

## CERTIFICADO DE CALIBRACIÓN / CALIBRATION CERTIFICATE

## INNOVATECIS CIA LTDA

General José María Guerrero N69-170 y Alfonso del Hierro

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Certificado No. (Certificate #): 59960

Fecha de Recepción (Reception Date): 2025-08-14

Fecha de Calibración (Calibration Date): 2025-08-14

Próxima Fecha de Calibración (Calibration Due): 2026-08

Fecha de Emisión (Emission Date): 2025-08-14

**Cliente (Client):** INTEGRATED LOGISTICS SERVICES SERVOLOGISTICS S.A.  
DE LAS AVELLANAS E7-40 Y DE LOS CIPRESES, QUITO (PICHINCHA), ECUADOR

## Información del Instrumento (Instrument Information)

**Equipo (Instrument):** Registrador de Temperatura**Marca (Brand):** INDATA**Modelo (Model):** TL-20**Serie (Serial #):** TSM1639379**Código (Code):** CTD-85**Ubicación:**

(Location):

CC04-UIO12

**Lugar de Calibración:**

(Place of Calibration):

In Situ

In Situ

**Int. de Medición:**

(Measurement Range)

(-27 a -13) °C

**División de escala:**

(Resolution)

1 °C

## Datos de Calibración (Calibration Info)

**Procedimiento (Procedure):** INN-PC-02

## Condiciones Ambientales (Environmental Conditions)

**Temperatura (Temp):**

(20.4 ± 21.1) °C

**Humedad (Humidity):**

(57.7 ± 64.8) %HR

## Trazabilidad (Traceability Info)

**Patrón (Standard)****Marca (Brand)****Cert. #****Última Calibración (Last Cal.)****Período (Period)**

Datalogger

Govee

54330

2025-03-18

1 año

## Resultados (Results)

| Nominal (Nominal) | Patrón (Standard) | UBP (UUT) | Error (Error) | EMP (MPE) | Incertidumbre (Uncertainty) |
|-------------------|-------------------|-----------|---------------|-----------|-----------------------------|
| # -27 °C          | -26.7 °C          | -27.1 °C  | -0.4 °C       | ± 0.5 °C  | ± 0.33 °C                   |
| -18 °C            | -18 °C            | -18.3 °C  | -0.3 °C       | ± 0.5 °C  | ± 1 °C                      |
| -13 °C            | -13.23 °C         | -13.4 °C  | -0.2 °C       | ± 0.5 °C  | ± 1 °C                      |

El presente Certificado de Calibración posee la trazabilidad en esta magnitud a través del Patrón Nacional, de la realización de la unidad de medida en el NPL, NIST, u otro Laboratorio Nacional reconocido al Sistema Internacional de Medidas. La calibración fue realizada bajo un Sistema de Gestión de Laboratorio conforme a la Norma ISO/IEC 17025:2017. Los resultados y su incertidumbre reportada con un nivel de confianza de K=2, 95% son relacionados a este instrumento y en el tiempo que se realizó las medidas. Este Laboratorio no se responsabiliza de los perjuicios que pueda ocasionar el uso inadecuado del instrumento calibrado. La reproducción parcial es prohibida, la reproducción total deberá hacerse con la autorización escrita aprobada por INNOVATEC Industrial Solutions. This Certificate of Calibration provides traceability of measurement through National Standards through units of measurement realized at the NPL, NIST or other recognized National Standard Laboratories to the International System of Units. The calibration was performed under a Laboratory Management System in accordance with the ISO/IEC 17025:2017 Standard. The results and the reported uncertainty at a confidence level of K=2, 95% are related only to this instrument and at the time of measurement. This Laboratory is not responsible for any damages that may result from improper use of the calibrated instrument. Partial reproduction is forbidden, the total reproduction must have an approved written authorization by INNOVATEC Industrial Solutions.

**Comentarios:** Los valores marcados con "#" no se encuentran dentro de la Acreditación frente a A2LA, pero sí dentro de las capacidades Técnicas de Group INNOVATEC Industrial Solutions

**Calibrado por:**

Calibrated by:

Jonathan Fonseca

**Aprobado por:**

Approved by:



|                       |            |                      |                            |
|-----------------------|------------|----------------------|----------------------------|
| Certificado No.:      | 59960      | Equipo (Instrument): | Registrador de Temperatura |
| Fecha de Calibración: | 2025-08-14 | Marca (Brand):       | INDATA                     |

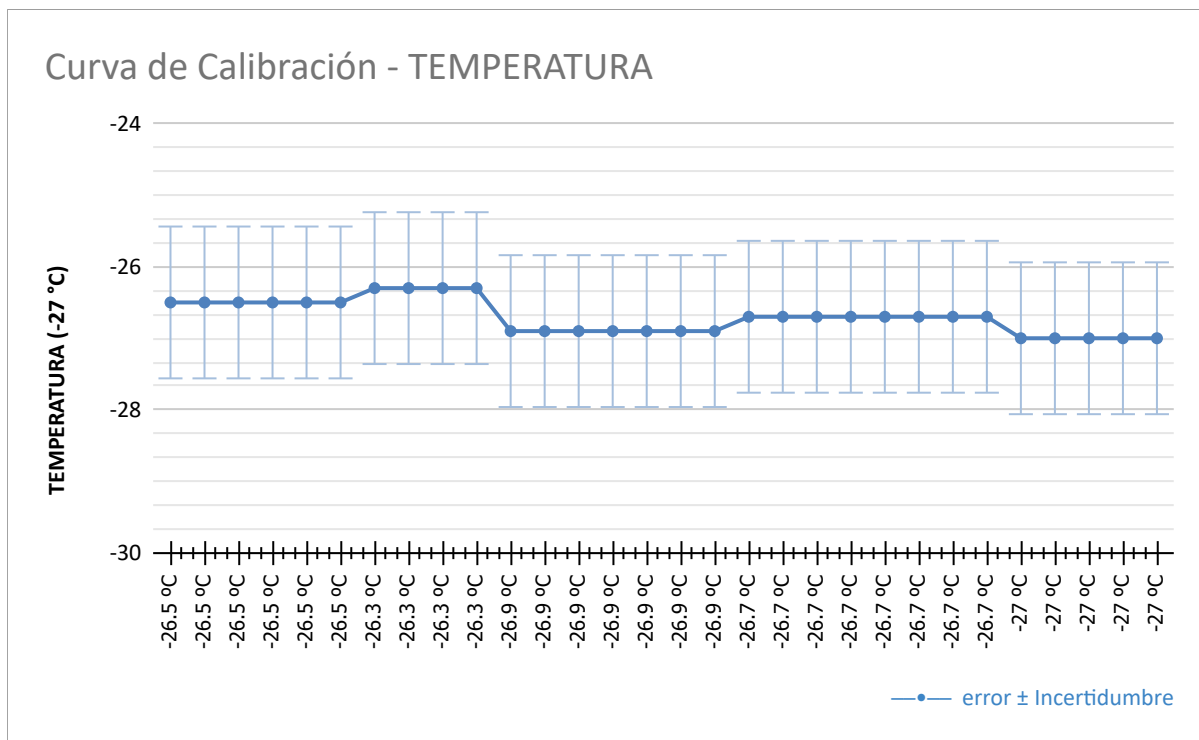
Tabla 1: Lecturas de la Temperatura

| Hora        | Patrón    | UBP      | Error   | Patrón   | UBP      | Error   | Patrón   | UBP      | Error   |
|-------------|-----------|----------|---------|----------|----------|---------|----------|----------|---------|
| 12:34:00 AM | -26.5 °C  | -26.9 °C | -0.4 °C | -17.8 °C | -18.3 °C | -0.5 °C | -13 °C   | -13.5 °C | 0.5 °C  |
| 12:35:00 AM | -26.5 °C  | -26.9 °C | -0.4 °C | -17.8 °C | -18.3 °C | -0.5 °C | -13 °C   | -13.5 °C | 0.5 °C  |
| 12:36:00 AM | -26.5 °C  | -26.9 °C | -0.4 °C | -17.8 °C | -18.3 °C | -0.5 °C | -13 °C   | -13.5 °C | 0.5 °C  |
| 12:37:00 AM | -26.5 °C  | -26.9 °C | -0.4 °C | -17.8 °C | -18.3 °C | -0.5 °C | -13 °C   | -13.5 °C | 0.5 °C  |
| 12:38:00 AM | -26.5 °C  | -26.9 °C | -0.4 °C | -17.8 °C | -18.3 °C | -0.5 °C | -13.1 °C | -13.5 °C | 0.4 °C  |
| 12:39:00 AM | -26.5 °C  | -26.9 °C | -0.4 °C | -18 °C   | -18.3 °C | -0.3 °C | -13.1 °C | -13.5 °C | 0.4 °C  |
| 12:40:00 AM | -26.3 °C  | -26.9 °C | -0.6 °C | -18 °C   | -18.3 °C | -0.3 °C | -13.1 °C | -13.5 °C | 0.4 °C  |
| 12:41:00 AM | -26.3 °C  | -26.9 °C | -0.6 °C | -18 °C   | -18.3 °C | -0.3 °C | -13.1 °C | -13.5 °C | 0.4 °C  |
| 12:42:00 AM | -26.3 °C  | -27.3 °C | -1 °C   | -18.2 °C | -18.3 °C | -0.1 °C | -13.1 °C | -13.5 °C | 0.4 °C  |
| 12:43:00 AM | -26.3 °C  | -27.3 °C | -1 °C   | -18.2 °C | -18.3 °C | -0.1 °C | -13.1 °C | -13.5 °C | 0.4 °C  |
| 12:44:00 AM | -26.9 °C  | -27.3 °C | -0.4 °C | -18.2 °C | -18.3 °C | -0.1 °C | -13.1 °C | -13.5 °C | 0.4 °C  |
| 12:45:00 AM | -26.9 °C  | -27.3 °C | -0.4 °C | -18.2 °C | -18.3 °C | -0.1 °C | -13.1 °C | -13.5 °C | 0.4 °C  |
| 12:46:00 AM | -26.9 °C  | -27.3 °C | -0.4 °C | -18.2 °C | -18.2 °C | 0 °C    | -13.2 °C | -13.5 °C | 0.3 °C  |
| 12:47:00 AM | -26.9 °C  | -27.3 °C | -0.4 °C | -18.2 °C | -18.2 °C | 0 °C    | -13.2 °C | -13.5 °C | 0.3 °C  |
| 12:48:00 AM | -26.9 °C  | -27.1 °C | -0.2 °C | -18.1 °C | -18.2 °C | -0.1 °C | -13.3 °C | -13.5 °C | 0.2 °C  |
| 12:49:00 AM | -26.9 °C  | -27.1 °C | -0.2 °C | -18.1 °C | -18.2 °C | -0.1 °C | -13.3 °C | -13.5 °C | 0.2 °C  |
| 12:50:00 AM | -26.9 °C  | -27.1 °C | -0.2 °C | -18.1 °C | -18.2 °C | -0.1 °C | -13.3 °C | -13.5 °C | 0.2 °C  |
| 12:51:00 AM | -26.7 °C  | -27.1 °C | -0.4 °C | -18.1 °C | -18.4 °C | -0.3 °C | -13.3 °C | -13.3 °C | 0 °C    |
| 12:52:00 AM | -26.7 °C  | -27.1 °C | -0.4 °C | -18.1 °C | -18.4 °C | -0.3 °C | -13.3 °C | -13.3 °C | 0 °C    |
| 12:53:00 AM | -26.7 °C  | -27.1 °C | -0.4 °C | -18.1 °C | -18.4 °C | -0.3 °C | -13.3 °C | -13.3 °C | 0 °C    |
| 12:54:00 AM | -26.7 °C  | -27.1 °C | -0.4 °C | -18 °C   | -18.4 °C | -0.4 °C | -13.3 °C | -13.3 °C | 0 °C    |
| 12:55:00 AM | -26.7 °C  | -27.1 °C | -0.4 °C | -18 °C   | -18.4 °C | -0.4 °C | -13.3 °C | -13.3 °C | 0 °C    |
| 12:56:00 AM | -26.7 °C  | -27.1 °C | -0.4 °C | -18 °C   | -18.4 °C | -0.4 °C | -13.5 °C | -13.3 °C | -0.2 °C |
| 12:57:00 AM | -26.7 °C  | -27.3 °C | -0.6 °C | -18 °C   | -18.4 °C | -0.4 °C | -13.5 °C | -13.3 °C | -0.2 °C |
| 12:58:00 AM | -26.7 °C  | -27.3 °C | -0.6 °C | -18 °C   | -18.4 °C | -0.4 °C | -13.5 °C | -13.1 °C | -0.4 °C |
| 12:59:00 AM | -27 °C    | -27.3 °C | -0.3 °C | -18 °C   | -18.4 °C | -0.4 °C | -13.5 °C | -13.1 °C | -0.4 °C |
| 1:00:00 AM  | -27 °C    | -27.3 °C | -0.3 °C | -17.8 °C | -18.3 °C | -0.5 °C | -13.3 °C | -13.1 °C | -0.2 °C |
| 1:01:00 AM  | -27 °C    | -27.3 °C | -0.3 °C | -17.8 °C | -18.3 °C | -0.5 °C | -13.3 °C | -13.1 °C | -0.2 °C |
| 1:02:00 AM  | -27 °C    | -27.3 °C | -0.3 °C | -17.8 °C | -18.3 °C | -0.5 °C | -13.3 °C | -13.1 °C | -0.2 °C |
| 1:03:00 AM  | -27 °C    | -27.3 °C | -0.3 °C | -17.8 °C | -18.3 °C | -0.5 °C | -13.3 °C | -13.1 °C | -0.2 °C |
| PROMEDIO    | -26.7 °C  | -27.1 °C |         |          |          |         |          |          |         |
| MAX         | -26.3 °C  | -26.9 °C |         |          |          |         |          |          |         |
| MIN         | -27 °C    | -27.3 °C |         |          |          |         |          |          |         |
| PROMEDIO    | -18 °C    | -18.3 °C |         |          |          |         |          |          |         |
| MAX         | -17.8 °C  | -18.2 °C |         |          |          |         |          |          |         |
| MIN         | -18.2 °C  | -18.4 °C |         |          |          |         |          |          |         |
| PROMEDIO    | -13.23 °C | -13.4 °C |         |          |          |         |          |          |         |
| MAX         | -13 °C    | -13.1 °C |         |          |          |         |          |          |         |
| MIN         | -13.5 °C  | -13.5 °C |         |          |          |         |          |          |         |

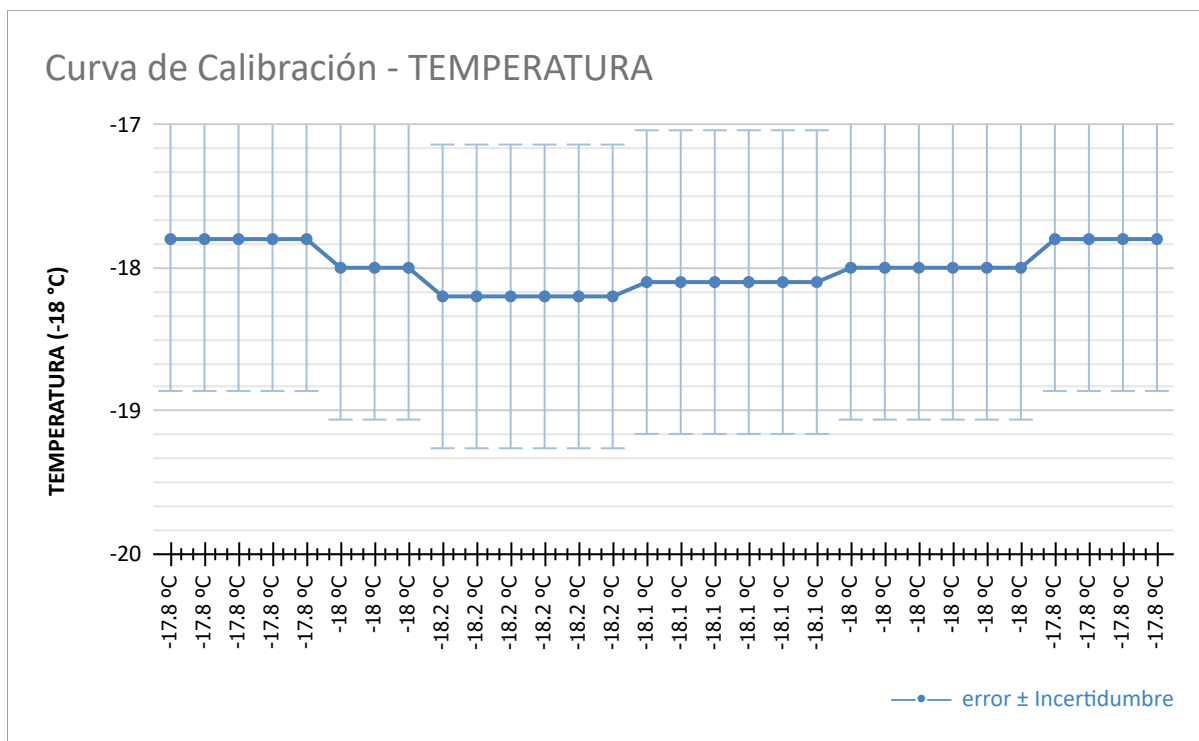
**Certificado No.:** 59960  
**Fecha de Calibración:** 2025-08-14

**Equipo (Instrument):** Registrador de Temperatura  
**Marca (Brand):** INDATA

### Curva de Calibración -27 °C



### Curva de Calibración -18 °C



Curva de Calibración -13 °C

