

CERTIFICADO DE CALIBRACIÓN / CALIBRATION CERTIFICATE

INNOVATECIS CIA LTDA

Certificado No. (Certificate #): 46374

General José Maria Guerrero N69-170 y Alfonso del Hierro

Fecha de Recepción (Reception Date): 2024-06-07

Quito, Ecuador

Fecha de Calibración (Calibration Date): 2024-06-07

(+593) 02 6040 607

Próxima Fecha de Calibración (Calibration Due): -

innovatec@innovatec.com.ec

Fecha de Emisión (Emission Date): 2024-06-11

Cliente (Client):

Productos Alimenticios Pascual, S.A

Ave. José Agustín Arango, Juan Díaz

Información del Instrumento (Instrument Information)

Equipo (Instrument): Cámara Climática

Int. de Medición: (Measurement Range) -3 a 40 °C/Amb. a 95%

Ubicación (Location): Laboratorio

Marca (Brand): Salva

División de escala: (Resolution) 1 °C/1%

Lugar de Calibración: (Place of Calibration): In Situ / On Site

Modelo (Model): 15

Serie (Serial #): 284318

Código (Code): LI&D-FER-02

Datos de Calibración (Calibration Info)

Condiciones Ambientales (Environmental Conditions)

Procedimiento (Procedure): INN-PC-29

Temperatura (Temp): (27.1 °C ± 27.5 °C)

Humedad (Humidity): (61 %HR ± 61 %HR)

Trazabilidad (Traceability Info)				
Patrón (Standard)	Marca (Brand)	Cert. #	Última Calibración (Last Cal.)	Período (Period)
Termohigrómetro	Elitech	43466 al 43461	2024-02-19	1 año
Termohigrómetro	Hobo	43467	2024-02-19	1 año

Resultados (Results)					
Patrón (Standard)	UBP (UUT)	Error (Error)	Incertidumbre (Uncertainty)	Estabilidad (Stability)	Uniformidad (Uniformity)
°C	°C	°C			Axial / Radial
25.1	25.0	-0.1	± 1.4°C	± 1.5 °C	± 1.3 °C / ±0.8 °C
34.3	33.6	-0.7	± 2.2°C	± 2.1 °C	± 2.9 °C / ±0.9 °C

Patrón (Standard)	UBP (UUT)	Error (Error)	Incertidumbre (Uncertainty)	Estabilidad (Stability)	Uniformidad (Uniformity)
%HR	%HR	%HR			Axial / Radial
70.2	72	1.3	± 19°C	± 27.1 %HR	±15.8%HR / ±11.8 %HR
74.5	73	-1.6	± 17°C	± 24.2 %HR	±13.3%HR / ±10.6 %HR

El presente Certificado de Calibración posee la trazabilidad en esta magnitud hacia el Patrón Nacional, a través de la realización de la unidad de medida en el NPL, NIST, o 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 to the National Standard, 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:

Para el análisis en la magnitud de temperatura, fueron considerados los valores obtenidos con la referencia central para determinar el desvío del punto de control. El indicador presenta variaciones altas respecto a los ajustes en la cámara.

Calibrado por:

Ing. Rubén Ortega

Aprobado por:



Certificado No.: 46374
Fecha de Calibración: 2024-06-07

Equipo (Instrument): Cámara Climática
Marca (Brand): Salva

Tabla 1.0: Lecturas de los sensores durante desplazamiento en la zona de trabajo @ 25 °C										
Tiempo (hh:mm:ss)	Lectura del Patrón °C @ 25 °C									
	PC	P1	P2	P3	P4	P5	P6	P7	P8	P9
10:19:35 AM	25.1	25.1	25.4	25.3	25.2	25.1	24.8	25.3	24.6	25.1
10:20:35 AM	25.0	25.0	25.2	25.1	25.1	25.1	24.6	25.1	24.6	25.0
10:21:35 AM	24.9	24.9	25.0	24.9	24.9	25.0	24.5	25.0	24.5	24.9
10:22:35 AM	24.9	24.9	25.0	24.9	24.9	24.9	24.3	24.9	24.4	24.9
10:23:35 AM	24.8	25.1	25.1	24.9	25.1	24.9	24.3	25.0	24.5	24.8
10:24:35 AM	24.9	25.2	25.2	25.0	25.1	24.9	24.4	25.1	24.4	24.9
10:25:35 AM	24.9	25.3	25.4	25.1	25.3	24.9	24.4	25.2	24.5	24.9
10:26:35 AM	25.0	25.5	25.6	25.4	25.5	25.0	24.6	25.4	24.6	25.0
10:27:35 AM	25.0	25.7	25.8	25.6	25.6	25.1	24.7	25.4	24.6	25.0
10:28:35 AM	25.1	25.7	25.9	25.7	25.7	25.1	24.8	25.5	24.7	25.1
10:29:35 AM	25.2	25.9	26.0	25.9	25.9	25.2	24.9	25.7	24.7	25.2
10:30:35 AM	25.3	25.9	26.1	26.0	25.9	25.3	25.0	25.7	24.7	25.3
10:31:35 AM	25.4	25.9	26.1	26.0	25.9	25.3	25.1	25.8	24.7	25.4
10:32:35 AM	25.4	25.9	26.1	26.0	25.9	25.4	25.1	25.8	24.8	25.4
10:33:35 AM	25.3	25.7	25.9	25.9	25.7	25.3	25.1	25.6	24.7	25.3
10:34:35 AM	25.3	25.5	25.7	25.7	25.5	25.3	25.0	25.5	24.7	25.3
10:35:35 AM	25.2	25.3	25.5	25.5	25.4	25.2	24.8	25.4	24.7	25.2
10:36:35 AM	25.1	25.0	25.2	25.2	25.1	25.1	24.7	25.1	24.6	25.1
10:37:35 AM	24.9	24.8	24.9	24.9	24.9	24.9	24.4	24.9	24.4	24.9
10:38:35 AM	24.8	24.7	24.8	24.7	24.7	24.9	24.2	24.7	24.4	24.8
10:39:35 AM	24.7	24.6	24.7	24.6	24.7	24.8	24.1	24.7	24.3	24.7
10:40:35 AM	24.7	24.7	24.7	24.5	24.7	24.7	24.0	24.6	24.2	24.7
10:41:35 AM	24.6	24.8	24.8	24.6	24.8	24.7	24.0	24.7	24.2	24.6
10:42:35 AM	24.7	24.9	24.9	24.7	24.9	24.7	24.0	24.7	24.2	24.7
Promedio	25.0	25.3	25.4	25.3	25.3	25.0	24.6	25.2	24.5	25.0
Desviación	0.2	0.4	0.5	0.5	0.4	0.2	0.4	0.4	0.2	0.2
Max	25.4	25.9	26.1	26.0	25.9	25.4	25.1	25.8	24.8	25.4
Min	24.6	24.6	24.7	24.5	24.7	24.7	24.0	24.6	24.2	24.6
ΔT Est.	1.5									
ΔT Radial	0.8									
ΔT Axial	1.3									

Fin de Certificado (End of Certificate)

NO VALIDO

Certificado No.: 46374
Fecha de Calibración: 2024-06-07

Equipo (Instrument): Cámara Climática
Marca (Brand): Salva

Tabla 1.0: Lecturas de los sensores durante desplazamiento en la zona de trabajo @ 73 %HR										
Tiempo (hh:mm:ss)	Lectura del Patrón °C @ 73 %HR									
	PC	P1	P2	P3	P4	P5	P6	P7	P8	P9
1:17:00 PM	62.0	73.2	74.0	67.4	69.4	70.8	68.4	72.6	72.6	66.1
1:17:30 PM	70.0	74.6	68.5	76.7	74.1	73.9	71.1	73.9	73.9	68.6
1:18:00 PM	89.0	59.3	61.9	59.0	53.1	69.4	70.6	71.6	71.6	62.7
1:18:30 PM	68.0	77.1	77.7	70.8	71.9	71.2	68.8	73.9	73.9	66.8
1:19:00 PM	71.0	79.2	72.8	79.5	78.3	75.7	72.0	76.1	76.1	70.4
1:19:30 PM	81.0	59.3	61.0	65.3	54.3	71.7	72.4	73.4	73.4	64.2
1:20:00 PM	60.0	77.5	77.6	70.9	71.7	71.7	69.7	75.2	75.2	67.7
1:20:30 PM	63.0	80.5	73.8	80.5	79.2	76.5	72.5	77.4	77.4	71.7
1:21:00 PM	89.0	57.7	59.8	65.8	54.0	72.1	72.9	74.0	74.0	64.9
1:21:30 PM	61.0	74.4	75.5	67.8	69.5	72.1	70.3	74.9	74.9	67.7
1:22:00 PM	62.0	78.1	72.3	79.0	77.1	76.1	72.1	76.6	76.6	71.0
1:22:30 PM	70.0	58.1	60.8	63.1	53.8	71.7	72.6	73.6	73.6	64.6
1:23:00 PM	89.0	72.0	73.1	67.9	68.6	71.7	69.9	74.5	74.5	67.3
1:23:30 PM	68.0	72.6	66.9	74.8	73.3	74.9	71.7	74.9	74.9	69.2
1:24:00 PM	71.0	58.4	61.2	57.3	54.4	69.9	71.7	71.8	71.8	63.7
1:24:30 PM	81.0	70.7	71.9	66.9	68.1	70.8	69.4	73.1	73.1	66.5
1:25:00 PM	60.0	72.2	66.7	74.0	72.9	73.5	71.2	73.5	73.5	67.9
1:25:30 PM	63.0	56.1	59.7	57.9	52.4	68.5	70.7	70.8	70.8	62.3
1:26:00 PM	89.0	71.8	73.3	66.3	68.0	69.9	68.4	72.1	72.1	65.5
1:26:30 PM	61.0	77.1	72.0	77.4	76.1	73.5	70.6	74.3	74.3	68.8
1:27:00 PM	62.0	57.4	60.0	62.0	52.6	69.8	71.5	72.0	72.0	62.7
1:27:30 PM	70.0	74.9	75.9	68.8	69.5	70.3	69.2	73.8	73.8	65.8
1:28:00 PM	89.0	81.5	75.5	81.3	79.5	74.7	71.5	76.0	76.0	70.5
1:28:30 PM	68.0	59.3	58.0	67.5	56.2	72.1	72.8	73.8	73.8	64.6
Promedio	72	69.7	68.7	69.5	66.6	72.2	70.9	73.9	73.9	66.7
Desviación	11	8.8	6.7	7.1	9.8	2.2	1.4	1.6	1.6	2.7
Max	89	81.5	77.7	81.3	79.5	76.5	72.9	77.4	77.4	71.7
Min	60	56.1	58.0	57.3	52.4	68.5	68.4	70.8	70.8	62.3
ΔT Est.	27.1									
ΔT Radial	11.8									
ΔT Axial	15.8									

Fin de Certificado (End of Certificate)

Certificado No.: 46374
Fecha de Calibración: 2024-06-07

Equipo (Instrument): Cámara Climática
Marca (Brand): Salva

Tabla 1.0: Lecturas de los sensores durante desplazamiento en la zona de trabajo @ 35 °C										
Tiempo (hh:mm:ss)	Lectura del Patrón °C @ 35 °C									
	PC	P1	P2	P3	P4	P5	P6	P7	P8	P9
12:03:35 PM	32.4	34.1	34.5	34.6	33.9	32.3	33.5	34.3	31.7	32.4
12:04:35 PM	32.6	34.2	34.8	34.8	34.1	32.5	33.7	34.5	31.9	32.6
12:05:35 PM	32.9	34.5	35.0	35.0	34.4	32.8	33.9	34.7	32.1	32.9
12:06:35 PM	33.0	34.6	35.1	35.2	34.5	32.9	34.1	34.9	32.3	33.0
12:07:35 PM	33.2	34.6	35.3	35.3	34.5	33.0	34.2	35.0	32.5	33.2
12:08:35 PM	33.3	34.7	35.3	35.4	34.6	33.2	34.4	35.1	32.7	33.3
12:09:35 PM	33.4	34.6	35.3	35.4	34.5	33.3	34.5	35.1	32.8	33.4
12:10:35 PM	33.5	34.6	35.4	35.4	34.5	33.4	34.5	35.2	32.9	33.5
12:11:35 PM	33.6	34.7	35.4	35.3	34.6	33.5	34.5	35.2	33.0	33.6
12:12:35 PM	33.6	34.6	35.3	35.3	34.5	33.6	34.6	35.2	33.1	33.6
12:13:35 PM	33.7	34.5	35.3	35.2	34.5	33.7	34.6	35.2	33.2	33.7
12:14:35 PM	33.7	34.6	35.3	35.2	34.5	33.8	34.6	35.2	33.3	33.7
12:15:35 PM	33.7	34.4	35.2	35.1	34.4	33.8	34.6	35.2	33.3	33.7
12:16:35 PM	33.8	34.5	35.1	35.0	34.4	33.9	34.5	35.2	33.4	33.8
12:17:35 PM	33.8	34.5	35.1	35.0	34.4	34.0	34.5	35.2	33.5	33.8
12:18:35 PM	33.8	34.4	35.0	35.0	34.4	34.0	34.5	35.1	33.5	33.8
12:19:35 PM	33.8	34.4	34.9	34.9	34.4	34.0	34.5	35.1	33.6	33.8
12:20:35 PM	33.9	34.5	34.9	34.9	34.4	34.1	34.5	35.2	33.6	33.9
12:21:35 PM	33.9	34.4	34.9	34.9	34.4	34.1	34.5	35.1	33.6	33.9
12:22:35 PM	33.9	34.4	34.9	34.9	34.4	34.2	34.4	35.1	33.7	33.9
12:23:35 PM	33.9	34.5	34.9	34.9	34.5	34.2	34.4	35.2	33.7	33.9
12:24:35 PM	34.0	34.5	34.9	34.9	34.4	34.2	34.5	35.1	33.7	34.0
12:25:35 PM	34.0	34.5	34.9	34.9	34.4	34.3	34.5	35.1	33.8	34.0
12:26:35 PM	34.1	34.6	35.0	34.9	34.5	34.3	34.5	35.2	33.8	34.1
Promedio	33.6	34.5	35.1	35.1	34.4	33.6	34.4	35.1	33.1	33.6
Desviación	0.5	0.1	0.2	0.2	0.1	0.6	0.3	0.2	0.6	0.5
Max	34.1	34.7	35.4	35.4	34.6	34.3	34.6	35.2	33.8	34.1
Min	32.4	34.1	34.5	34.6	33.9	32.3	33.5	34.3	31.7	32.4
ΔT Est.	2.1									
ΔT Radial	0.9									
ΔT Axial	2.9									

Fin de Certificado (End of Certificate)

Certificado No.: 46374

Fecha de Calibración: 2024-06-07

Equipo (Instrument): Cámara Climática

Marca (Brand): Salva

Tabla 1.0: Lecturas de los sensores durante desplazamiento en la zona de trabajo @ 75 %HR										
Tiempo (hh:mm:ss)	Lectura del Patrón °C @ 75 %HR									
	PC	P1	P2	P3	P4	P5	P6	P7	P8	P9
1:17:00 PM	70	69.1	69.0	67.7	62.0	81.1	76.0	78.4	78.0	73.8
1:17:30 PM	70	82.0	79.6	73.7	78.2	81.5	73.7	80.2	82.0	77.5
1:18:00 PM	70	81.9	72.8	80.8	82.1	84.1	77.0	81.1	82.5	79.6
1:18:30 PM	85	66.1	66.4	64.9	60.7	80.3	75.7	77.1	77.7	73.1
1:19:00 PM	60	78.7	77.7	70.8	74.9	80.3	73.4	78.5	80.8	76.1
1:19:30 PM	75	80.2	72.0	78.2	80.4	83.4	75.7	79.0	81.3	78.2
1:20:00 PM	86	65.5	66.0	63.1	60.6	78.2	74.8	75.8	76.4	72.0
1:20:30 PM	61	78.2	77.0	71.1	74.5	79.1	72.5	77.6	80.0	75.2
1:21:00 PM	78	80.4	72.0	78.1	80.4	82.2	74.8	78.1	80.1	77.5
1:21:30 PM	85	64.6	65.0	64.4	59.6	76.9	73.9	74.9	75.1	71.0
1:22:00 PM	60	77.5	76.3	71.1	74.0	78.3	71.6	76.7	78.8	74.0
1:22:30 PM	73	80.7	70.1	79.0	80.5	81.4	74.4	77.7	79.2	76.8
1:23:00 PM	83	64.0	64.7	63.7	58.9	76.1	73.4	74.0	74.3	70.1
1:23:30 PM	60	77.3	76.8	71.0	73.3	77.4	71.1	75.8	77.9	73.2
1:24:00 PM	71	81.3	70.8	78.5	81.0	80.6	73.9	77.2	78.4	76.1
1:24:30 PM	85	63.3	64.4	61.6	58.1	75.7	73.4	74.0	73.4	69.5
1:25:00 PM	70	77.1	75.9	71.1	73.4	76.6	71.1	75.8	77.1	72.7
1:25:30 PM	70	81.8	71.7	77.9	81.2	80.1	73.4	77.2	78.0	75.9
1:26:00 PM	70	63.4	64.7	63.6	57.9	75.2	73.4	74.0	72.9	69.3
1:26:30 PM	85	77.2	76.8	70.8	72.9	76.1	70.6	75.8	76.6	72.4
1:27:00 PM	60	82.1	72.8	78.5	81.5	79.7	73.4	77.6	77.5	75.7
1:27:30 PM	75	63.1	64.4	64.9	57.9	74.8	73.4	74.0	72.5	69.1
1:28:00 PM	86	76.9	76.6	70.7	72.6	75.7	70.6	75.8	76.2	72.2
1:28:30 PM	61	82.4	75.9	77.9	81.8	79.3	73.4	77.2	77.6	75.9
Promedio	73	74.8	71.6	71.4	71.6	78.9	73.5	76.8	77.7	74.0
Desviación	9	7.4	5.0	6.1	9.3	2.7	1.7	1.9	2.7	3.0
Max	86	82.4	79.6	80.8	82.1	84.1	77.0	81.1	82.5	79.6
Min	60	63.1	64.4	61.6	57.9	74.8	70.6	74.0	72.5	69.1
ΔT Est.	24.2									
ΔT Radial	10.6									
ΔT Axial	13.3									

Fin de Certificado (End of Certificate)