

CRYOPAK iMINI ESCORT iMINI

Simple and Smart



User Guide

Rev. 3.1

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1. Introduction

Cryopak Verification Technologies, Inc. offers new and advanced, temperature and / or humidity data loggers.

Cryopak's new iMINI is now available for both temperature and humidity data monitoring solutions. iMINI data logger offers multi-function display, user replaceable battery, large memory options to choose from, start & stop button and much more.

Table below outlines the range of iMINI products:

Available iMINI family products list

Product code	Description	Type	Total Sensors	Sensor Location	Sensor Type
MX-IN-S-8-L	Temperature	Multi-use	1	Internal	NTC
MX-ST-S-8-L	Temperature	Single Use	1	Internal	NTC
MX-OE-S-8-L	Temperature	Multi-use	1	External	NTC
MX-1E-S-8-L	Temperature	Multi-use	2	One Internal & One External	NTC
MX-2E-S-8-L	Temperature	Multi-use	2	Both External	NTC
MX-HS-S-16-L	Temperature & Humidity	Multi-use	2	Both Internal	Digital sensor
MX-HE-S-16-L	Temperature & Humidity	Multi-use	3	Two Internal & One External	Digital sensor & NTC

Important Notes:

- All iMINI products are available in different memory sizes: **8K, 16K, 32K, 64K** and **128K**.
- Humidity iMINI loggers are available in **16K, 32K, 64K** and **128K**. **8K** memory is also available (on request).

2. Safety instructions



In no circumstance should heavy force be applied to your iMINI logger. Applying heavy force to any part of your iMINI could result in logger malfunction and/or injury.



Your iMINI logger should only be operated within the parameters specified in the technical data discussed within this user manual. A failure to follow these instructions could result in your iMINI logger malfunctioning and cause permanent damage to the unit.



Certain models of iMINI loggers are vulnerable to damage when contact with water takes place. Please check your iMINI loggers IP rating before placing your iMINI logger in such conditions.



Your iMINI logger is not to be subjected to a naked flame. Exposures to such conditions may result in damage to your iMINI logger, and result in an explosion of the battery.



Never operate your iMINI logger with a low battery. It is recommended that you replace the battery as soon as the battery low symbol is indicated on your iMINI logger's display.



Do not attempt to repair or modify any part of this logger. Such actions will result in a loss of warranty. All repairs are to be made by an official ESCORT Verification Technology service.



For iMINI loggers which operate external sensors, it is important to keep the sensor tip clean to ensure that the data collected is accurate.



In order to keep your iMINI loggers recordings accurate, we recommend that you perform annual calibration of this device.



If an iMINI Humidity logger's humidity sensor comes into direct contact with moisture it will not perform accurately.



Once your logger's case has been opened and the warranty seal is broken your iMINI logger is no longer covered by warranty.



Battery life depends greatly on the quality of battery fitted, the temperature your iMINI logger is operated at and the recording frequency your iMINI logger is logging at.



Do not use batteries other than those specified in the user manual. A failure to use the correct battery could result in poor performance and/or logger malfunction.

3. Product code

The product code for Cryopak Verification Technologies, Inc. products is presented in a modular fashion for ease of recognizing and ordering a variety of different products.

For ease of communication, the dashes within the product code may be omitted.

The product codes of the iMINI data loggers' family have the following format:

[XX] - [YY] - [T] - [M] - [Options] (e.g. MX-IN-S-8-L)

The initial letters 'XX' indicates product family as detailed below:

XX		
MX	iMINI Cryopak iMINI (Yellow case)	New generation intelligent iMINI

The field 'YY' represents the sensor combination code with following options:

YY	
IN	Logger with one internal temperature sensor
ST	Single trip logger with internal temperature sensor
OE	Logger with no internal and one external temperature sensor (1Meter length)
1E	Logger with one internal and one external temperature sensor (1Meter length)
2E	Logger with two external temperature sensors (1Meter length each)
HS	Logger with one internal temperature sensor and one internal humidity sensor
HE	Logger with one internal temperature sensor, one internal humidity sensor & one external temperature sensor (1Meter length)

The next field 'T' identifies the temperature measurement range.

T			
Code	Sensor location		Temperature range
S	internal	external	-40°C to +80°C

'M' identifies the Memory capacity of the logger. Following options are available:

M		
8	8K memory	Logger can store 7,806 data points
16	16K memory	Logger can store 15,998 data points
32	32K memory	Logger can store 32,832 data points
64	64K memory	Logger can store 65,150 data points
128	128K memory	Logger can store 130,686 data points

The Specification Sheets detail in more depth which logger models are available with which memory options for each model. All iMINI data loggers are fitted with LED's and LCD display.

4. Memory size vs Sensors

The iMINI data logger with multiple sensors splits each sensor's memory records capacity. Data is divided equally between all active sensors. For example, for 16 K memory data logger, with one enable sensor, there will be 15,998 records. If two sensors enabled, then each sensor will have a 7999 records capacity.

5. Features

- Multiple temperature and/or humidity sensor configurations available ([see product codes](#));
- Rear label specifying product code and serial number plus bar coded serial number according to EAN 128;
- Multifunction LCD Display & LEDs;
- Four alarms supported, High, High High, Low, and Low Low;
- Light weight - 70 grams (including battery);
- Lug to fix logger on wall or other surface as required;
- Display showing last temperature measurement taken and alarm status (High Alarm / Low Alarm), or status of the logger. Optional statistics (e.g. highest, lowest, and average) can be chosen during logger programming. Display also capable of displaying Firmware version, Memory size and number of active sensors (by briefly pressing the STOP button);
- Optional start delay for climate acclimation;
- CE compliant;
- Logging interval range - 5 second - 17 hours (please contact us if large logging intervals e.g. 23 hour is required, we can prepare special loggers upon request);
- User replaceable battery. To replace the battery, simply use a coin to remove the battery cover from rear and pry out the battery carefully. It is highly recommended to use PANASONIC brand 3V battery;

Refer to [battery replacement guide](#).

Important Notes:

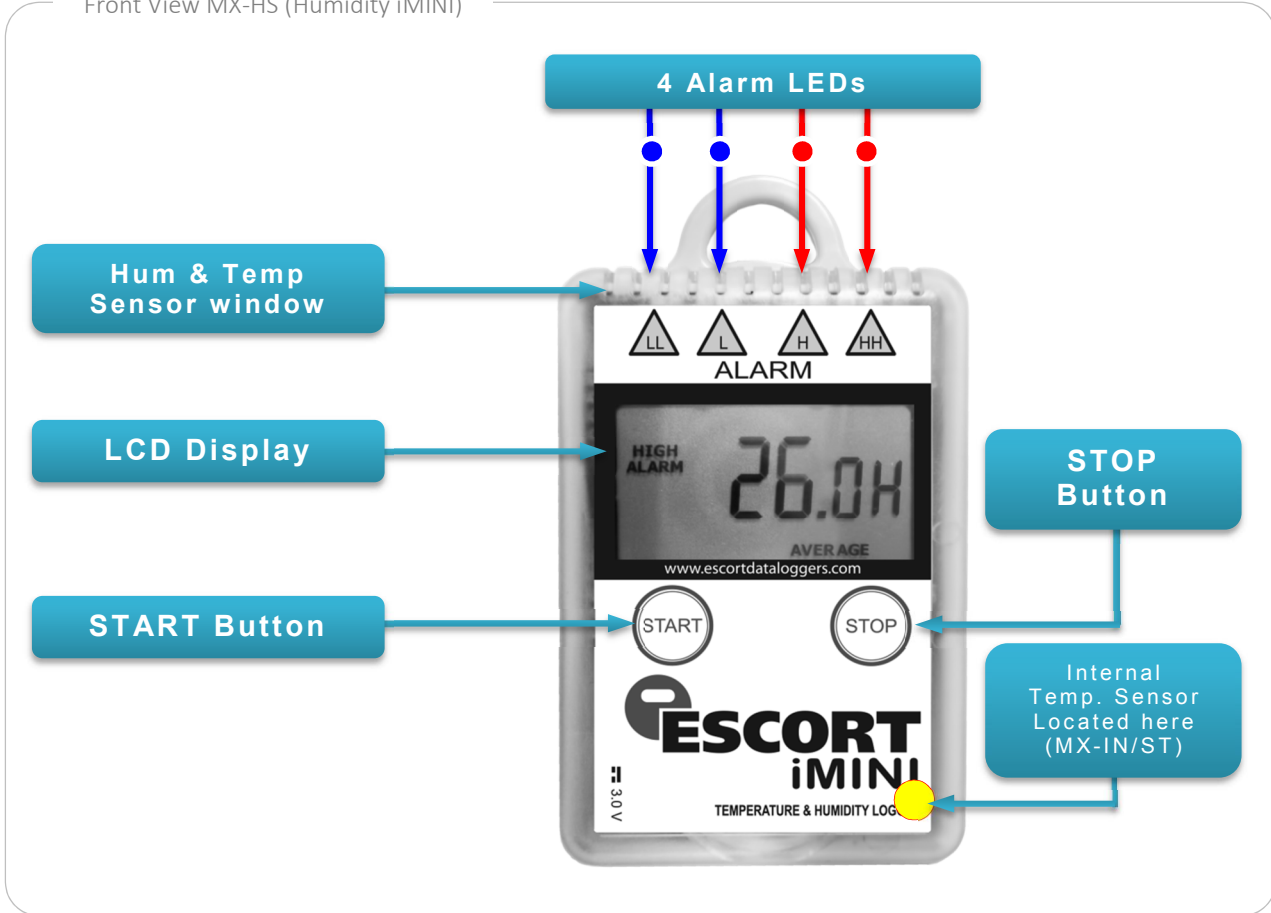
- Stored readings cannot be lost by removing the battery. However, it is recommended to replace the battery when it is not logging. More frequent use will require a shorter span between battery changes.
- If the LCD display appears to be dim and battery icon starts appearing on the LCD display of the logger, or if 'Low Battery' is reported by ConsolePlus software, it is advised to change the battery.

6. Specifications

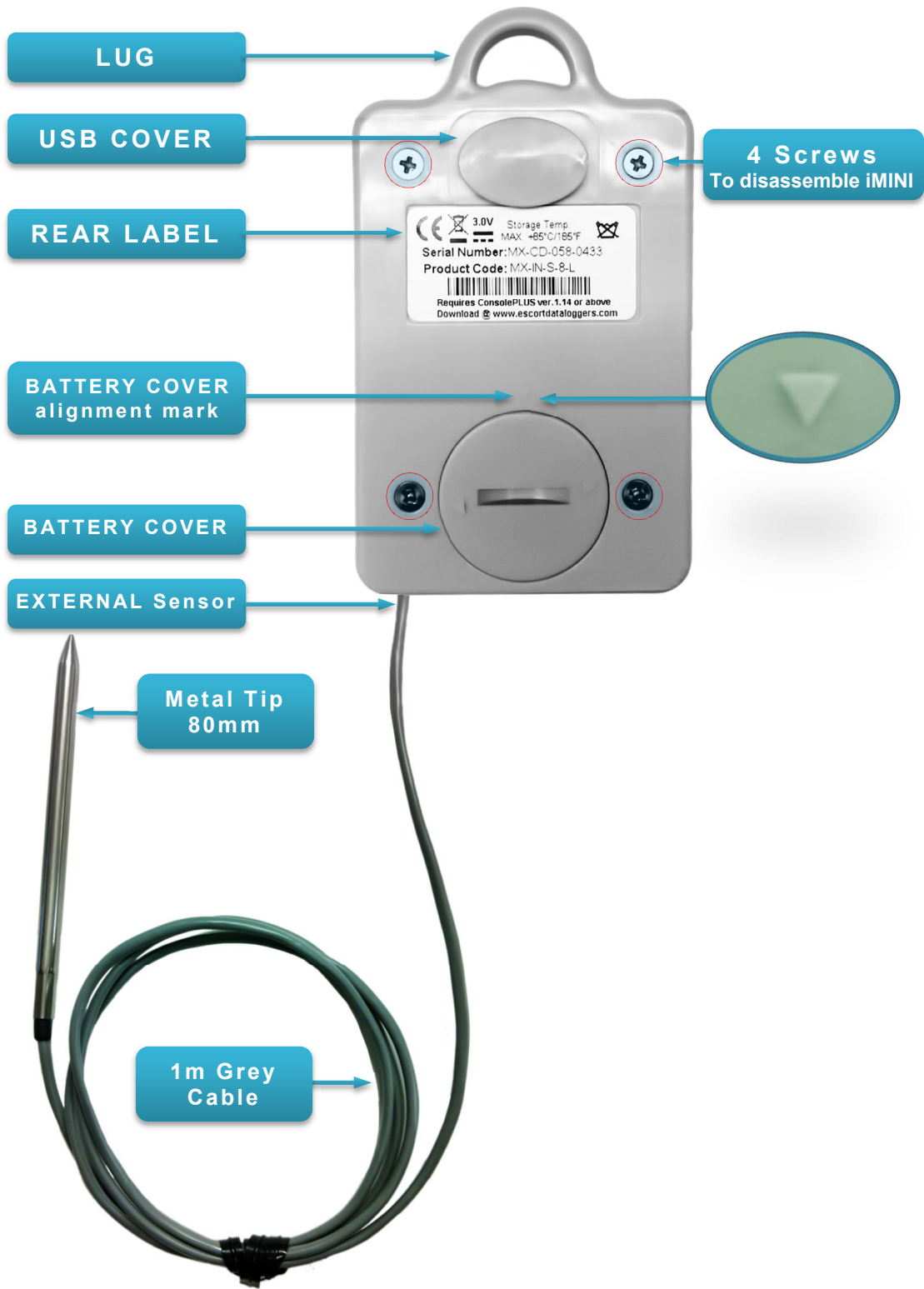
Description	Specifications
Program Interval	5 seconds to 17 hours
Time Accuracy	±1 hour per year
Sensors	Internal and /or external
Temperature Range	-40 °C to +80 °C (-40 °F to +176 °F)
Humidity Range	0-100%
Temperature Accuracy	±0.5 °C (-40 °C to -10 °C), ±1 °F (-40 °F to +14 °F), ±0.3 °C (-10 °C to +70 °C), ±0.6 °F (+14 °F to +158 °F)
Humidity Accuracy	±3% (10%-90%) ±4% (<10% and > 90%)
Resolution	0.1 °C / 0.1 °F / 0.1%
Sensor Response Time	Internal Sensor – T90 of 20 minutes in moving air, External Sensor – T90 of 5 minutes in moving air
LCD Operating Range	-20 °C to +70 °C (-4 °F to +158 °F)
Alarm Thresholds	4 thresholds; 2 red LEDs, 2 blue LEDs
Alarm Configuration	HIGH HIGH, HIGH, LOW & LOW LOW
Bookmark	Yes
Preprogram Option	User programmable
Start Option	Push button and/or timer
Auto Restart	Yes
Start Delay	Yes, 1 minute to 99 days
Stop Option	Stop button (can be disabled) or timer
Size	83 x 57 x 17mm (excluding lug)
Weight	70 grams (including battery)
Case Material	Polycarbonate/ABS
Battery	3.0V, user replaceable (Panasonic only)
IP Rating	IP65 (with plastic cap over USB connector) for Temp. iMINI IP51 for Humidity iMINI
Warranty	24 months, excluding battery (Multi use loggers), One Trip, excluding battery (Single trip loggers)
Calibration	NIST Traceable upon request
Accuracy Certificate	Yes
Other Certification	ISO9001:2008, CE, RoHS
Battery Life	1-2 years (depending on usage)
Interface	USB
Software	ConsolePlus
Default File Format	CVT
Data Export	PDF, TXT, CSV & CVT
Security	Password protected, (programmable using ConsolePlus Software) encrypted binary file is generated along with PDF

7. Outlook

Front View MX-HS (Humidity iMINI)



Rear View (MX-OE/1E)



8. Size & Dimensions



9. Pictures

MX-IN / MX-ST



MX-OE & MX-1E

MX-OE / MX-1E



MX-HE (external)

MX-HE



MX-HS

MX-HS



MX-2E

MX-2E





10. Software

All new products, including iMINI from Cryopak Verification Technologies, will be supported by ConsolePlus. The software has built-in auto update feature; user will be prompted to upgrade when new release is available.

Setup file can be downloaded from <http://72.55.148.15/CVT/ConsolePlusSetup.zip>
For installation and program/download information refer to ConsolePlus user Manual.

11. Software dependencies

ConsolePlus can be installed on the following platforms:

- Windows XP
- Windows Vista
- Windows 7
- Windows 8, 8.1
- Windows 10

⚠ Important Note:

Adobe reader (latest Version) must be installed on the computer; otherwise user may encounter an error;

- In PDF generation
- Print
- Print preview
- Software crash

12. Accessories / Interface

For all the iMINI data loggers, **Type A to Mini-B USB** cable is required to connect data logger to the workstation. ConsolePlus will auto detect the logger (no need to select COM port).



To connect the USB interface, gently pull the USB cover from the rear side of the iMINI and plug in the Mini-B side of the cable to the female connector. Connect the other side of the cable to a computer's available USB port. Device driver is automatically installed during installation of ConsolePlus, so no separate driver installation is required.

13. Display

The iMINI data logger has a multifunction LCD display with a refresh rate per second. Below is the list of displayed text on the LCD and the functions:



13.1. How to know the firmware version

Firmware & information

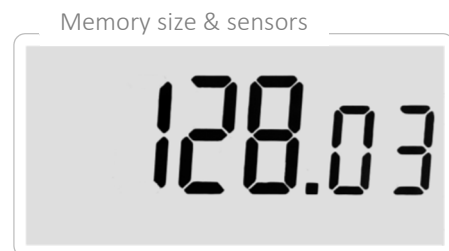
- The iMINI data logger is also capable of displaying firmware version, memory size and number of activated sensors, by simply pressing the STOP button for 3-5 seconds, when it is not logging.

- The iMINI will cycle firmware version first. In this case, the firmware version is 1.42.

⚠ Important Note:

The firmware version of iMINI data logger is being updated regularly for features; your device may have a different one.

- Then, memory size & No. of active sensors.
- Value before the decimal point denotes memory size of iMINI; in this case it is 128K.
- Value after decimal point means number of active sensors; in this case there are three active sensors on the iMINI.



13.2. External sensor symbol

The iMINI with three sensors (MX-HE-S-8-L), external sensor is displayed as



13.3. Start/ Stop

Start/Stop depends on how the loggers has been configured:

Configured?	LCD display Before start	Action required	After Start LCD display
With delay	READY	Push & hold START button 3-5 sec.	3 broken lines, then IN DELAY text on screen. When delay time is met, latest temp/hum on display & text LATEST flashing
Without Delay	READY	Push & hold START button 3-5 sec.	3 broken lines, then latest temp/hum on display & text LATEST flashing
With Timer start	READY IN DELAY	iMINI starts automatically with timer	When start time is met, latest temp/hum on display & text LATEST flashing
With delay & Timer start	READY IN DELAY	Auto-start: iMINI starts automatically with timer	When start time is met, latest temp/hum on display & text LATEST flashing
		Manual start: Push & hold START button 3-5 sec.	3 broken lines, then IN DELAY text on screen. When delay time is met, latest temp/hum on display & text LATEST flashing
Without delay & Timer start	READY IN DELAY	Auto-start: iMINI starts automatically with timer	When start time is met, latest temp/hum on display & text LATEST flashing
		Manual start: Push & hold START button 3-5 sec.	3 broken lines, then latest temp/hum on display & text LATEST flashing

13.4. Bookmark

To place a bookmark in the iMINI logger when recording, press & hold START button for 3-5 seconds. The word **MARKED**, along with the temperature, will be displayed. Upon download, the marked readings will have a '*' symbol and on the graph, a star icon will be placed. There is no limit on bookmarked readings.

13.5. Other LCD functions

13.5.1. Before Program

LCD may be in any state; ready or logging.


13.5.2. View highest, lowest & average temperature & humidity

Press START button quickly once LCD will cycle through HIGHEST, LOWEST & AVERAGE temp/hum for each available sensor one by one and revert to normal state after 4 cycles.

13.5.3. View time out of specification

Press START button quickly twice LCD will cycle through time above & below specification for each available sensor and display will show text ABOVE & BELOW with the information of duration in minutes.

13.6. List of text and information on the iMINI logger display

LCD display	Occurrence	Description
READY	Constant	iMINI is programmed and READY to start with START button
READY IN DELAY	Constant	iMINI is programmed with delay and will start after designated delay when push START button is detected
IN DELAY	Constant	iMINI is programmed with Date/Time, will start recording when date/time is met
STOP	Constant	iMINI is not logging or has finished the last trip
	Constant	Battery icon will appear when battery is low
HIGH ALARM	Constant	Temperature went above HIGH alarm conditions

HIGH ALARM	Text Flashing	Temperature went above HIGH HIGH alarm conditions
LOW ALARM	Constant	Temperature went below LOW alarm conditions
LOW LOW ALARM	Text Flashing	Temperature went below LOW LOW alarm conditions
LATEST	Text Flashing	iMINI is logging
MARKED	Flash Once	A bookmark is placed (by pressing START button when logging for 3-5 seconds)
HIGHEST LOWEST AVERAGE	*Constant	Highest, Lowest & Average temperature of the entire trip will cycle on display when START button is pressed once
HOURS		When START button is pressed twice to display time above/below specifications
⁰ C	*Constant	Celsius
⁰ F	*Constant	Fahrenheit
H	*Constant	Humidity

* Text or symbol display next to occurrence (latest Temperature or Humidity)

14. LEDs

The iMINI has four LEDs, two red LEDs and two blue LEDs. These LEDs will function during program, download and when any of the four alarms is triggered.

14.1. During Alarm

The iMINI supports four alarm conditions. If the temperature goes out of specification, respective LEDs will start flashing during logging and will remain until the logger is reprogrammed.

- | | | | |
|-------------|----|---|----------|
| ▪ LOW LOW | LL | ① | Blue LED |
| ▪ LOW | L | ② | Blue LED |
| ▪ HIGH | H | ③ | Red LED |
| ▪ HIGH HIGH | HH | ④ | Red LED |

14.2. During program /download

LED 2 (L) & 3 (H) will turn on solid during program or download of the iMINI data logger.



15. Battery Status & Battery Change

Low Battery:

It is highly recommended to change the iMINI battery as earliest possible in the following events:

- If the LCD display appears to be dimmer than the normal.
- Battery icon starts appearing on the LCD display of the logger.
- 'Low Battery' is reported by ConsolePlus software.

⚠ Important Notes:

- Sometimes, even with a properly working logger, the battery icon is displayed when connected to ConsolePlus. Under these circumstances, unplug iMINI and wait a few seconds to refresh the battery status. If battery is genuinely low, the battery icon will remain on the LCD display. Otherwise, the battery icon will disappear.
- If battery is removed from a iMINI when logging, logger will stop logging.

Consequences:

If the iMINI is logging with a low battery, there are high possibilities of logger's memory corruption and crucial data loss. During logging, if the battery gets low, the writing of memory address can fail, which results in memory corruption. Logger may no longer be detectable with ConsolePlus software or, if detected may not be able to program it.

Ease:

You have the ability to change your iMINI's battery. To replace your logger's battery, please follow the procedure below.

Procedure:

1. Purchase a PANASONIC coin battery CR2450 3.0V (can be purchased through your CVT distributor or local electronics store).
2. Remove battery cover located on the rear of your iMINI logger with the help of a coin, turning it counter-clockwise.
3. Pry out the battery carefully from battery compartment.
4. Short the battery terminals with the help of screwdriver or with tweezers for 30 seconds.
5. Insert the new battery in the compartment ensuring correct direction. The positive terminal of the battery is always on top side and negative at bottom.
6. Replace the battery cover by matching two marks, one on the rear of the iMINI and other on the battery cover and turning it clockwise.



⚠ Important Note:

It is advised NOT to unscrew the iMINI data loggers. It can lead to many issues such as: accuracy error, static charge to damage CPU, LCD damage and ultimately it will void the warranty of the unit.

16. Sensor Maintenance

Internal temperature sensor logger:

No maintenance required, internal sensor is sealed inside the logger.

External Temperature sensor logger (with probe):

External sensors must be cleaned for accurate temperature readout. Sensor should be residue free. Solid deposits, sticky stuff or adhesive tapes must be removed. Use isopropyl alcohol or other cleaning agent to clean the external sensor if necessary. Cleaner the sensor, better the response time.

Logger with Humidity Sensor:

Do not expose the logger's humidity window in direct contact with liquid or heavy moisture. Humidity window must be clean and without any residues.

17. Special Notes for humidity iMINI use

Humidity loggers have wide horizontal slots on the top of lid (just below lug). The digital humidity and temperature sensor is right underneath it, soldered directly on PCBA. Please note,



- *The IP rating of this logger is IP51 so please take extra precautions in placement of logger.*
- *Avoid direct contact of liquid/water (otherwise PCBA will get corroded).*
- *If excessive moisture is present in measuring environment, it is advised to place the logger in upside down position, where the lug is on bottom. in this position the extra moisture will remain on the bottom instead of bleeding on PCBA.*

18. Warranty information

(Clause from CVT Terms & Conditions)

9.1 CVT's warranties in respect of the Products are:

(a) The warranties and conditions implied by the Uniform Commercial Code

Article 2, Part 3 312(Warranty of Title and Against Infringement), 313-2(b) (sale by description) and 314-2, 315 (merchantable quality); or

(b) A specific warranty or Product specification included in the Order Confirmation or on the CVT website www.cryopak.com.

9.2 The warranty in subclause 9.1 is to the exclusion of all other warranties, conditions and liabilities wherever expressed or implied and whether arising in contract, court or by statute or otherwise.

9.3 No representation in relation to the Products shall be binding on CVT unless in writing and signed by CVT or one of its Directors, or included in either of the warranties detailed in clause 9.1.

9.4 CVT will not be liable for any personal injury, property damage, consequential or contingent loss or damage caused through the negligence or otherwise of CVT, its servants or agents or rising out of the goods being defective or otherwise not in accordance with any warranty given.

10. Specific Warranty Provisions

10.1 Warranty is understood as "return to base". You will be responsible for freight/taxes and duties back to CVT; CVT will pay the return freight back to You.

10.2 Product Warranty is twenty four months on all products, except for the Single Trip loggers where the warranty term is limited to a single trip to be performed within the 24 month period. This does not include batteries.

10.3 *The warranty does not cover:*

- (a) RH calibration later than 1 year after production, or if the unit has been subject to environmental conditions outside those specified.*
- (b) Willful damage, mistreatment, misuse or abuse of the goods.*
- (c) Loss or damage caused by ingress of moisture unless ordered with immersion rating;*
- (d) Batteries*
- (e) Circumstances where the unit has been modified from CVT specifications.*
- (f) Exposure of the logger to temperatures outside the specified storage temperature, or operating temperature.*
- (g) Exposure to environmental conditions outside the specified conditions.*
- (h) Circumstances where the printed circuit board has been removed or tampered with.*

10.4 *In the case of a warranty claim CVT will repair the Product or, at its option supply an equivalent replacement.*

10.5 *In some circumstances, where a specific return is authorized, CVT, may permit the use of its Federal Express account number for returning Product. Such permission is valid ONLY for that authorized shipment. CVT will not accept any freight charges for goods that have been returned without its express permission.*

10.6 *You may return Product to CVT for accuracy testing, if there are reasonable doubts as to the Products overall accuracy.*

10.7 *If a Product is returned within the warranty period, a Traceability Certification will be performed. Should the logger read within the specifications, a Traceability Certificate will be issued and You will be charged with the cost and the cost of return freight. If the logger does not pass the certification, ie: the logger is at fault, the logger will be replaced or repaired. The new or repaired logger will be issued with a Traceability Certificate free of charge.*

10.8 *If the Product is returned outside the warranty period, a Traceability Certificate will be issued and charged regardless of the outcome of the test.*

10.9 *CVT will not pay for any performance tests undertaken by any outside organization, without prior approval*

Recycling of electronic devices

Some parts in products from Cryopak Verification Technologies consist of recyclable materials, but others should not be disposed of in household waste. To avoid pollution, we kindly ask you to adhere to national policies and regulations concerning waste disposal and recycling. iMINI data loggers must be returned to your distributor for disposal (European Standard EN 50419:2005).

19. Contact details

If you require further information regarding CRYOPAK Verification Technologies, Inc. products please contact us at:

USA

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You can find additional information regarding all of our products on our website:

www.cryopak.com
<http://www.cryopak.com/en/verification-products/>

