

# LNDS

## Liquid Nitrogen Data Logging System

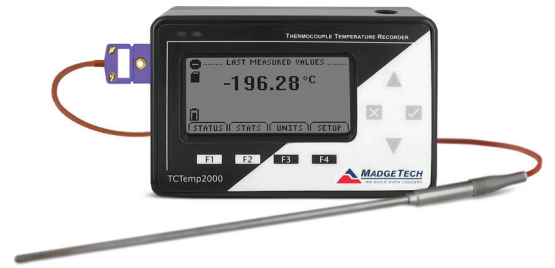
MadgeTech's LNDS, Liquid Nitrogen Data Logging System, is an ultra-low temperature measurement system created specifically for the monitoring of temperature sensitive substances that need to be preserved at cryogenic temperatures.

The LNDS can be mounted to the top or outside of a cryo-shipper or freezer, and the probe sheath can be inserted into the tank. The user can then directly view the internal temperature through the LCD on the logger. Also, a variety of probe sizes are available.

MadgeTech's LNDS is easily user programmable with pre-selected sample rates from between 2 seconds to 24 hours, and it features a programmable start time and date, up to six months in advance.

The 8-button keypad and large LCD provides the user with the ability to view the current reading, minimum, maximum, and average statistics, in real-time. The non-volatile memory will retain data even if AC and battery power are lost. Also, the 9-volt battery it runs on is both user-replaceable and cost effective.

The Liquid Nitrogen Monitoring System includes the TCTemp2000 data logger with an ISO 17025 accredited calibration certificate, thermocouple probe, and 9 volt AC wall mounted power adapter.



## Features

- Measures down to -200 °C
- Equipped with one internal temperature sensor and one type E thermocouple
- Large, backlit LCD display
- Min./max. & average statistics
- Front keypad w/lock feature
- User replaceable battery and external power
- Provides complete time vs. temperature history
- Thermocouple calibrated at -196 °C, -80 °C, and 0 °C for improved accuracy at lower temperatures

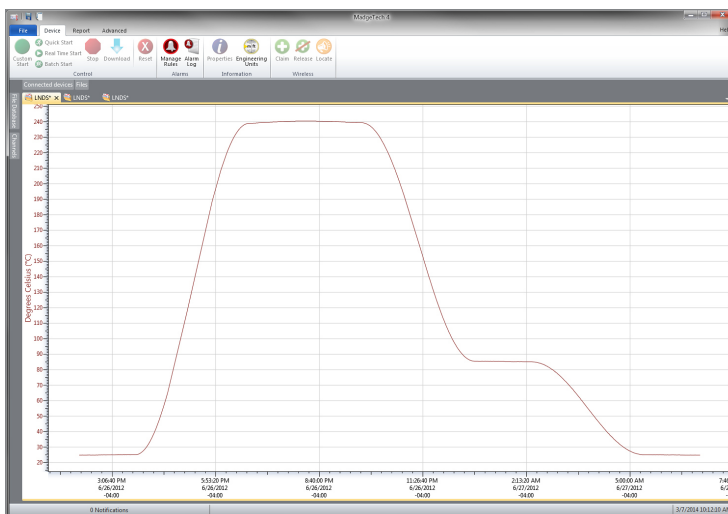
## Applications

- Liquid Nitrogen Monitoring
- -200 °C applications

## Includes

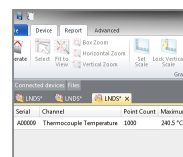
- TCTemp2000 Data Logger
- Type E Thermocouple Probe (36 inch lead wire and 6 inch sheath)
- 9 Volt AC Wall Mounted Power Adapter
- ISO 17025 Accredited Calibration Certificate

## MadgeTech 4 Software Features

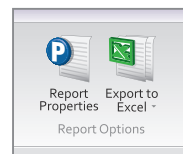


Graph View

- Multiple graph overlay
- Statistics
- Digital calibration
- Zoom in/ zoom out
- Lethality equations (F0, PU)
- Mean Kinetic Temperature
- Full time zone support
- Data annotation
- Min./Max./Average lines
- Summary view



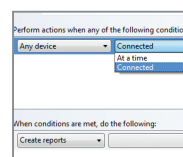
Statistics



Export to Excel

Time	Time Zone	Delta
1:13:37 PM	-0400	-00:00:00
1:14:37 PM	-0400	-00:01:00
1:15:37 PM	-0400	-00:02:00
1:16:37 PM	-0400	-00:03:00
1:17:37 PM	-0400	-00:04:00
1:18:37 PM	-0400	-00:05:00
1:19:37 PM	-0400	-00:06:00
1:20:37 PM	-0400	-00:07:00
1:21:37 PM	-0400	-00:08:00
1:22:37 PM	-0400	-00:09:00
1:23:37 PM	-0400	-00:10:00
1:24:37 PM	-0400	-00:11:00
1:25:37 PM	-0400	-00:12:00
1:26:37 PM	-0400	-00:13:00
1:27:37 PM	-0400	-00:14:00
1:28:37 PM	-0400	-00:15:00

Tabular Data View



Automation

## SPECIFICATIONS

Specifications are subject to change without notice. Specific warranty remedy limitations apply.

TEMPERATURE	
Temperature Sensor	Type E Thermocouple
Thermocouple Measurement Range	-200 °C to +260 °C (-328 °F to +500 °F)
Thermocouple Resolution	0.1 °C (0.18 °F)
Thermocouple Calibrated Accuracy and Range	±1.0 °C (-200 °C to 0 °C)
Internal Channel Temperature Range	-20 °C to +60 °C (-4 °F to +140 °F)
Internal Temperature Resolution	0.01 °C (0.018 °F)
Internal Calibrated Accuracy	±0.5 °C (0 to +50 °C)
Thermocouple Connection	Female subminiature (SMP)
Cold Junction Compensation	Automatic, based on internal channel

DOT-MATRIX LCD	
Dimensions	2.5 in x 1.375 in (63 mm x 35 mm)
Text	Configurable channel text size
Indicators	Power, status, memory
Backlight	Configurable w/auto shut-off and contrast adjustment

GENERAL	
Start Modes	Software programmable start time and date, up to six months in advance
Stop Modes	Programmable stop time
Memory	131,071 readings per channel; 262,143 total readings
Wrap Around	Yes
Password Protection	An optional password may be programmed into the device to restrict access to configuration options. Data may be read out with the password.
Reading Rate	1 reading every 2 seconds to 1 every 24 hours
Calibration	Digital calibration through software
Calibration Date	Automatically recorded within device
Battery Type	9 V lithium battery included, user replaceable; optional AC adapter
Battery Life	1 year battery life at 1 min reading rate with display off. 30 days typical with continuous LCD and no backlight usage.
Data Format	Date and time stamped °C, °F, °R, K
Time Accuracy	1 minute/month at 25 °C (77 °F)
Computer Interface	USB (interface cable required); 115,200 baud
Operating System Compatibility	Windows XP SP3 or later
Software Compatibility	Standard Software version 4.2.19.0 or later Secure Software version 4.2.18.0 or later
Operating Environment	-20 °C to +60 °C 0 to 95%RH non-condensing
Dimensions	4.8 in x 3.3 in x 1.25 in (122 mm x 84 mm x 32 mm)
Thermocouple Dimensions	36 in lead wire, 6 in x 0.1875 in dia. probe
Weight	16 oz
Material	Black anodized aluminum
Approvals	CE

**BATTERY WARNING:** MAY LEAK AND/OR FLAME IF OPENED, RECHARGED, CONNECTED IMPROPERLY, OR DISPOSED OF IN FIRE.

## Ordering Information

LNDS	PN 900349-00	Liquid Nitrogen Data Logging System. Includes data logger with a calibration certificate, thermocouple probe and 9 volt AC wall mounted power adapter.
IFC200	PN 900298-00	USB interface cable
U9VL-J	PN 901804-00	Replacement battery for LNDS