Instruction Manual

Multiple Function Data Logger

CE

Introduction

Congratulations on your purchase of this multiple function PDF datalogger.

This datalogger is designed for monitoring temperature, humidity and pressure subject to quality control requirement. Temperature, humidity and pressure 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
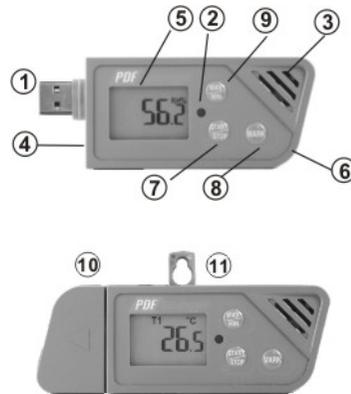
① USB2.0 plug & play connector. USB driver is not required.

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 temperature measuring and capacitive humidity sensor for humidity measuring.

④ External probe socket in models with external probe port

⑤ LCD (Liquid Crystal Display).

a. Measured temperature or humidity or pressure. 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 from logged data.

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 key:

Press key to check the MAX or MIN data of all logged 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 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 several alternate languages. There are English, German, French, Italian, Spanish and Portuguese.
- To review the instruction manual, you may click "Manual" to open the manual PDF file.
- The user can check the calibration report for the logger by selecting the PDF file named "Calibration Certificate".
- 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 and hpa for pressure. In Imperial, it is Fahrenheit

for temperature and inHg for pressure.

★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℃, 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:

Password: disable   Temp. blank

Company Name: blank   RH: blank

Language: English   Pressure: blank

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 10 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.

- Press MAX/MIN key any time to review the maximum and minimum data stored in memory.

- 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
Model 1 : Temperature logger
Model 2: Temperature + Ext. temp. logger
Model 3: Temperature + Humidity logger
Model 4: Temperature +Humidity +Barometric logger

Temp. & Ext. measurement	By NTC thermistor, $-30.0\sim70.0^{o}$C $(-22.0\sim158.0^{o}$F)
Temp. resolution	0.1^{o}C $(0.1^{o}$F)
Temp. accuracy	$+/-0.5^{o}$C
Humidity	0.1~99.9%rH
Humidity res.	0.1%rH
Humidity accu.	+/-3% at $25\,^{o}$C(10-90%rH), others +/-5%
Barometric	300~1100hpa; 8.9~32.5inHg
Baro res.	1hpa;0.1inHg
Baro accu.(hpa)	$+/-3(0\sim60\,^{o}$C), $+/-5$ $(-20\sim0\,^{o}$C), the rest is not specified.
Logging Type	Multiple use

Sampling points
Model 1: 48000 points
Model 2: 24000 Temp. +24000 ext. Temp.
Model 3: 24000 Temp. +24000 Humidity
Model 4: 16000 Temp.+ 16000 Humidity+ 16000 Baro.

Battery Life	3 months
Operating temp.	$-30\sim70^{o}$C (Logging status); room temp.(PC status)
Operating RH%	Humidity < 80%
Storage temp.	$-40\sim85^{o}$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	Temp: $-30.0\sim70.0^{o}$C Humidity:1~99%rH Baro:300~1100hpa
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

Model 1:	IP67
Model 2:	IP65
Model 3:	IP65, not include sensor
Model 4:	IP65, not include sensor.
Directives	EN12830
Operating System	Windows only

Error Code

- - - - . -	
Why?	In model 2 only. 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
E04	
Why?	In humidity display of model 3 & 4 only, means temperature is in error mode
Solution	Solve the error issue of temp. sensor
E11	
Why?	In humidity display of model 3 &4 only, means humidity calibration is fail
Solution	Re-calibrate the humidity
E31	
Why?	Microprocessor is fail
Solution	Contact distributor for after service
E33	
Why?	In humidity display of model 3&4 only, means humidity measuring 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