

## USER GUIDE



ULTRAHIGH-PRECISION NTC METER

# ACQ-01



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## I. INTRODUCTION

The ACQ-01 product is a multiple channels ultrahigh-precision NTC meter. It has been developed by SILENTSYS SAS to offer best performances in terms of NTC measurement. It is an ultralow noise acquisition system for thermistors. It accurately reads up to 6 thermistors simultaneously and is provided with a dedicated software for precise temperature monitoring and recording.

The electronic architecture was made to reach a high level of precision while keeping its efficiency. The electronic circuit is integrated in a modern designed anodized aluminum enclosure with standard SMA female connectors for an easy use.

The ACQ-01 module simply works with a provided USB C data cable and is controlled by a dedicated software through the USB connection.

**IMPORTANT:** Read the operating instructions carefully and especially observe the safety information. If you do not follow the safety instructions and information on proper handling in this manual, we assume no liability for any resulting personal injury or damage to property. Such cases will invalidate the warranty/guarantee.

## II. DELIVERY CONTENT

Your ACQ-01 is delivered with a case for an easy transportation and protection. Along with the case, you will find :

- ACQ-01 device
- USB Type C data cable
- User Guide (this document)
- Data Report
- The device software (ask the support or sales team for it)

**IMPORTANT:** For up-to-date Operating Instructions, please contact us directly (see contact information at the end of this document).

### III. SAFETY INSTRUCTIONS

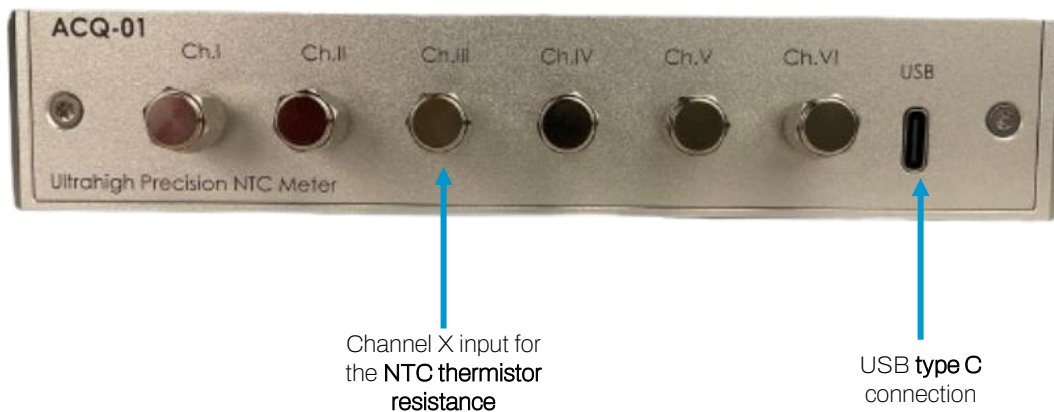
- Consult an expert when in doubt about operation, safety or connection of the device.
- Maintenance, modifications and repairs are to be performed exclusively by SILENTSYS SAS.
- If you are not sure about the correct connection or use, or if questions arise which are not covered by these operating instructions, please do not hesitate to contact our technical support or another qualified specialist.
- The device is not a toy. Keep it out of the reach of children and pets.
- Protect the product from extreme temperatures, direct sunlight, strong jolts, high humidity, moisture, flammable gases, vapors and solvents.
- Do not place the product under any mechanical stress.
- If it is no longer possible to operate the product safely, take it out of operation and protect it from any accidental use. Safe operation can no longer be guaranteed if the product:
  - is visibly damaged,
  - is no longer working properly,
  - has been stored for extended periods in poor ambient conditions or
  - has been subjected to any serious transport-related stresses.
- Also observe the safety and operating instructions of any other devices which are connected to the product.
- Never open the device or insert objects into it through its holes. Such cases will void the warranty/guarantee.
- Always lay the cables so that nobody can trip over or become entangled in them. This poses a risk of injury.
- Check the product for damage(s) each time before use. If you discover any damages, do not use the product.
- Do not operate the product in interior places or rooms with unfavorable ambient conditions. This can damage the sensitive electronics found inside the product and can potentially pose life-threatening risks. Poor ambient conditions are:
  - High humidity (>80 % relative, condensation)
  - Dust, flammable gases, solvent vapors, benzene
  - Electromagnetic fields (motors, transformers, audio systems for model building etc.) or electrostatic fields
- The maximum altitude allowed is 2'000 m (6'561 ft) above sea level.
- This device is powered down by removing the mains plug, which must remain accessible.

### IV. DISPOSAL



Electronic devices are recyclable waste and must not be disposed of in the household waste. At the end of its service life, dispose of the product according to the relevant statutory regulations. You thus fulfill your statutory obligations and contribute to the protection of the environment.

## V. CONNECTION INTERFACES



## VI. QUICK START

- 1) Place the ACQ-01 unit on a stable, level and robust surface.
- 2) Plug the provided data cable to your computer.
- 3) The ACQ-01 is ready to be used. You can now launch the dedicated software.
- 4) You can now connect your thermistors to the ACQ-01 and witness your measurements being displayed on the software.
- 5) To turn OFF the ACQ-01 module, unplug the USB data cable from the device USB port.

## VII. SOFTWARE INTERFACE

List available ports to connect to. Refresh the ports list. Once connected, it cannot be pressed. Toggle **Start Monitoring / Stop Monitoring** from the selected **Serial port** and gives the connection status.

The screenshot shows the SILENTSYS software interface with several sections and annotations:

- Device section:** Shows 'Serial port' as 'COM31 - ACQ01' and a 'Refresh' button. A 'Stop Monitoring' button is also present.
- Plotting area:** Contains six subplots for different channels (Channel 1 to Channel 6). Annotations indicate the possibility to zoom by drawing a rectangle with the left click and to reset zoom with the right click.
- Plotting layout parameters:** Includes 'New Plot', 'Subplot columns' (set to 3), 'Timeframe' (set to 30.000 s), 'Time unit', and 'Clear plots'.
- Recording parameters:** Includes 'CSV Separator' (set to ';'), 'Record duration' (set to 5 m), 'Endless' checkbox (checked), 'Time elapsed', 'Time remaining', and a 'Start recording' button.
- Status section:** Displays messages such as 'Saturation ! Channel n° 5 in saturated state. Please fix your PGA Gain Value.', 'NTC required', and 'Absence of NTC on channel n° 2. Please connect your NTC on the required channel.'
- Channels and plots settings panel:**
  - Channels settings:** Allows selecting a channel (Channel 1), setting the unit (°C), Beta (3435.0), Color (red), and Record status (checked).
  - Plots settings:** Allows selecting a plot (New plot (Number n° 1)), deleting a selected channel, setting the title (New plot), unit (°C), Y label (NTC Resistor [Ω]), and Y max/Y min values.
  - Autoscale:** A checkbox that, if checked, changes the vertical axis limits automatically, making Y max and Y min unavailable.

Change the **PGA** (Programmable Gain Amplifier) of your channels. The channels share the PGAs two by two.

**Channels** **PGA**

**PGA settings**

|               |     |
|---------------|-----|
| Channel 1 ~ 2 | 1   |
| Channel 3 ~ 4 | 64  |
| Channel 5 ~ 6 | 128 |

Set the **PGA gain** to 1, 64 or 128. The gain value is 1 by default.



## VIII. TECHNICAL DATA

### **Specifications**

- Number of channels: 6
- PGA gains value: 1, 64 and 128
- Accuracy: typ. 0.02%
- Resistance range: 30  $\Omega$  to 30 M $\Omega$
- Temperature range: -55 °C to +200 °C (for PGA gain 1)
- Sampling interval: 200 ms
- Resolution: typ. 4.77 m $\Omega$  and 12.37  $\mu$ °C (for PGA gain 1)
- Input connectors: SMA Female
- USB control with dedicated software
- Short circuit protections

### **Mechanicals characteristics**

- Product dimensions: 165 mm x 155 mm x 32 mm
- Product weight: approx. 900 g
- Aluminum case
- Temperature: 0°C to +40°C

## ABOUT SILENTSYS

SILENTSYS SAS is a French company that develops, produces and commercializes innovative ultralow noise systems covering photonics, microwave/THz and electronic modules. Thanks to our well-established know-how and our patented designs, SILENTSYS offers high-performance systems that are compact, easy to use and affordable.

Our goal is to provide systems that are highly compatible with the needs of emerging industrial and laboratory applications such as those related to quantum technologies (Communications, Cryptography, Computing, Metrology, Sensing...).

## CONTACT

Sales: [sales@silentsys.com](mailto:sales@silentsys.com)

Technical Support: [support@silentsys.com](mailto:support@silentsys.com)

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## LOCATION



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## NOTES

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