



TECHNICAL SPECIFICATIONS

LIBERO CD

PDF Data Logger for Direct Placement into Dry Ice

Dry ice is commonly known to reach temperatures of -78.5°C , so most dry ice data loggers work to -80.0°C . If you regularly have dry ice shipments, you might wonder why you reach temperatures below that limit. The fact is dry ice can reach temperatures far below -80.0°C during a regular shipment. Temperatures colder than -80.0°C in dry ice can occur because of vibration or pressure differences, both things that are likely to happen during your shipment. That's why we designed the LIBERO CD dry ice data logger to measure even the lowest temperature we have seen occurring in dry ice shipments and added on some extra to measure as low as -95.0°C , so you can ship dry ice without needing to worry.

LIBERO CD PDF report with multi level alarm criteria

This is an example PDF report of the LIBERO CD dry ice temperature data logger.

In real shipments information for the recipient or shipment specific information e.g. Temperature Number, Courier, Origin, ... or any other information making it easier to systematically analyse recorded data can be added here.

LIBERO Configuration					
Type	LIBERO CD VS 11 R09	Current State	Shipped	Start at	23 May 2016 18:38:12
Device ID	7406 0000 016	End Measurement	23 May 2016 18:00:12	Checkmark	OK
Log Interval	1 m	Checkmark <td>OK</td> <td></td> <td></td>	OK		
Report Time Base	UTC	Checkmark <td>OK</td> <td></td> <td></td>	OK		
Configured by	EC134 / chandimann, 23 May 2016 12:12:03	Checkmark <td>OK</td> <td></td> <td></td>	OK		
Alarm Zone					
Alarm Zone	Allowed Time	Total Time	No. of Exceedances	Longest Ex.	Status
H1: over -25.0°C	1 m (min)	0 m	0 / unlimited	0 m	OK
H2: over -40.0°C	1 m (min)	0 m	0 / unlimited	0 m	OK
H3: over -45.0°C	1 m (min)	0 m	0 / unlimited	0 m	OK
G: -80.0 to -85.0°C	unlimited	15 h 3 m	0 / unlimited	0 m	OK
L1: below -85.0°C	0 m (min)	0 m	0 / unlimited	0 m	OK
L2: below -95.0°C	0 m (min)	0 m	0 / unlimited	0 m	OK

MKT Limits and Maximum Duration		Alarm Conditions	
Duration	15 h 3 m	Alarm at	none
MKT	-78.5°C	File created	24 May 2016 10:07:24
Logging Results			
Highest Temperature	-73.8°C 23 May 2016 19:00:12	Stop at	24 May 2016 10:02:58
Lowest Temperature	-78.1°C 24 May 2016 09:54:12	Alarm at	none
Average Temperature	-78.0°C		

Report created by ELPRO (LIBERO) Page 1 / 1 www.elpro.ch

we prove it.

SWISS QUALITY



- > Internal temperature sensor for placement directly into dry ice
- > Covers all scenarios experienced in dry ice, also below -80 °C
- > Fully functional immediately upon removing from dry ice
- > Unmatched accuracy, fully calibrated with traceable certificate
- > Compatible with liberoMANAGER cold chain database

Technical Specifications LIBERO CD

Type	PDF data logger with multiple alarm levels for direct use in dry ice	
Application area	Cold chain monitoring – deep frozen or dry ice shipments	
Recording options and mode	Single use: start/stop mode	
Type of probe	Internal NTC probe	
Application range	-80 °C..+50 °C	
Measurement range	-95 °C..+50 °C (use below -80 °C for extended periods will shorten battery life)	
Measurement accuracy	<div> <div>± 0.5 °C [-30.0 °C..+30.0 °C]</div> <div>± 1.0 °C [+30.1 °C..+50.0 °C]</div> <div>± 0.7 °C [-80.0 °C..-30.1 °C]</div> <div>± 1.5 °C [-95.0 °C..-80.1 °C]</div> </div>	
Resolution	0.1 °C	
Measurement interval	1 to 60 minutes, user programmable	
Memory capacity	24,200 measurements values (equals 168 days run time with 10 minute interval)	
Expiry date and battery life	<p>Data logger can be started at any time within the shelf life.</p> <p>Once started, the data logger records data until the memory is full or the data logger is stopped.</p> <p>Service life: 30 days when continuously exposed to temperatures up to -80 °C, 5 days when continuously exposed to temperatures of -95 °C.</p> <p>Automatic expiration date management: expired data loggers can no longer be started.</p>	
Certificate	ILAC / NIST / ISO 17025 traceable production calibration certificate	
Programmable alarms	<p>8 temperature alarm levels with single or cumulative delays</p> <p>2 temperature thresholds with alarm delay</p> <p>Alarm on duration/run time</p>	
Start-up delay	0 minutes to 24 h	
Display	Multifunction LCD, size: 23.5 × 23.5 mm, with large OK and ALARM indicator	
Display functionality	<div> <div>- Status: Conf, Start, Run, Stop</div> <div>- Current temperature measurement</div> <div>- OK, ALARM or blank</div> <div>- Configuration profile identification</div> </div>	
Report	<p>Built-in PDF file generator automatically establishes an evaluation report with embedded data upon connection to a USB port. Complies with the ISO standard 19005-1 document management for the long-term preservation of electronic documents (PDF/A) and FDA 21 CFR Part 11.</p> <ul style="list-style-type: none"> - Customizable report title and filename - Text area for additional information (e.g., shipment information, instructions for recipient, etc.) - Immediate release or quarantine based on alarm status - Statistics (min/max, average, alarm) and detailed data logger information (ID, configuration, etc.) - Chart visualizing the temperature curve and alarm limits 	
Traceability	ID number (traceable to component level)	
Case dimension weight IP code	ABS plastic material 96 × 50 × 16 mm (3.8 × 2.0 × 0.6 inch) 50 g (1.8 oz) IP65	
Storage	<p>Ambient conditions: +15 °C..+25 °C / 40 %RH..70 %RH</p> <p>Storage period: up to max. 6 months recommended (for dry ice applications)</p>	
Certifications	CE UKCA EN12830 EMC RTCA DO-160 RoHS Safe Transport of Chemical Goods	
Data logger configuration and additional analysis software	<p>liberoCONFIG and SmartStart software to create, store and manage individual settings in a settings profile.</p> <p>liberoMANAGER database as cloud service to store shipment reports and results, analyze shipments, manage release status and trigger customer specific workflows in cold chain processes.</p> <p>elproVIEWER software to access and export embedded data of PDF report, for data analysis and comprehensive report features (for users not using liberoMANAGER).</p>	