

# Instruction Manual

## Ultra Low Temperature Data Logger



### Introduction

Congratulations on your purchase of this ultra low temperature PDF datalogger.

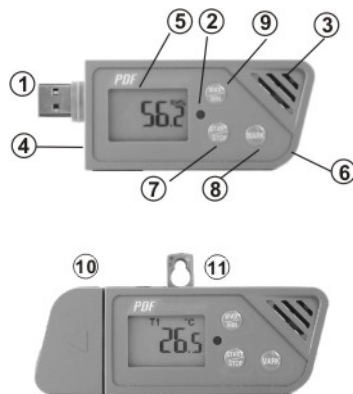
This datalogger is designed for monitoring freezer temperature and air temperature, subject to quality control requirement.

Temperature measurements are saved throughout the entire 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 are 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.

② LED indicator:

**Low/High:** Red LED blinks every 10 seconds when the measuring set limit value is exceeded during record.

**OK:** When the logging function is started, the green LED blinks once every 10 seconds when there is no alarm occurs.

③ NTC thermistor for air temperature measuring

④ External probe socket for RTD external probe

⑤ LCD (Liquid Crystal Display).



a. Measured temperature

LCD updates and interexchange every 5

seconds.

b. REC flashes every second when logger is in logging mode. While logger is programmed with start delay, REC displays but doesn't flash during the standby status.

c. T1 is air temperature, T2 is external probe temperature

d. H or L displays when measuring set limit value is exceed.

e. MX or MI display when checking MAX or MIN value counted from previous reset moment.

f. Low battery icon flashes on display every second when battery level is too low to accurately measure and log data.

⑥ Battery cover, operated by 2 pcs CR2032 batteries. Use coin and follow up the direction indicator to open and close the cover. While installing the batteries, the anode side faces up.

⑦ START/STOP (ON/OFF) key:

After installing the batteries, press key to power on the logger. LCD displays for 2 seconds. Press again to turn off.

After the logger is programmed, press the Start/Stop button for 5 seconds to start logging.

To stop logging, press the Start/Stop button again, for 5 seconds. In the logging mode, short press key won't power off the logger.

⑧ MARK key:

To mark an event manually during the measurement period, press the MARK button for 2 seconds until the measured data flash three times. This MARK function is usually used when there is a transition, from one location to another. At most 8 marks will be identified in the PDF report.

Short press MARK button any time can also display the leftover battery life time as a quick reference. However, precise battery life time is still decided by operation condition & battery brand.

⑨ MAX/MIN/RESET key:

Short press key to check the MAX or MIN data counted from previous reset moment. Long press till "rSt" (reset) appears on LCD to reset the maximum and minimum data.

⑩ Waterproof cover and stand:

To provide USB plug waterproof feature, put on this cover and slightly rotate it to make it tight. To make logger stand on desktop, rotate this cover to suitable supporting angle.

⑪ Hanger

### 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.

- Press ON/OFF to power on the logger

- Connect the data logger to a PC via the USB port. The green LED is ON while building the connection with computer.

- Windows folder management 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 several 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 START button 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 PDF report and LCD. The selections are Metric or Imperial. In Metric, it is Celsius for temperature. In Imperial, it is Fahrenheit for temperature.

#### **★Password**

The Password function is default OFF. The user may enable it to prevent unauthorized reprogramming prior to pressing the START button. 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 or power off the logger.

**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 °C, please program the alarm delay as 30 mins, alarm type as cumulative and range as 2~8 °C

#### **★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:

Password: disable    Temp. blank

Company Name: blank    Temp: 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.

**Step2 Start logging**

- Press "START" key for 5 seconds when you want to start the logging.
- “REC” will appear and flash on LCD to indicate the logging is activated. Measured parameters update and interexchange on LCD every 5 seconds.
- If Logger is programmed as Start delay, after pressing the start key, the “REC” will appear (not flashing) to show the logging is started and in standby status.
- During the logging, the green LED will blink every 10 seconds if there is no alarm occurred. If any, it turns into flashing red LED.
- 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 or power off the logger.
- To place a bookmark manually during the delivery transition, long press MARK key until measured reading flashes three times.
- Short press MAX/MIN/RESET key any time to review the maximum and minimum data counted from previous reset moment.
- Press MAX/MIN/RESET key longer to reset the maximum and minimum data. “rSt” appears on LCD to indicate it is done.

- Press MARK key can review the approximate leftover battery life time.
- Step3 Download data**
- Press "STOP" key for 5 seconds 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 several 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.
- 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     |                   |
| Air Temp. | By NTC thermistor |

|                   |                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------|
| Ext. Temp.        | By PT1000 RTD sensor, 3.8mm dia.<br>*20mm long stainless probe, 200cm long cable with 3.5mm diameter ear phone jack |
| Air Measurement   | -30.0~70.0°C (-22.0~158.0 °F)                                                                                       |
| Ext. Measurement  | -100.0~120.0 °C (-148.0~248.0 °F)                                                                                   |
| Temp. resolution  | 0.1°C (0.1°F)                                                                                                       |
| Temp. accuracy    | Full range: +/-0.5 °C                                                                                               |
| T90 Response time | Less than 5 minutes                                                                                                 |
| Logging Type      | Multiple use                                                                                                        |
| Sampling points   | 24000 Temp. +24000 ext. Temp.                                                                                       |
| Battery Life      | 3 months life time (Under alarm function is disable)                                                                |
| Operating temp.   | -30~70°C (Logging status); room temp.(PC status)                                                                    |
| Operating RH%     | Humidity < 80%                                                                                                      |
| Storage temp.     | -40~85°C                                                                                                            |
| Storage RH%       | Humidity <90%                                                                                                       |
| Weight            | ~90g                                                                                                                |
| Battery           | 2PC 3.0V CR2032                                                                                                     |
| 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       | Air: -30.0~70.0°C<br>Ext.: -100.0~120.0 °C                                                                          |
| Alarm delay       | 0, 5, 30, 45, 60, 90, 120 minutes                                                                                   |
| Alarm type        | Single, Cumulative, Disable                                                                                         |
| Operation keys    | 3 Keys, Start/Stop & Mark & MX/Mn                                                                                   |
| LED indicator     | REC, High /Low alarm                                                                                                |
| Protection class  | IP65                                                                                                                |
| Directives        | EN12830                                                                                                             |
| Operating System  | Windows only                                                                                                        |

**Error Code**

|             |                                            |
|-------------|--------------------------------------------|
| - - - - , - |                                            |
| Why?        | External probe is unplugged                |
| Solution    | Check the contact between probe and logger |
| E02         |                                            |
| Why?        | Measured value is below specified range    |
| Solution    | Put the logger in specified range          |
| E03         |                                            |
| Why?        | Measured value is above specified range    |
| Solution    | Put the logger in specified range          |
| E31         |                                            |
| Why?        | Microprocessor is fail                     |
| Solution    | Contact distributor for after service      |

|                                                 |                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Why red LED is flashing but recorded data is OK |                                                                                                                                                                                                                                                                                                                                            |
| Why?                                            | Alarm detection works every 10 seconds but data logging are possibly programmed as every 2 hours. In this condition, if alarm happens between two logging points, it might lead the recorded data is OK but red LED is flashing, especially if the alarm mode is set as “Single”.                                                          |
| Solution                                        | To program the alarm function as cumulative can reduce this situation                                                                                                                                                                                                                                                                      |
| Why my datalogger could not record second time? |                                                                                                                                                                                                                                                                                                                                            |
| Solution                                        | After you download the data, please go back to configure page to re-check all the setting and then press “SAVE” to confirm.<br><br>Then, once you long press the start key again to record, you will see green LED blink to indicate the recording is started and the new record will overwrite the kept old data in the logger memory IC. |