Instruction Manual

Multiple Use
Dry Ice Temp. Datalogger

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QUICK GUIDE

Step 1:

Insert Logger into USB port of Windows computer to config the logger

Step 2:

Long press "GO" till red LED flashes in sequence 3 times.

Step 3:

Put the logger into dry ice transportation box.

Step 4:

Take out the logger from box while reaching destination.

Step 5:

Insert Logger into USB port of Windows computer to read out the recorded data.

Introduction

Congratulations on your purchase of this multiple use dry ice temperature datalogger.

This datalogger is designed for monitoring temperature subject to quality control requirement in transportation and storage. Temperature measurements are saved throughout the duration of the measurement period.

This datalogger is equipped with a user defined programming function. The measurement report output is implemented using a PDF file and an Excel file, no unique software, and no USB driver is required.

Read through the instruction manual before using this logger. The logger is calibrated before shipment.

Product Description

① USB2.0 plug & play connector. USB driver is not required. PC software is also not required.

② LED indicator:

Status	LED indication
Power OFF	All LEDs are OFF.
Standby	**OK** Green LED blinks triple every 5 seconds when logger is programmed to standy but not yet start to log.
Activate recording	Red LEDs flash in sequence 3 times to indicate you are activating a logger.
Recording	**OK** Green LED blinks every 10 seconds when logging function is under going.
Marking	Red/Red/Red LEDs flash in sequence to indicate you are marking the time stamp into logger.
Stop recording	Red LEDs flash in sequence to indicate you are stopping a logger

Recording is completed	**OK** Green LED blinks every 5 seconds after logging function is ended automatically or manually.
Low power	**OK** RED LED blinks every 5 seconds to indicate the battery power is below 3.0V
Over alarm threshold	**Low/High** Red LED blinks every 10 seconds when the measuring set limit value is exceeded during record.

③ GO (START/STOP) key:

This logger can only be turned ON and OFF through PC. Plug into PC to execute configuration may turn it on and it will be turned off automatically after the report is generated. After the logger is programmed, press the GO key for 5 seconds to start logging. To stop logging, press the GO key again for 5 seconds. In the logging mode, short press key won't power off or stop the logger.

④MARK key:

To mark an event manually during the measurement period, press the MARK key for 5 seconds until the red LEDs flash in sequence. This MARK function is usually used when there is a transition, from one location to another. At most

8 marks can be identified in the PDF report.

⑤ High accuracy built in PT1000 sensor for temperature measuring.

⑥ Built in Battery. This logger is operated by 1 pc 3.6V built in lithium battery. The battery is not replaceable or re-chargable. The provided power is enough for 1 millions times records or 18 months usage. Example, if it is 10000 records per trip, it is enough for 100 trips.

⑦ Hanger

⑧Waterproof USB plug cover:

To provide the logger with water proof feature, wear on this plug cover before each logging trip.

Operation

NOTE:

1. Adobe Reader software is required.

2. Program the logger and generate the PDF and Excel report at room temperature. For example: if the logger is removed from a freezer, it should be allowed to return to the ambient room temperature before generating the PDF report temperature.

3. The executable file for programming the logger is named: PDF Logger Configuration Tool

Step1   Configuring the data logger

It is possible to make configuration changes at anytime before the logging function is started. Once the logger is started, configuration changes cannot be made unless stopping the logging first. If the logger is locked with a Password, the Password is required to make configuration changes.

- First, connect the data logger to a PC via the USB port. The green LED is on while the connection with computer is built.

- Windows file display window will appear.

- If the correct file folder is not open, click on Folder to view files.

- Open the file " PDF Logger Configuration Tool. exe".

- The default language is English. The user may change it to one of six alternate languages. There are English, German, French, Italian, Spanish, and Portuguese.

- User programmable parameters are as follows:

★Sampling rate

Select the sampling interval you need from 30 seconds to 2 hours.

★Start delay

Select the start delay from 0 min to 24 hours. For example: If the delay is 5 minutes, and the sampling rate is 10 minutes, the real time to log the first temperature measurement is 5 minutes after the GO key is pressed. All measurements after the first measurement will be at a 10 minute (or selected) interval.

★Unit of Measurement (UoM)

Select the unit that will be displayed on the report. The selections are Celsius or Fahrenheit

★Password

The Password function is default OFF. The user may enable it to prevent unauthorized reprogramming prior to pressing the logger starting key. A Password may have up to 16 alpha or numeric characters.

★Company Name

A user defined name, or descriptor, can be input under Company Name. It will be displayed on the PDF report as the Title, with a maximum of 20 characters.

★Alarm types

Regardless of the Alarm Type, if the red LED is triggered, it won't stop even the reading return to normal range or logging is stopped. The way to stop red alarm LED is to plug logger into computer to generate report.

Single: an alarm is triggered immediately when the measured value exceeds the alarm threshold.

Cumulative: an alarm is not triggered when the measured value exceeds the alarm threshold, but only once the overall average value during alarm delay duration exceeds the alarm threshold.

Disable: No alarm function during the logging process

★Alarm delay

The preset alarm delay interval for a single alarm type is always ZERO.

The adjustable alarm delay interval for a cumulative alarm type can be 5 minutes to 2 hours.

★Alarm Limits

Select the alarm threshold values. For example: if 2 - 8 deg C is selected, it means that an alarm condition will occur below 2 deg C, or above 8 deg C. The programmable alarm limit of each parameter is limited to one decimal. *To summarize, to activate a alarm when 30 min average value of hazardous alarm delay period is higher than 8℃, please program the alarm delay as 30 mins, alarm type as cumulative and range as 2~8℃*

★Time zone

Before programming the logger the user must assure that the PC is set for the correct time zone. The logger will auto synchronize to the time zone of the PC, when Save is pressed. Time zone changes over the transit distance are not adjusted in the logged data.

The default value of above parameters are:

Sampling rate: 5 min   Alarm Type: Disable

Start delay: 0 min   Alarm delay: 0 min

Temp. Unit: °C   Alarm Limits: blank

Password: disable

Company Name: blank   Language: English

Once all the programming is done, press "Save" to confirm the setting and then you may close the setup window and remove the logger from PC USB port.

★Battery life time quick check

This logger is operated by built in lithium battery. The battery is not replaceable or re-chargable. The provided power is enough for 1 million times records or 18 months usage, which comes first. You may check how many records are used from beginning till current time from the number provided in the gray out column right below the alarm setting. The logger won't be lockout while reaching above condition, you still can use it till the battery icon turns into red LED.

Step2   Start logging

-When logger is successfully programmed, the green LED blinks triple every 5 seconds to indicate the logger is in standby mode.

-If recording isn't activated within 30 mins, the logger will sleep again to save battery power.

-Put on the USB plug cover and then press "GO" key for five seconds to start the logging.

-Red LEDs will flash in sequence 3 times to indicate the logging is activated.

-During the logging, the green LED will blink every ten seconds. If battery power is too low to maintain a normal operation, red LED blinks.

- To place a bookmark manually during the delivery transition, press MARK key for 5 seconds till the Red LEDs flash in sequence.

Step3   Download data

-Press "GO" key for 5 seconds till red LEDs flash in sequence to stop the logging.

-Plug logger into PC USB port can also stop the logging.

- Open the file "PDF Logger Configuration Tool. exe

- Choose function "Convert to PDF" or " Convert to Excel" to generate the report in preferred format. The default language is English. The user may change it to one of six alternate languages.

- Select the preference location to save the generated report to.

- The created excel report contains all data shown in PDF report except the graph.

- The logger will be turned off automatically after report is generated and no new recording trip is programmed.

- If a new recording trip is required, please be sure to go to configuration page to check the settings again and press SAVE, regardless the setting are the same or different from previous trip.

-The recorded data will be kept in logger and only be overwritten when a new recording trip is started. Any time before this, you may return to file generation feature to generate report again in any launages you preferred.

NOTE: Note: The generated "excel" file is a tab-delimited ASCII text file which can be easily read by many programs. However, when opening the file in Microsoft Excel, a warning message may be displayed because the file is named ".csv" but the contents are like a ".txt" file.   It can be safely opened.

Technical data

Model	Multiple Use Dry Ice Temp. Logger
Temp. & Ext. measurement	By PT1000 sensor -80.0~70.0^{o}C (-112.0~158.0^{o}F)
Temp. resolution	0.1^{o}C (0.1^{o}F)
Temp. accuracy	+/-0.5^{o}C
T$_{90}$ Response	Within 20 mins
Logging Type	Multiple use
Sampling points	48000 points
Battery Life	1 million points or 18 months, which comes first
Operating temp.	-80~70°C (Logging status); room temp.(PC status)
Operating RH%	Humidity < 80%
Storage temp.	-40~85°C
Storage RH%	Humidity <90%
Weight	~20g
Battery	Built in 1 PC 3.6V Lithiim battery
Sampling interval	30 seconds, 5, 10, 30, 60, 90, 120 minutes
Start delay	0, 5, 30, 45, 60, 90,120 minutes, 24 hours
Alarm range	Temp: -80.0~70.0^{o}C
Alarm delay	0, 5, 30, 45, 60, 90, 120 minutes
Alarm type	Single, Cumulative, Disable
Operation keys	2 Keys, GO & Mark
LED indicator	REC, Low battery, High /Low alarm
Protection class	IP67
Directives	EN12830:2018, RTCA DO-160G
Operating System	Windows only