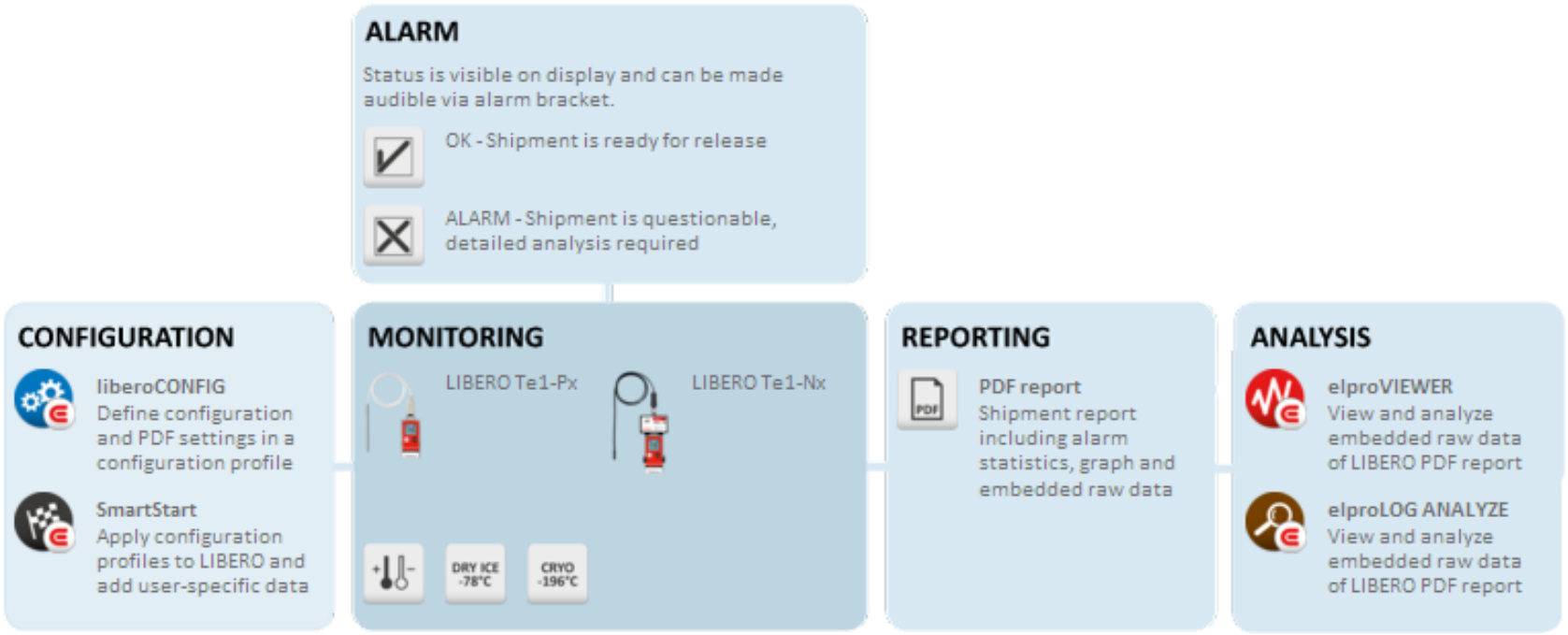
LIBERO PDF Logger
for Cryogenic Container Monitoring

LIBERO Cryogenic Monitoring Solution



LIBERO Cryogenic Monitoring Kit

Suitable for most cryogenic container types

LIBERO Te1-PY well-protected in stainless steel bracket

- Data logger with stainless steel bracket is mounted on top of the lid; temperature probe is mounted through the cork into the upper part of the vapor phase area.

- Send us the lid (cork) or the complete container in order to mount the bracket and the probe for you.

Principle of Mounting on a Cryo Shipper

LIBERO PDF data logger with bracket mounted onto the Lid (Cork)

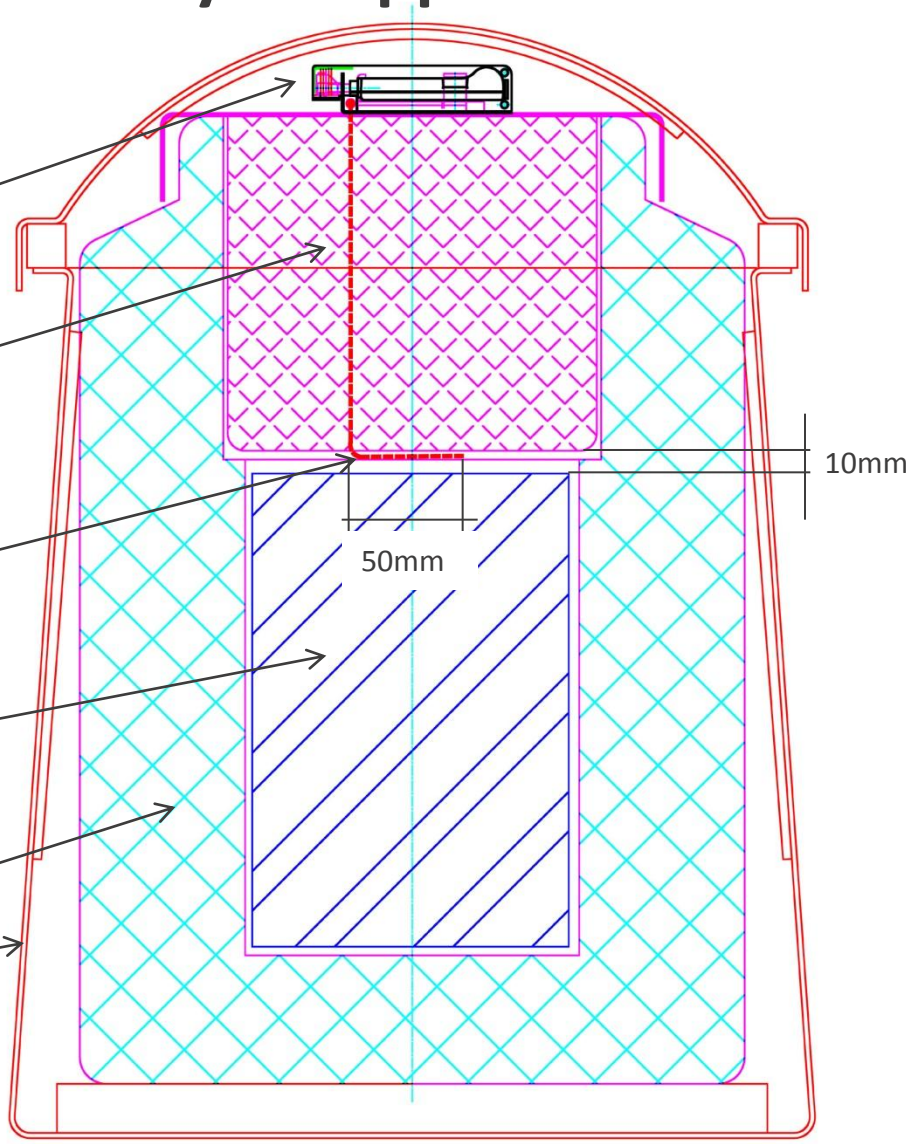
Probe pushed through the insulation

Probe in gap below the insulation
for correct measuring the length of the probe in this space is about 50mm (2 inch).
Use bendable stainless steel probe

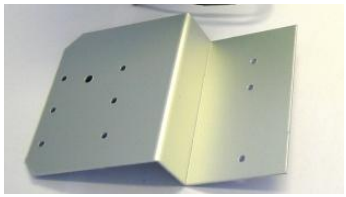
User Volume

Cryo Container with LN2 absorber

Transport Case



Data logger and Bracket



LIBERO PDF Logger Te1-P for external Pt100 probes
Data logger can be plugged into any USB port of a PC, MAC or Linux to generate a evaluation report, no software required

Part No	Description	Log interval min.	Battery
800021	LIBERO Te1-PS, single use	1 minute	100 days
800020	LIBERO Te1-PY, multiple use	1 minute	400 days
800019	LIBERO Te1-P, multiple use	5 minutes	2 years

Alarm Bracket for Pt100 Probe
This is mainly used for fixed installations. The alarm bracket can generate visual and audible alarm. It can trigger external alarms.

Part No	Description
800915	Alarm Bracket

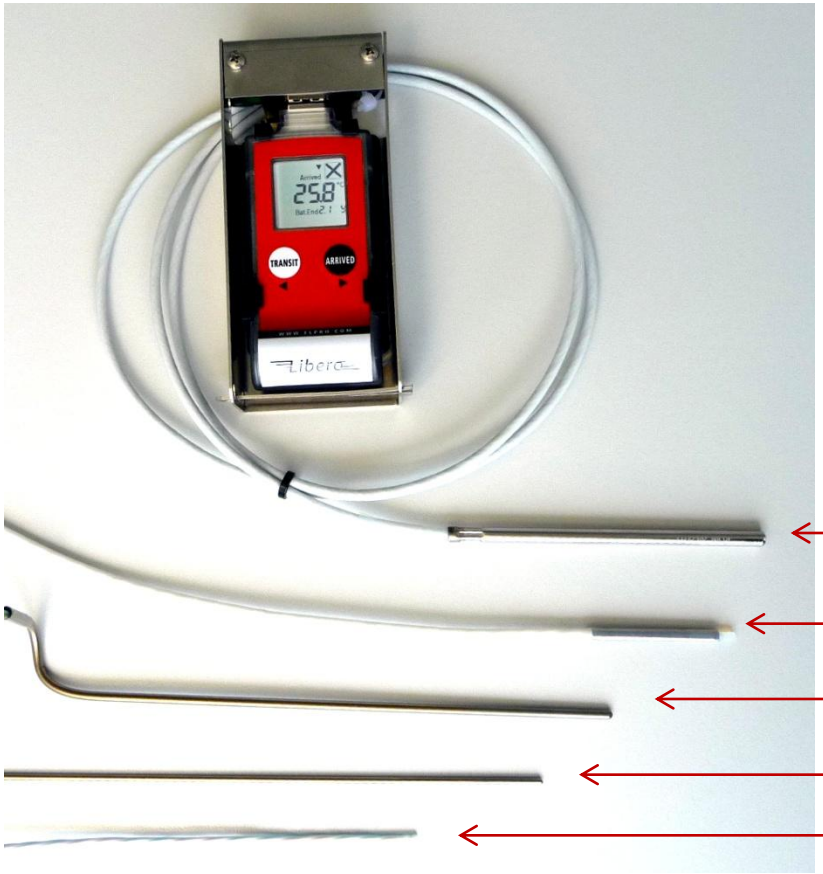
Stainless steel bracket for Libero and Pt100 Probe
Mostly used for mobile cryo shippers, lockable by padlock
Data logger is well protected. Sensor is connected in a terminal.

Part No	Description
800911	Stainless Steel Bracket with terminals
800914	Stainless Steel Bracket to protect the Alarm Bracket

Z- Mounting Plate
To fix the bracket 4402-A to the side of a cork

Part No	Description
800912	Z-Mounting Plate

Overview CRYO Temperature Probes
-200°C .. +200°C



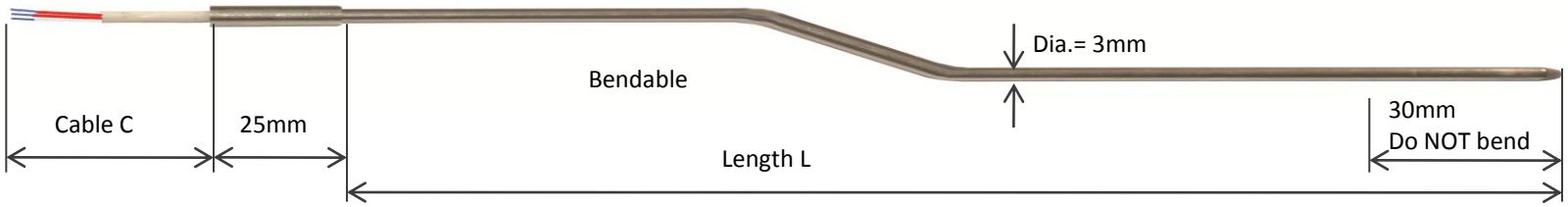
ELPRO CRYO Temperature Probes
All types are available in different lengths and with calibration certificate at -196°C

Type	Diameter
PTFE / Stainless Steel	5.0mm
PTFE / Stainless Steel	4.4mm
Stainless Steel, bendable	3.0mm
Stainless Steel, bendable	2.0mm
PTFE	2.2mm

Cryo Temperature Probes -200°C .. +200°C

Cryo Probe ML Type, Stainless Steel -200°C .. +200°C, bendable

(Example shown with 2 bends, delivered straight)



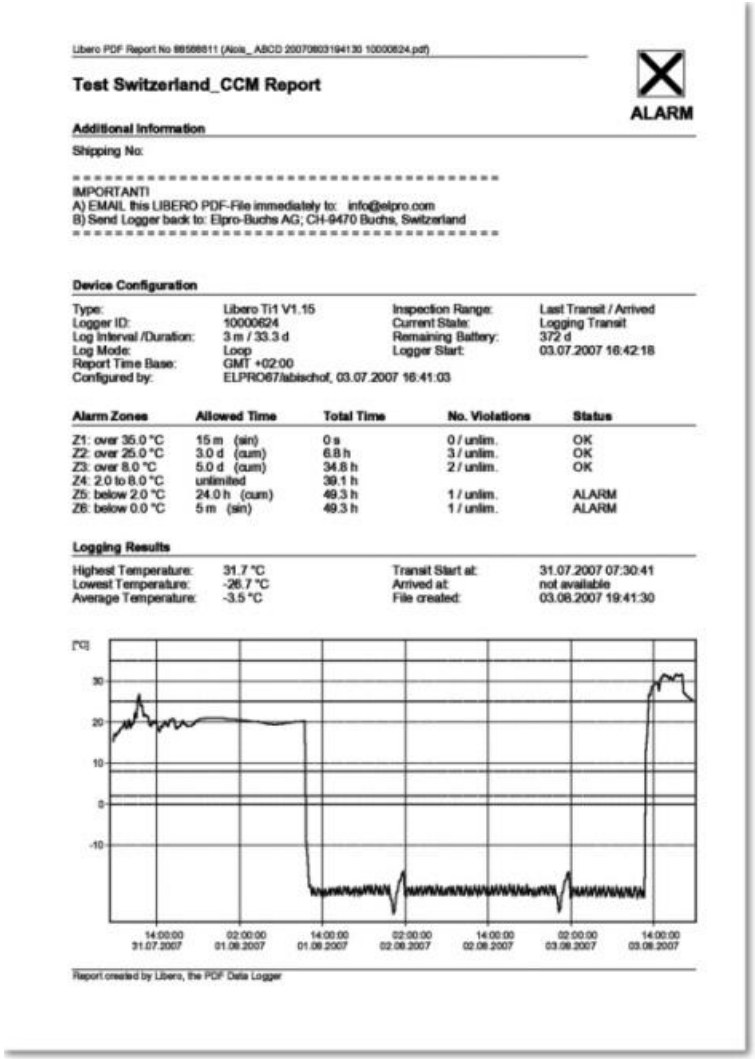
ELPRO CRYO Probe ML (Stainless Steel) D=3mm
bendable for easy adjustment to application
Pt100, Class A, temperature range: -200°C .. +200°C

Part No.	Text	Length L	Cable C
800685	Cryo Probe ML D=3mm	300mm	50mm
800686	Cryo Probe ML D=3mm	370mm	100mm
800687	Cryo Probe ML D=3mm	200mm	50mm
800688	Cryo Probe ML D=3mm	450mm	150mm

Additional Types of Cryo Probes are available on request
- With M12 connector and extension cable
- Made with PTFE cable in different diameters

LIBERO PDF Logger for external Probe and Alarm

- Automatic built-in PDF Generator
- Single & Multiple use versions (400 days/2 years)
- Memory: 16’000 temperature data points
- Measuring range: -200°C ..+200°C
- High accuracy: +/- 0.2° (depending on range)
- Large, multifunctional LCD display
- Alarm: 2 limit values or 5 alarm/time ranges
- Alarm indicator and external Alarm Output
- Function Keys: TRANSIT and ARRIVED
- Detailed evaluation of embedded data possible with free elproVIEWER software



Libero PDF Report No 89588811 (Alois_ABCD 20070803194130 10000624.pdf)

Test Switzerland_CCM Report

ALARM

Additional Information

Shipping No:

IMPORTANT!
A) EMAIL this LIBERO PDF-File immediately to: info@elpro.com
B) Send Logger back to: Elpro-Buchs AG; CH-9470 Buchs, Switzerland

Device Configuration

Type:	Libero Ti1 V1.15	Inspection Range:	Last Transit / Arrived
Logger ID:	10000624	Current State:	Logging Transit
Log Interval /Duration:	3 m / 33.3 d	Remaining Battery:	372 d
Log Mode:	Loop	Logger Start:	03.07.2007 16:42:18
Report Time Base:	GMT +02:00		
Configured by:	ELPRO67/labischof, 03.07.2007 16:41:03		

Alarm Zones	Allowed Time	Total Time	No. Violations	Status
Z1: over 35.0 °C	15 m (sin)	0 s	0 / unlim.	OK
Z2: over 25.0 °C	3.0 d (cum)	6.8 h	3 / unlim.	OK
Z3: over 8.0 °C	5.0 d (cum)	34.8 h	2 / unlim.	OK
Z4: 2.0 to 8.0 °C	unlimited	39.1 h		
Z5: below 2.0 °C	24.0 h (cum)	49.3 h	1 / unlim.	ALARM
Z6: below 0.0 °C	5 m (sin)	49.3 h	1 / unlim.	ALARM

Logging Results

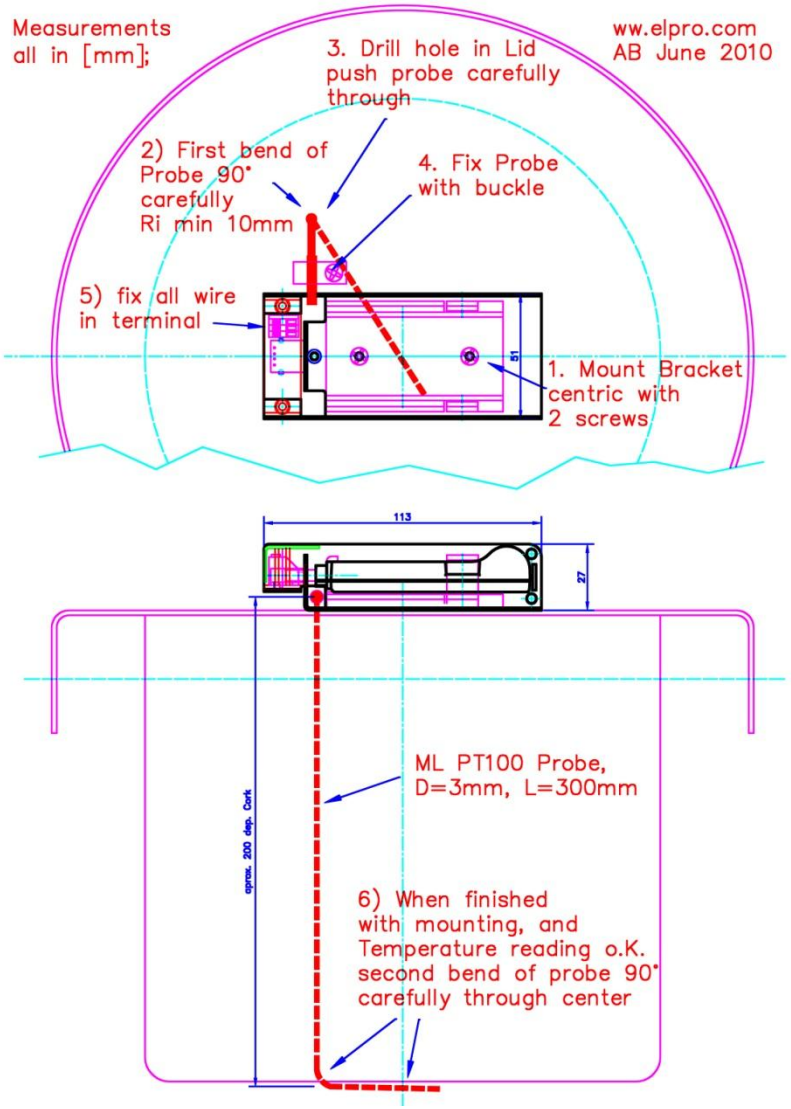
Highest Temperature:	31.7 °C	Transit Start at:	31.07.2007 07:30:41
Lowest Temperature:	-26.7 °C	Arrived at:	not available
Average Temperature:	-3.5 °C	File created:	03.08.2007 19:41:30

[°C]
30
20
10
0
-10
14:00:00 31.07.2007
02:00:00 01.08.2007
14:00:00 01.08.2007
02:00:00 02.08.2007
14:00:00 02.08.2007
02:00:00 03.08.2007
14:00:00 03.08.2007

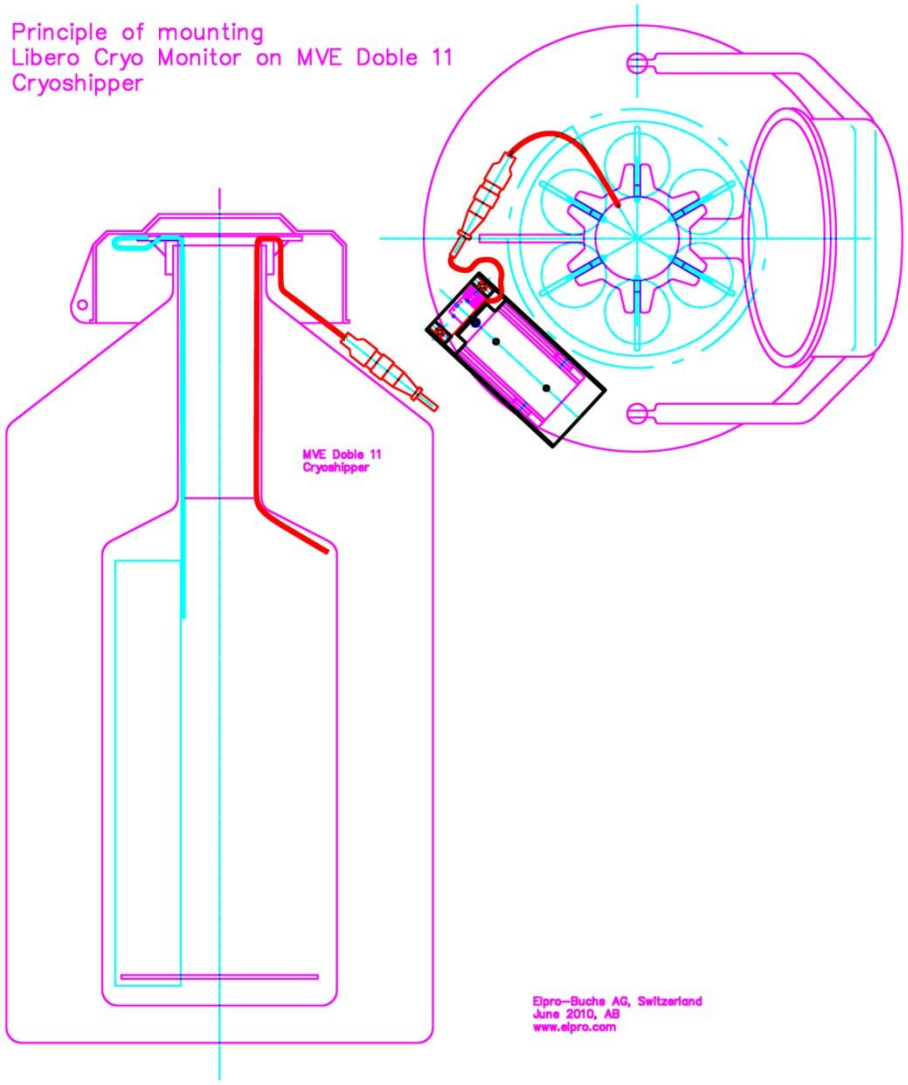
Report created by Libero, the PDF Data Logger

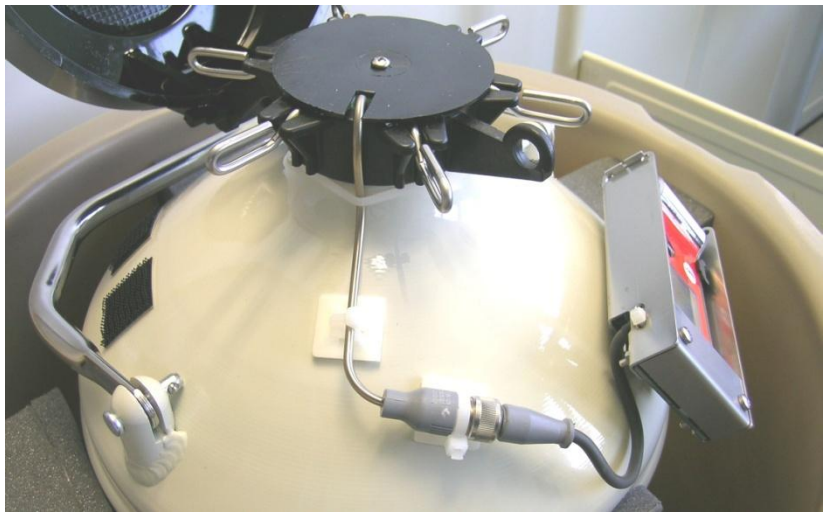
Just plug LIBERO into any USB port:
PDF/A report, automatically created

Mounted on lid of MVE CryoShipper, -XC and -Mini

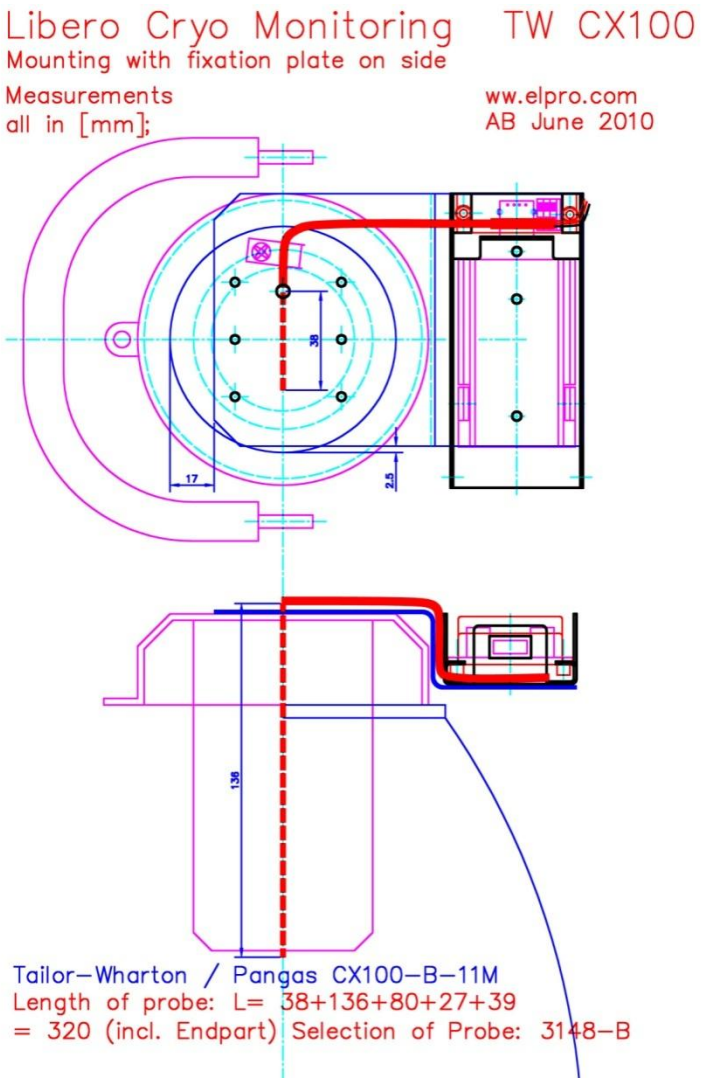


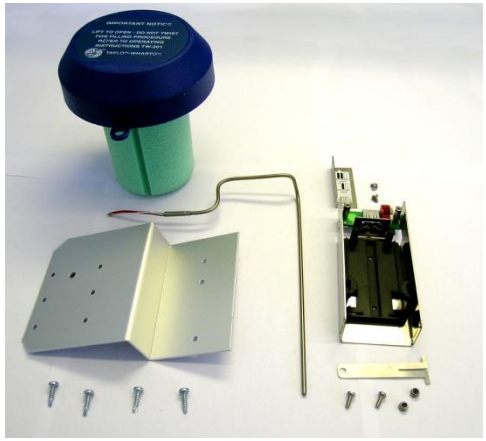
Mounting for smaller Lid Diameter, Bracket fixed to Tank, Vapour shipper: MVE Doble 11

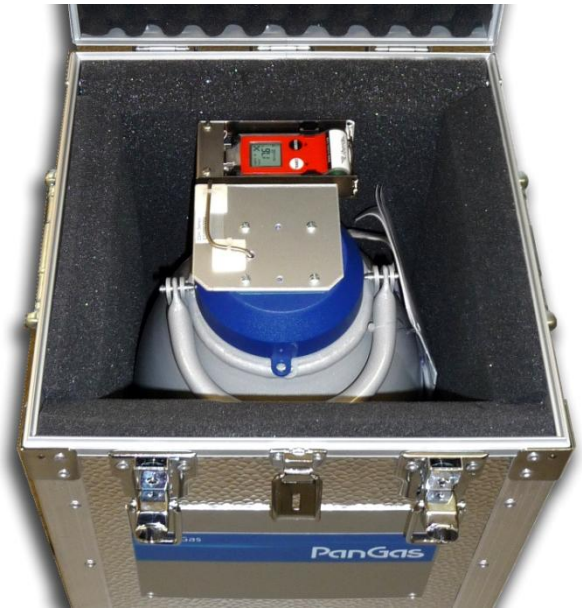




Mounting for Taylor Wharton Cryo Express CX 100

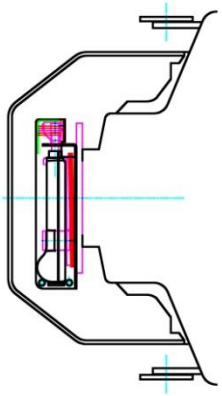


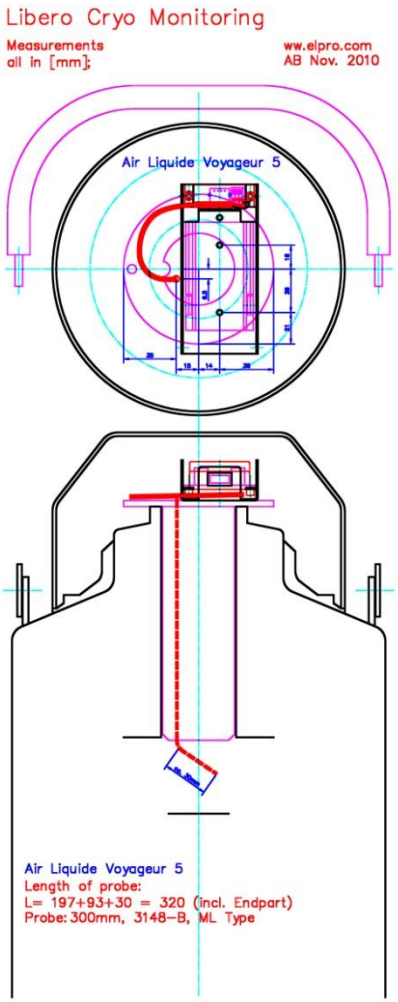




The complete LIBERO PDF Logger is fixed to the cork and still fits into the standard transportation case .

Mounting on AIR LIQUIDE Voyageur 5

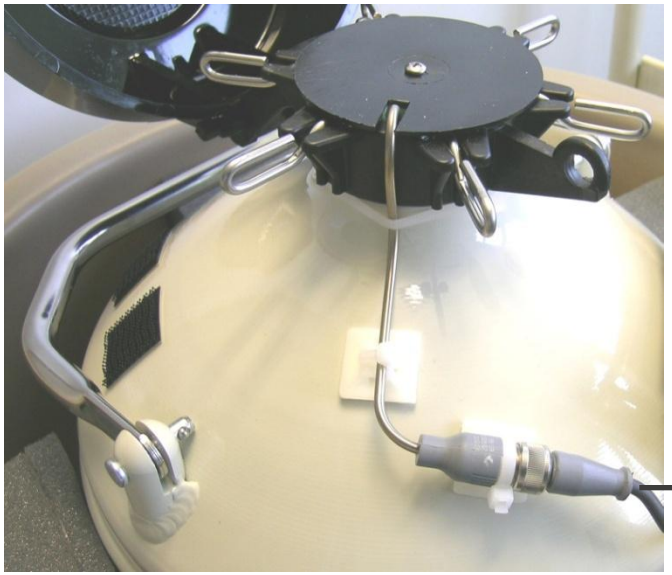




LIBERO Alarming Bracket for fixed Cryo Containers

Cryo Container is equipped with a temperature probe going inside the LN2 tank. When the container is back at its place in the laboratory, it can be connected to the LIBERO Alarm Bracket. This device detects the Alarms generated by the LIBERO PDF Logger and starts beeping. With the internal dry contact, a telephone auto dialler may be connected or any connection to the building alarming system.

Temperature Sensor goes into Cryo Vessel



Telephone
Auto-Dial unit or
building control

Voice Alarm to
Telephone
or GSM / SMS

Beep!

Blink!

LIBERO Alarm Bracket mounted to the wall

Display: - OK or ALARM
- Current Temperature
Data logging: Memory up to one Year
Alarm: - Beeper and LED

100% self-sustaining with 3x AAA Battery in Bracket

Handling and System Components

At departure:

1. Check LIBERO display:
   If it is already in «TRANSIT», press the «STOP/Arrived» button for 3 seconds.
2. **To start a new transport section**, press «START/Transit» button for 3 seconds:

Logging status changes to «TRANSIT» and temperature monitoring becomes active.

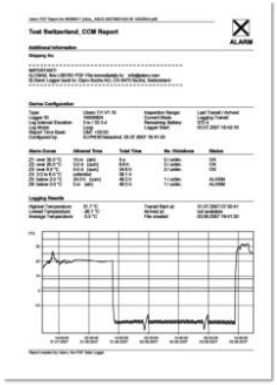
Costs and required Material
is depending on the type of cryo shipper:
- LIBERO PDF Logger Te1-P or Te1-PY
- Temperature Probe
- Stainless steel Bracket
- Mounting fee

Send us an e-mail to swiss@elpro.com indicating your container type and request a quote.

At destination:

1. **To mark the end of a transport section**, press the black «STOP/Arrived» button for about 3 seconds:

   Logging status changes to «ARRIVED».
2. Disconnect LIBERO from Terminal and plug LIBERO into the USB port of your PC.
3. Within few seconds, the evaluation report (PDF/A file) will automatically be generated and presented in the explorer window.



Optional:
elproVIEWER Software
for additional data evaluation of embedded data in PDF File (free) or data overlay/join (liable to cost).

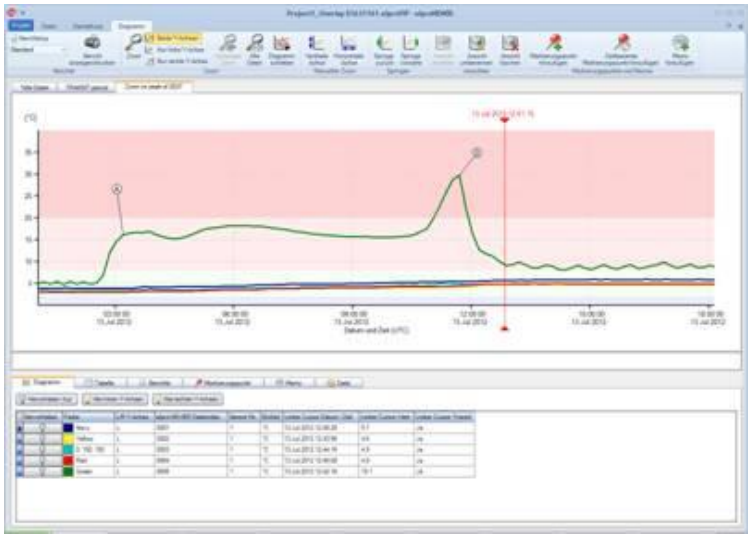
elproVIEWER

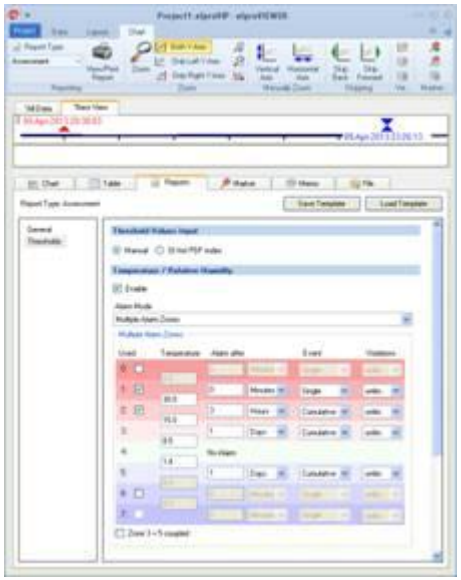
Basic Edition:

- View embedded data of all LIBERO PDF Loggers
- Detailed analysis & powerful reports

Professional Edition:

- Assessment functionality incl. specific report
- Overlay of up to 100 curves
- Join up of up to 16 curves





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