploaded. Then you can click the "Logger Setting" button to enter the parameter configuration interface and configure the parameters according to specific application.

(3) After finishing configuration, click the "Save" button to save the parameter setting, then it will open a window "Parameter Configuration completed", click OK and close the interface.

03. Initial use

03.1 Configuration operation

Open tempbase.exe software, after connecting the **temp**mate.®-M1 logger with the computer, the data information will be automatically uploaded. Then you can click the "LoggerSetting" button to enter parameter configuration interface and configure the parameters according to the specific application. After finishing the configuration, click the "Save" button to save the parameter setting, then it will open a window "Parameter Configuration completed", click OK and close the interface.

03.2 Logger start operation

The **temp**mate.®-M1 supports three start modes (manual start, start right now, timing start), the specific start mode is defined by the parameter setting.

Manual start: Press the left key for 4 seconds to start the logger.

Start right now: Immediately start after the **temp**mate.®-M1 is disconnected with the computer.

Timing start: tempmate.®-M1 starts when the set start time is reached
(Note: The set start time needs to be at least one minute).

03.3 Pause operation

Double click left key to enter the pause status. Under pause status, the device only records time instead of temperature recording. By double click left key again, the pause operation is canceled and set to normal temperature recording again.

03.4 Mark operation

Double click the right key to mark an operation. After finishing marking operation – if quickly pause and pause cancel action is performed - the current marking can be canceled.

Note:

(1) For one recording trip, the device can support a maximum of 10 marks.

(2) Under status of pause or sensor disconnected status (when external sensor is configured), **the MARK operation is disabled.**

03.5 Stop operation

M1 supports two stop modes(stop when reaches the max. record capacity, manual stop), and the specific stop mode is determined by parameter setting.

Stop when reaches the max. record capacity: When record capacity reaches the max. record capacity, the logger will stop automatically.

Manual stop: The device only stops when it is manually stopped except if the battery is under 5%. If the recorded data reaches to its max. capacity, the data will be overwritten (depends on the setting).

Note:
During the status of data overwriting (ring memory), MARK operation will not be cleared. Saved marks still exist. The max. MARK events are still "10 times" and every marked data will be saved without clearing during the transport cycle.

03.6 Viewing operation

During **temp**mate.®-M1 is in recording or stopping status, insert the logger to the computer, the data can be viewed by the **temp**base.® software or the generated PDF report in the USB device.

PDF reports are different if there is an alarm setting:

✚ If no alarm setting is programmed, there is no alarm information column and in data table, no alarm color marking, and at the left upper corner, it displays PDF in the black rectangle.

✚ If the alarm is set as upper/lower alarm, it has an alarm information column, and it has three lines of informations: upper alarm information, standard zone information, lower alarm information. The upper alarm recording data is displayed in red, and the lower alarm data is displayed in blue. In the left upper corner, if alarm occurs, the background of the rectangle is red and displays ALARM inside. If no alarm occurs, the background of the rectangle is green and displays OK inside.

✚ If the alarm is set as multiple zone alarm in the PDF alarm information column, it could have max. six lines: upper 3, upper 2,upper 1, standard zone; lower 1, lower 2 the upper alarm recording data is displayed in red, and the lower alarm data is displayed in blue. In the left upper corner, if alarm occurs, the background of rectangle is red and displays ALARM inside. If no alarm occurs, the background of rectangle is green and displays OK inside.

Note:
(1) Under all alarm modes, if data table zone for marked data is indicated in green. If the recorded points are invalid (USB connection (USB), pause data (PAUSE), sensor failure or sensor is not connected (NC)), then the record marking is gray. And in PDF curve zone, in case of USB data connection (USB), data pause (PAUSE), sensor failure (NC), all of their lines will be drawn as bold gray dotted lines.

(2) If the **temp**mate.®-M1 is connected to the computer during the recording period, it records no data during the connection time.

(3) During the **temp**mate.®-M1 is connected with the computer, the M1 is generating a PDF report depending on the configuration:

➕ If **temp**mate.®-M1 is stopped, it always generates a report when the M1 is plugged in the USB port

➕ If **temp**mate.®-M1 is not stopped, it only generates a PDF when it is enabled in the "Logger Setup"

03.7 Multiple start

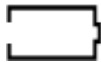The **temp**mate.®-M1 supports the function of continuous starting after last logger stopping without the need to reconfigure the parameters.

04. Key function description

Left key: Start (restart) **temp**mate.®-M1, menu switch, pause

Right key: MARK, manual stop

05. Battery management

05.1 Battery level indication

Battery level indication	Battery capacity
	40 % ~ 100 %
	20 % ~ 40 %
	5 % ~ 20 %
(flash)	< 5 %

Note:
When the battery capacity is lower or equal to 10%, please replace the battery immediately. If the battery capacity is lower than 5%, the **temp**mate.®-M1 will stop recording.

05.2 Battery replacement

Replacing steps:
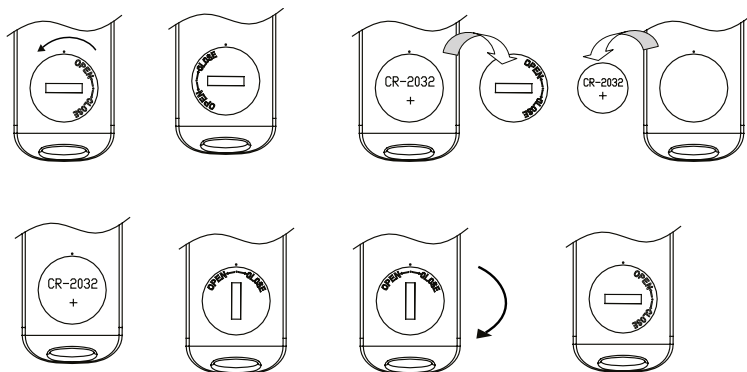
Note:
It is recommended to check the battery status before restarting the logger to ensure that the remaining battery life could finish the recording task. The battery can be replaced before you configure the parameter. After replacement of battery, the user needs to configure the parameter again.

When the logger is connected to computer under the status of recording or pause status, it is prohibited to plug out the **temp**mate.®-M1 without battery power supply.

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06. LCD display notice
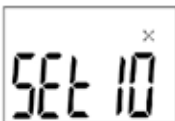
Alarm LCD display

When LCD display time is configured to 15 s, click left key to activate the display. If over temperature incident occurs, it firstly displays alarm interface for about 1 s, then skips to main interface automatically.
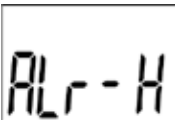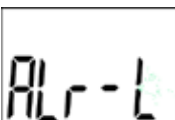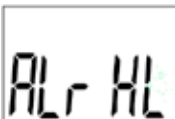
When display time is configured to "forever", over temperature alarm occurs permanently. Press left key to skip to main interface.

When display time is configured to "0", there is no display available.

07. Appendix 1 – working status description
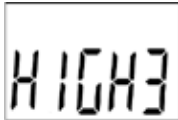
Device status	LCD display	Device status	LCD display
1 Start logger	StArt	**5** MARK success	SEt 8
2 Start delay ▶ is flashing		**6** MARK failure	SEt 10
3 Recording status During recording status, in the middle of the first line, static display ▶	rEC	**7** Device stop In the middle of the first line, static display ■	StOP
4 Pause In the middle of the first line, blinking display ■	PAUSE	**8** USB connection	USb

08. Appendix 2 – other LCD display

Device status	LCD display	Device status	LCD display
1 Erase data status	- - - -	**3** Alarm interface Only exceed upper limit	ALr-H
2 PDF generation status PDF file is under generation, PDF is in flash status	PdF	Only exceed lower limit	ALr-L
		Both upper and lower limit occurs	ALr HL

09. Appendix 3 – LCD page display

Page	LCD display	Page	LCD display
Page 1 Battery level, current working status (record, stop, etc.) upper/lower limit status, current temperature ⭫ upper limit alarm occurs ⭭ lower limit alarm occurs	`0.8℃`	**Page 7** Upper limit 2	`HIGH2`
Page 2 Battery level, current working status, recording points	`489 Log`	**Page 8** Setting temperature of upper limit 2	`2 70.℃`
Page 3 Battery level, current working status, MAX. temperature	`28.8℃ MAX`	**Page 9** Upper limit 3	`HIGH3`
Page 4 Battery level, current working status, MIN. temperature	`18℃ MIN`	**Page 10** Setting temperature of upper limit 3	`3 80.℃`
Page 5 Upper limit 1	`HIGH1` / `H 6.0℃`	**Page 11** Lower limit 1	`Lo 1`
Page 6 Setting temperature of upper limit 1	`1 6.0℃` / `L 0.8℃`	**Page 12** Setting temperature of lower limit 1	`1 0.8℃`
		Page 13 Lower limit 2	`Lo 2`
		Page 14 Setting temperature of lower limit 2	`2 -12℃`