

DIAGRAMA BIOCLIMATICO DE ZONAS DE VIDA DEL SISTEMA HOLDRIDGE ADAPTADO E INTERPRETADO A LA GEOGRAFIA DEL PERU por : Ing. Carlos J. Zamora J. (2009)

Superficie Territorial : 1 285 215,60 Km²

Componentes Principales

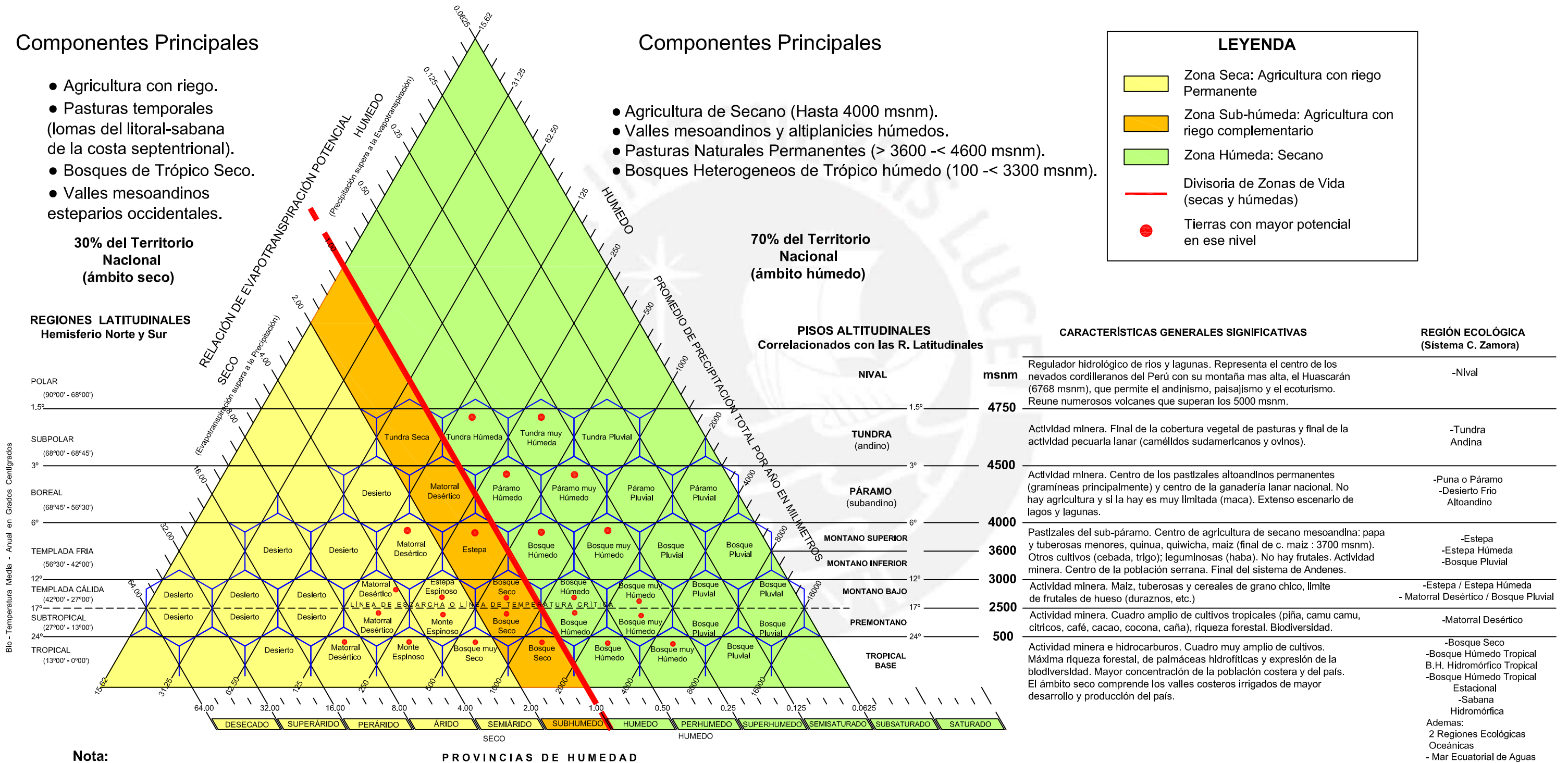
- Agricultura con riego.
- Pasturas temporales (lomas del litoral-sabana de la costa septentrional).
- Bosques de Trópico Seco.
- Valles mesoandinos esteparios occidentales.

30% del Territorio Nacional (ámbito seco)

Componentes Principales

- Agricultura de Secano (Hasta 4000 msnm).
- Valles mesoandinos y altiplanicies húmedas.
- Pasturas Naturales Permanentes (> 3600 -< 4600 msnm).
- Bosques Heterogeneos de Trópico húmedo (100 -< 3300 msnm).

70% del Territorio Nacional (ámbito húmedo)

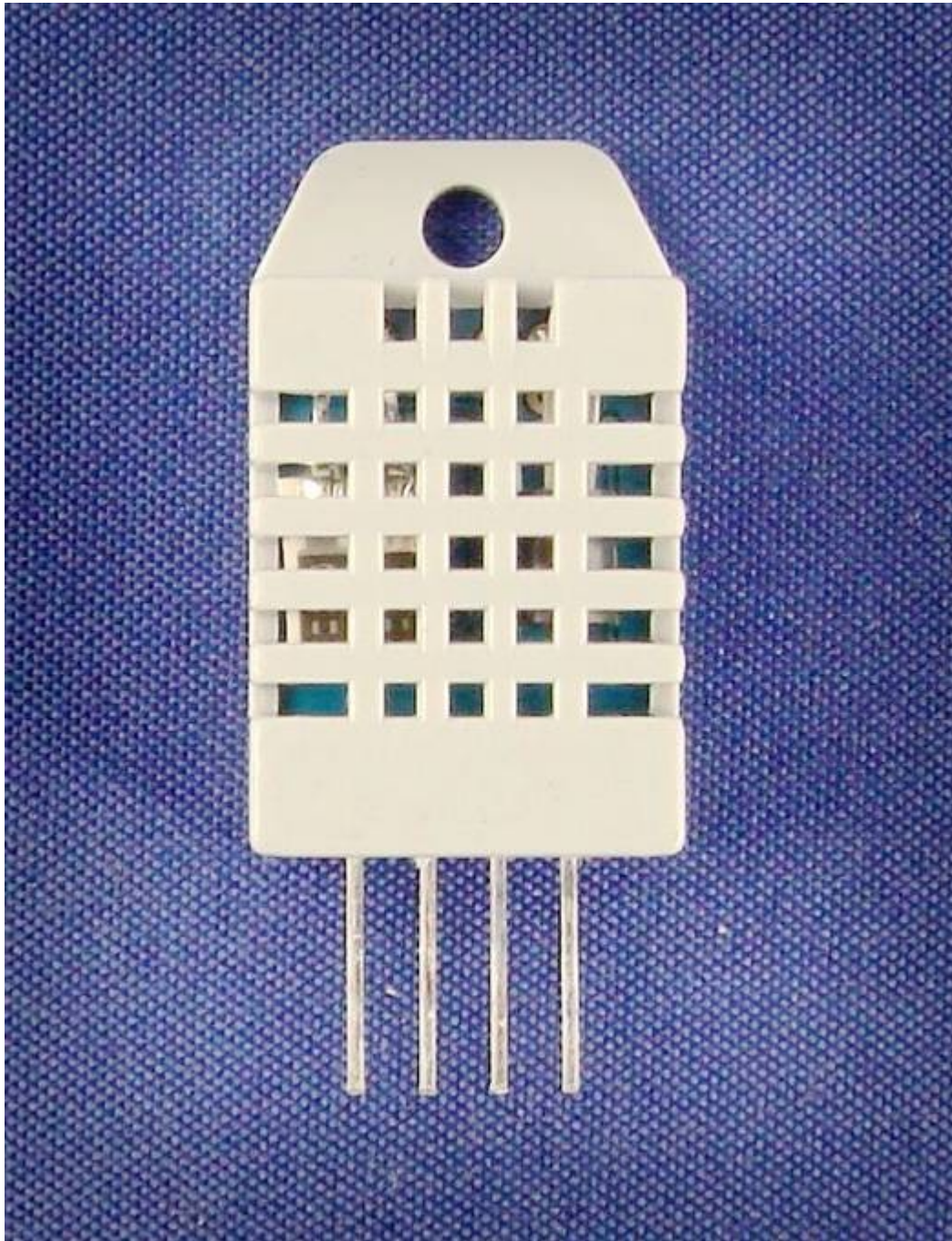


Nota:

- 1) El Perú compromete a tres franjas latitudinales: **Tropical; Subtropical; y, Templado-cálido**.
- 2) Verticalmente, debido a la altitud de la Cordillera de los Andes, presenta siete (07) pisos ecológicos. El piso **Montano** ha sido subdividido por el suscrito en **Montano superior** y **Montano inferior** debido a rasgos propios específicos.
- 3) **Páramo**: conforma una formación fitogeográfica específica de los Andes extremo septentrionales del Perú y que se extiende desde Venezuela, Colombia y Ecuador. La Puna deberá relegarse para los Andes Centrales y Meridionales del Perú, extendiéndose a Bolivia y el norte andino de Chile.
- 4) **Tundra Andina**: Denominada por su cierta similitud con la Región Tundra del Hemisferio Norte, pero, careciendo de permafrost (suelo congelado todo el tiempo), de inviernos largos umbrosos y de la marcada oblicuidad de los rayos solares.

Digital-output relative humidity & temperature sensor/module

DHT22 (DHT22 also named as AM2302)



Capacitive-type humidity and temperature module/sensor

Aosong Electronics Co.,Ltd

Your specialist in innovating humidity & temperature sensors

1. Feature & Application:

- * Full range temperature compensated
- * Relative humidity and temperature measurement
- * Calibrated digital signal
- * Outstanding long-term stability
- * Extra components not needed
- * Long transmission distance
- * Low power consumption
- * 4 pins packaged and fully interchangeable

2. Description:

DHT22 output calibrated digital signal. It utilizes exclusive digital-signal-collecting-technique and humidity sensing technology, assuring its reliability and stability. Its sensing elements is connected with 8-bit single-chip computer.

Every sensor of this model is temperature compensated and calibrated in accurate calibration chamber and the calibration-coefficient is saved in type of programme in OTP memory, when the sensor is detecting, it will cite coefficient from memory.

Small size & low consumption & long transmission distance(20m) enable DHT22 to be suited in all kinds of harsh application occasions.

Single-row packaged with four pins, making the connection very convenient.

3. Technical Specification:

Model	DHT22
Power supply	3.3-6V DC
Output signal	digital signal via single-bus
Sensing element	Polymer capacitor
Operating range	humidity 0-100%RH; temperature -40~80Celsius
Accuracy	humidity +-2%RH(Max +-5%RH); temperature <+-0.5Celsius
Resolution or sensitivity	humidity 0.1%RH; temperature 0.1Celsius
Repeatability	humidity +-1%RH; temperature +-0.2Celsius
Humidity hysteresis	+/-0.3%RH
Long-term Stability	+/-0.5%RH/year
Sensing period	Average: 2s
Interchangeability	fully interchangeable
Dimensions	small size 14*18*5.5mm; big size 22*28*5mm

4. Dimensions: (unit----mm)

1) Small size dimensions: (unit----mm)

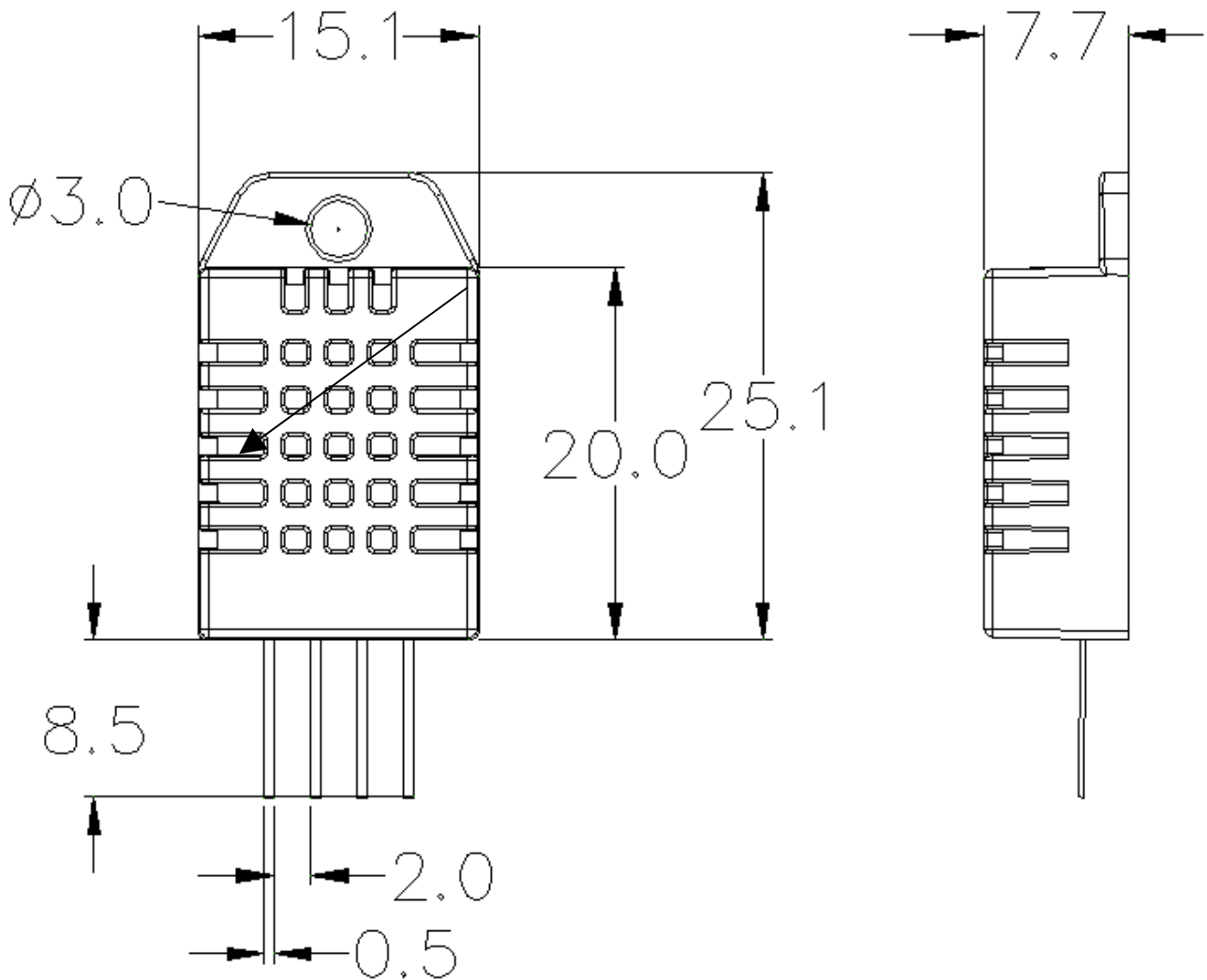
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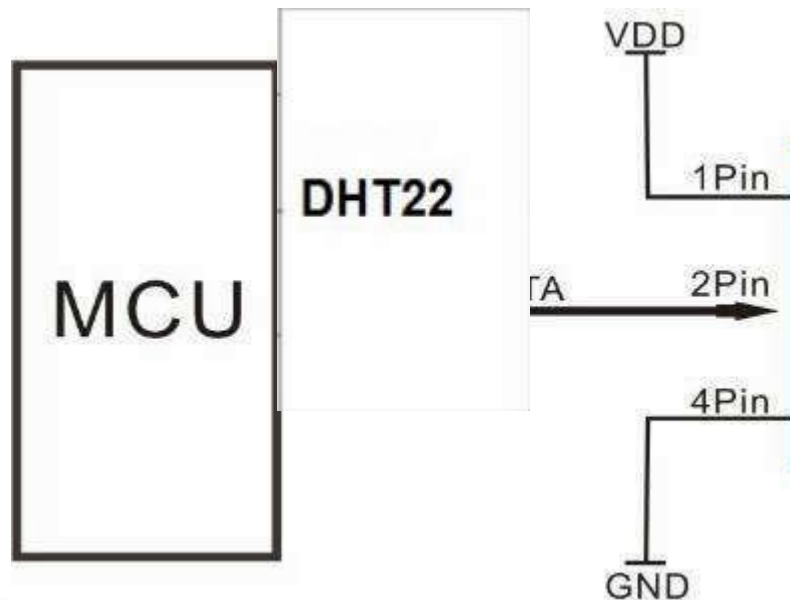
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Pin sequence number: 1 2 3 4 (from left to right direction).

Pin	Function
1	VDD----power supply
2	DATA--signal
3	NULL
4	GND

5. Electrical connection diagram:



3Pin---NC, AM2302 is another name for DHT22

6. Operating specifications:

(1) Power and Pins

Power's voltage should be 3.3-6V DC. When power is supplied to sensor, don't send any instruction to the sensor within one second to pass unstable status. One capacitor valued 100nF can be added between VDD and GND for wave filtering.

(2) Communication and signal

Single-bus data is used for communication between MCU and DHT22, it costs 5mS for single time communication.

Data is comprised of integral and decimal part, the following is the formula for data.

DHT22 send out higher data bit firstly!

DATA=8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data+8 bit check-sum
If the data transmission is right, check-sum should be the last 8 bit of "8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data".

When MCU send start signal, DHT22 change from low-power-consumption-mode to running-mode. When MCU finishes sending the start signal, DHT22 will send response signal of 40-bit data that reflect the relative humidity

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Tesis publicada con autorización del autor

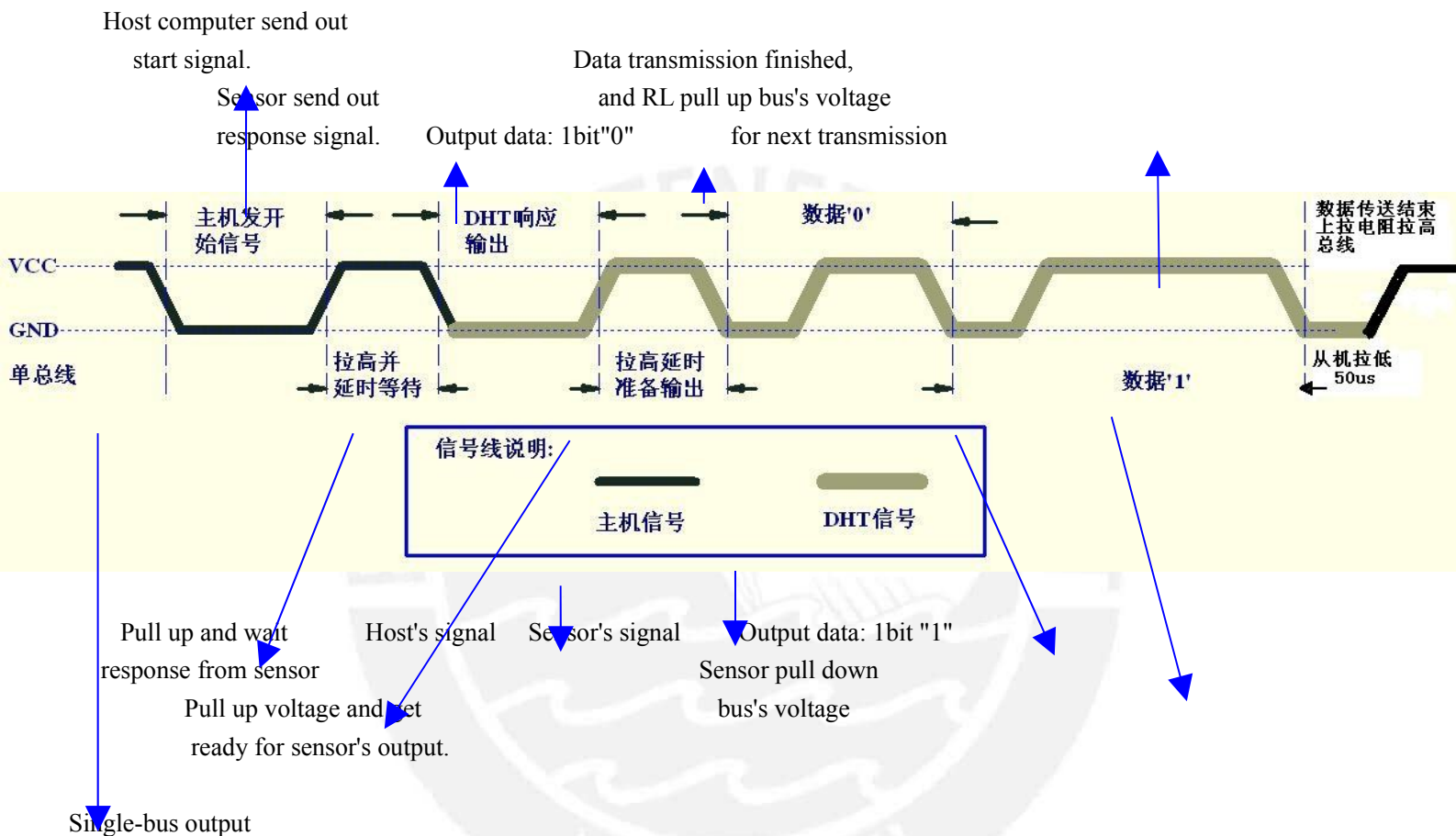
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and temperature information to MCU. Without start signal from MCU, DHT22 will not give response signal to MCU. One start signal for one time's response data that reflect the relative humidity and temperature information from DHT22. DHT22 will change to low-power-consumption-mode when data collecting finish if it don't receive start signal from MCU again.

1) Check bellow picture for overall communication process:



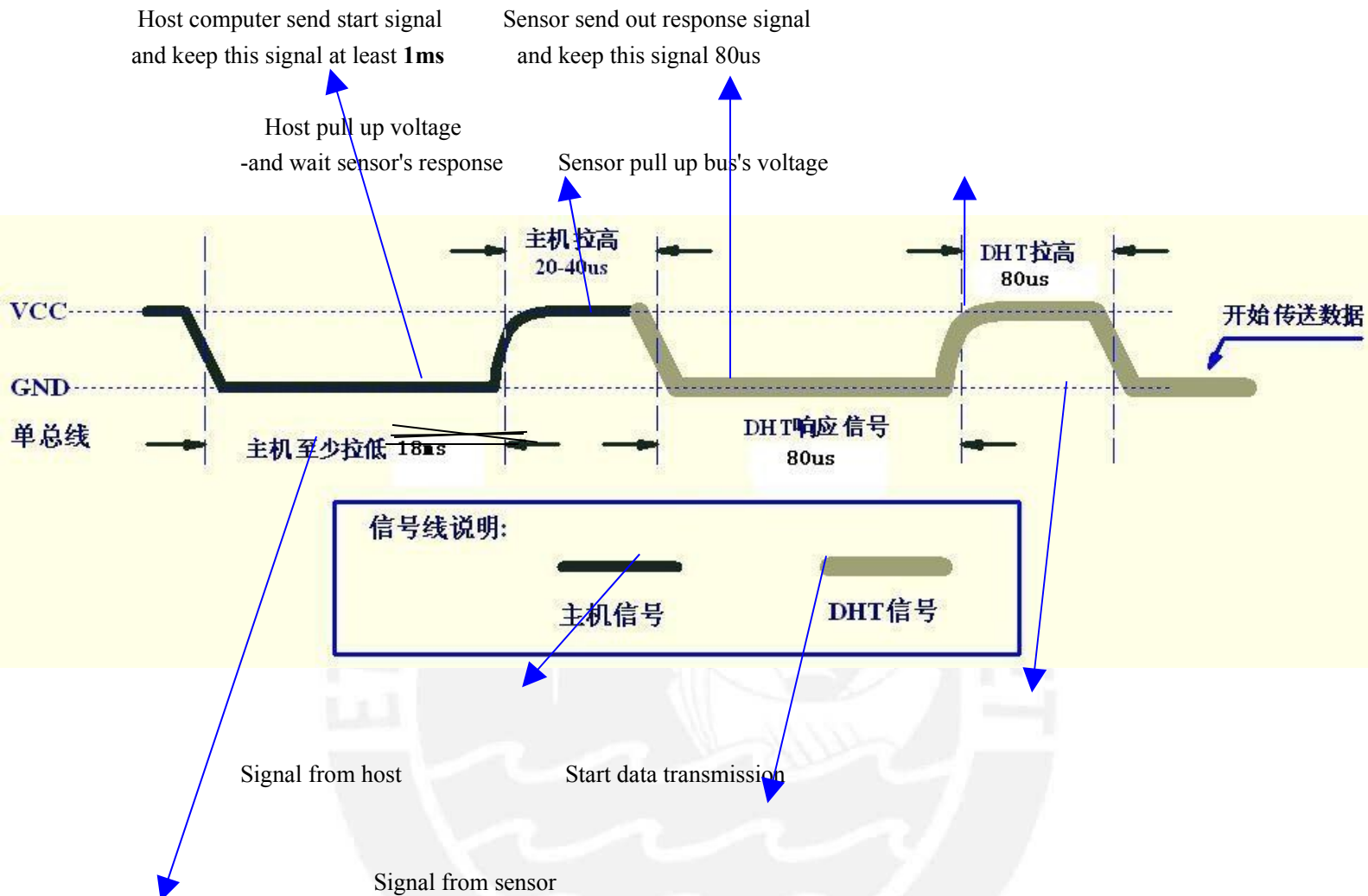
2) Step 1: MCU send out start signal to DHT22

Data-bus's free status is high voltage level. When communication between MCU and DHT22 begin, program of MCU will transform data-bus's voltage level from high to low level and this process must beyond at least 1ms to ensure DHT22 could detect MCU's signal, then MCU will wait 20-40us for DHT22's response.

Check bellow picture for step 1:

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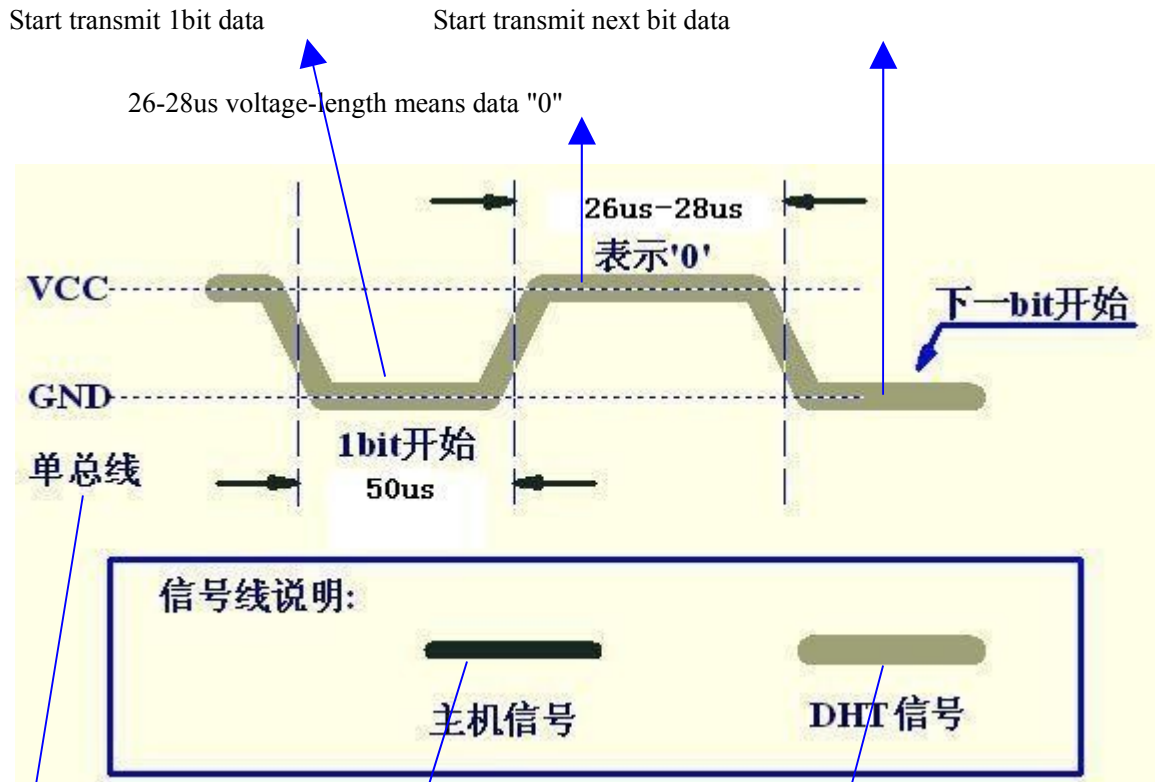


Single-bus signal

Step 2: DHT22 send response signal to MCU

When DHT22 detect the start signal, DHT22 will send out low-voltage-level signal and this signal last 80us as response signal, then program of DHT22 transform data-bus's voltage level from low to high level and last 80us for DHT22's preparation to send data.

Check bellow picture for step 2:



Host signal

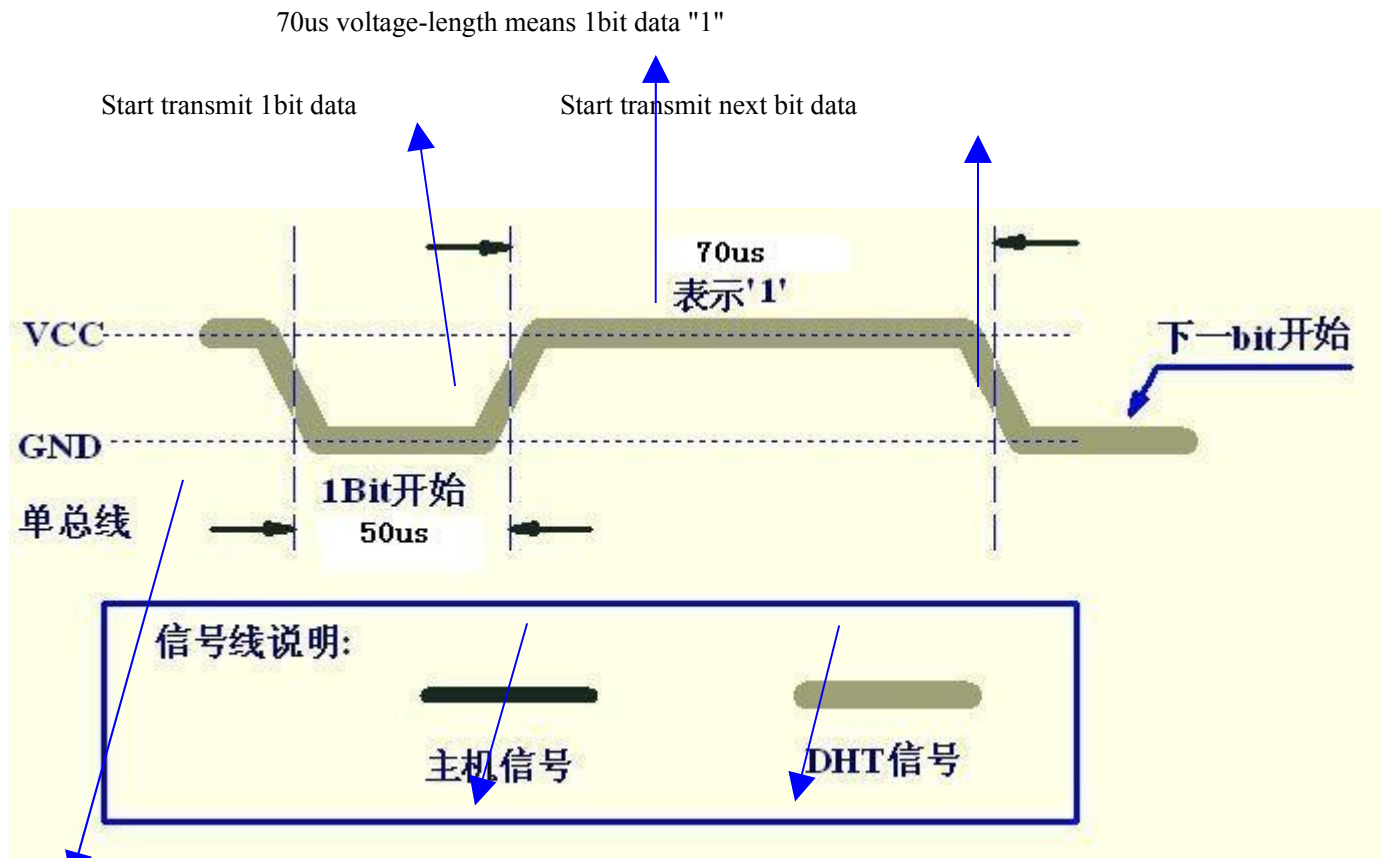
Sesnor's signal

Single-bus signal

Step 3: DHT22 send data to MCU

When DHT22 is sending data to MCU, every bit's transmission begin with low-voltage-level that last 50us, the following high-voltage-level signal's length decide the bit is "1" or "0".

Check bellow picture for step 3:



Host signal

Sesnor's signal

Single-bus signal

If signal from DHT22 is always high-voltage-level, it means DHT22 is not working properly, please check the electrical connection status.

7. Electrical Characteristics:

Item	Condition	Min	Typical	Max	Unit
Power supply	DC	3.3	5	6	V
Current supply	Measuring	1		1.5	mA
	Stand-by	40	Null	50	uA
Collecting period	Second		2		Second

*Collecting period should be : >2 second.

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8. Attentions of application:

(1) Operating and storage conditions

We don't recommend the applying RH-range beyond the range stated in this specification. The DHT22 sensor can recover after working in non-normal operating condition to calibrated status, but will accelerate sensors' aging.

(2) Attentions to chemical materials

Vapor from chemical materials may interfere DHT22's sensitive-elements and debase DHT22's sensitivity.

(3) Disposal when (1) & (2) happens

Step one: Keep the DHT22 sensor at condition of Temperature 50~60Celsius, humidity <10%RH for 2 hours;

Step two: After step one, keep the DHT22 sensor at condition of Temperature 20~30Celsius, humidity >70%RH for 5 hours.

(4) Attention to temperature's affection

Relative humidity strongly depend on temperature, that is why we use temperature compensation technology to ensure accurate measurement of RH. But it's still be much better to keep the sensor at same temperature when sensing.

DHT22 should be mounted at the place as far as possible from parts that may cause change to temperature.

(5) Attentions to light

Long time exposure to strong light and ultraviolet may debase DHT22's performance.

(6) Attentions to connection wires

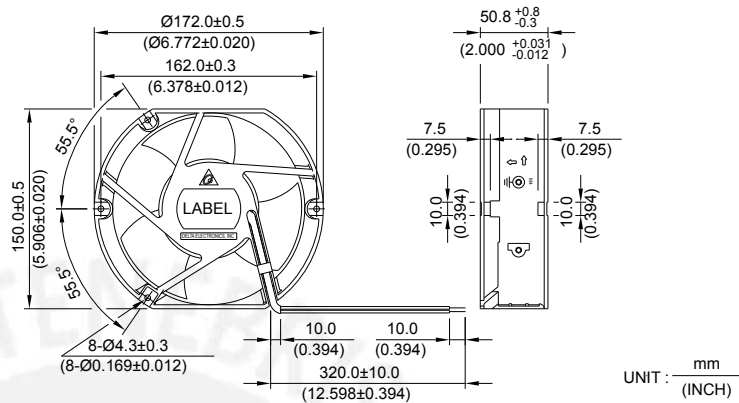
The connection wires' quality will effect communication's quality and distance, high quality shielding-wire is recommended.

(7) Other attentions

- * Welding temperature should be bellow 260Celsius.
- * Avoid using the sensor under dew condition.
- * Don't use this product in safety or emergency stop devices or any other occasion that failure of DHT22 may cause personal injury.

EFB 172 x 150 x 50.8 MM SERIES

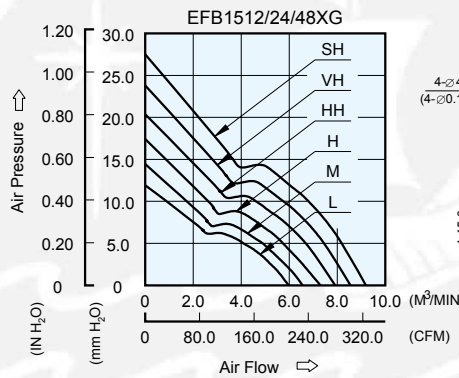
DIMENSIONS DRAWING



- * Bearing Type
Ball Bearings
- * Material
Impeller : Plastic (UL 94V-0)
Frame: Die-cast Aluminum
- * Lead Wires :
UL 1007 AWG #24 OR Equivalent
Red Wire Positive (+)
Black Wire Negative (-)
- * Weight : 840g (29.62 oz)

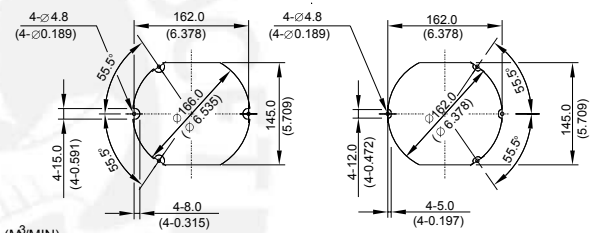
P & Q CURVE (AT RATED VOLTAGE)

MOUNTING PANEL CUTOUT



OUTLET SIDE

INLET SIDE



UNIT: mm (INCH)

MODEL		Rated Voltage	Operating Voltage Range	Input Current	Input Power	Speed	Maximum Air Flow		Maximum Air Pressure		Noise
PART NO.	FUNCTION	VDC	VDC	Amp	Watt	R.P.M.	m ³ /min	CFM	mmH ₂ O	IN H ₂ O	dB-A
EFB1512LG	-R00 / -F00	12	8.0 to 14.0	0.79	9.48	2800	5.950	210.12	11.90	0.469	50.0
EFB1524LG	-R00 / -F00	24	12.0 to 28.0	0.39	9.36						
EFB1548LG	-R00 / -F00	48	24.0 to 60.0	0.19	9.12						
EFB1512MG	-R00 / -F00	12	8.0 to 14.0	0.99	11.88	3050	6.520	230.25	14.50	0.571	52.0
EFB1524MG	-R00 / -F00	24	12.0 to 28.0	0.47	11.28						
EFB1548MG	-R00 / -F00	48	24.0 to 60.0	0.25	12.00						
EFB1512HG	-R00 / -F00	12	8.0 to 14.0	1.35	16.20	3350	7.130	251.79	17.49	0.689	55.0
EFB1524HG	-R00 / -F00	24	12.0 to 28.0	0.56	13.44						
EFB1548HG	-R00 / -F00	48	24.0 to 60.0	0.31	14.88						
EFB1512HHG	-R00 / -F00	12	8.0 to 14.0	1.79	21.48	3700	7.920	279.69	20.30	0.800	57.5
EFB1524HHG	-R00 / -F00	24	12.0 to 28.0	0.77	18.48						
EFB1548HHG	-R00 / -F00	48	24.0 to 60.0	0.38	18.24						
EFB1524VHG	-R00 / -F00	24	12.0 to 28.0	0.97	23.28	4000	8.560	302.29	23.80	0.937	60.0
EFB1548VHG	-R00 / -F00	48	24.0 to 60.0	0.49	23.52						
EFB1524SHG	-R00 / -F00	24	12.0 to 28.0	1.17	28.08	4300	9.203	325.00	27.50	1.083	63.0

* Function type is optional.
 * The max. air flow and the speed are measured in free air ; max. air pressure is measured at zero air flow.
 * Noise is measured in anechoic chamber in free air, one meter from intake side.
 * All readings are typical values at rated voltage.
 * Specifications are subject to change without notice.

DK-24 (1 LED) Mist Maker

- Has 1 pc super bright LED
- Mini size design
- Attached controller with switch & mist quantity controllable.
- Chinese patented product
- Long lifetime ceramic disc (>5,000 hours)
- Gained Certification of GS, BS, UL, SAA, CSA, CE, etc.



Specification :

Power: AC24V 1200mA

Size: Φ 40mm H45mm

Ceramic Disc Size: 20mm

Cabel Length: 1.8m

Water Rate: 90ml/h



DELTA ELECTRONICS, INC.
 252, SHANG YING ROAD, KUEI SAN
 TAOYUAN HSIEN 333, TAIWAN, R. O. C.

TEL : 886-(0)3-3591968
 FAX : 886-(0)3-3591991

SPECIFICATION FOR APPROVAL

Customer:

Description: DC BLOWER

Customer P/N: REV:

Delta Model NO.: BFB1012H

Smample Rev: 00 Issue NO:

Sample Issue Date: JAN.30.2004. Quantity:

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS BLOWER. THE BLOWER MOTOR IS WITH TWO PHASES AND FOUR POLES.

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12 VDC
OPERATION VOLTAGE	4.0 - 13.8 VDC
INPUT CURRENT	0.80 (MAX. 1.20) A
INPUT POWER	9.60 (MAX. 14.40) W
SPEED	3600 R.P.M. (REF.)
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.720 (MIN. 0.660) M ³ /MIN. 25.43 (MIN. 23.31) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	25.40 (MIN. 20.73) mmH ₂ O 1.000 (MIN. 0.816) inchH ₂ O
ACOUSTICAL NOISE (AVG.)	52.0 (MAX. 55.0) dB-A
INSULATION TYPE	UL: CLASS A

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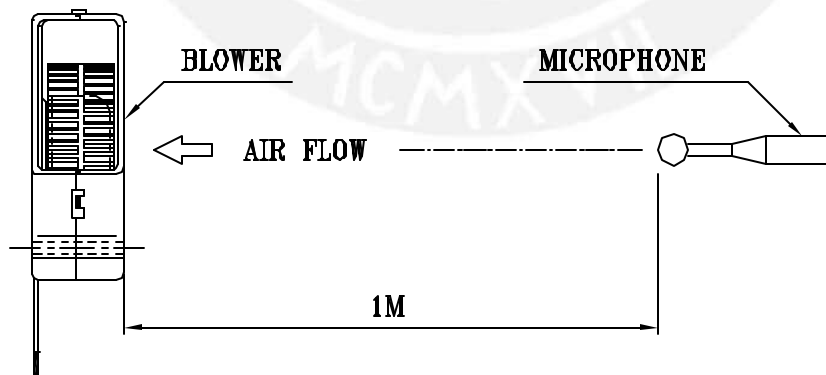
PART NO:

DELTA MODEL:

BFB1012H

INSULATION STRENGTH	10 MEG OHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 500 VAC 60 Hz ONE MINUTE, (BETWEEN FRAME AND (+) TERMINAL)
EXTERNAL COVER	OPEN TYPE
LIFE EXPECTANCE	50,000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
OVER CURRENT SHUT DOWN	THE CURRENT WILL SHUT DOWN WHEN LOCKING ROTOR
INSULATION TYPE	UL: CLASS A
LEAD WIRE	UL 1007 -F- AWG #24 BLACK WIRE NEGATIVE(-) RED WIRE POSITIVE(+)

- NOTES: 1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.
2. THE VALUES WRITTEN IN PARENS , (), ARE LIMITED SPEC.
3. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN ANECHOIC CHAMBER WITH B & K SOUND LEVEL METER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

PART NO:

DELTA MODEL: BFB1012H

8. BASIC RELIABILITY REQUIREMENT:

8-1. THERMAL CYCLING LOW TEMPERATURE: -40°C
 HIGH TEMPERATURE: +80°C
 SOAK TIME: 30 MINUTES
 TRANSITION TIME < 5 MINUTES
 DUTY CYCLES: 5

8-2. HUMIDITY EXPOSURE TEMPERATURE: +25°C ~ +65°C
 HUMIDITY: 90-98% RH @ +65°C
 FOR 4 HOURS/CYCLE
 POWER: NON-OPERATING
 TEST TIME: 168 HOURS

8-3. VIBRATION TEMPERATURE: +25°C
 ORIENTATION: X, Y, Z
 POWER: NON-OPERATING
 VIBRATION LEVEL: OVERALL gRMS=3.2

FREQUENCY(Hz)	PSD(G ² /Hz)
10	0.040
20	0.100
40	0.100
800	0.002
1000	0.002

TEST TIME: 2 HOURS ON EACH ORIENTATION

8-4. MECHANICAL SHOCK TEMPERATURE: +20°C
 ORIENTATION: X, Y, Z
 POWER: NON-OPERATING
 ACCELERATION: 20 G MIN.
 PULSE: 11 ms HALF-SINE WAVE
 NUMBER OF SHOCKS: 5 SHOCKS
 FOR EACH DIRECTION

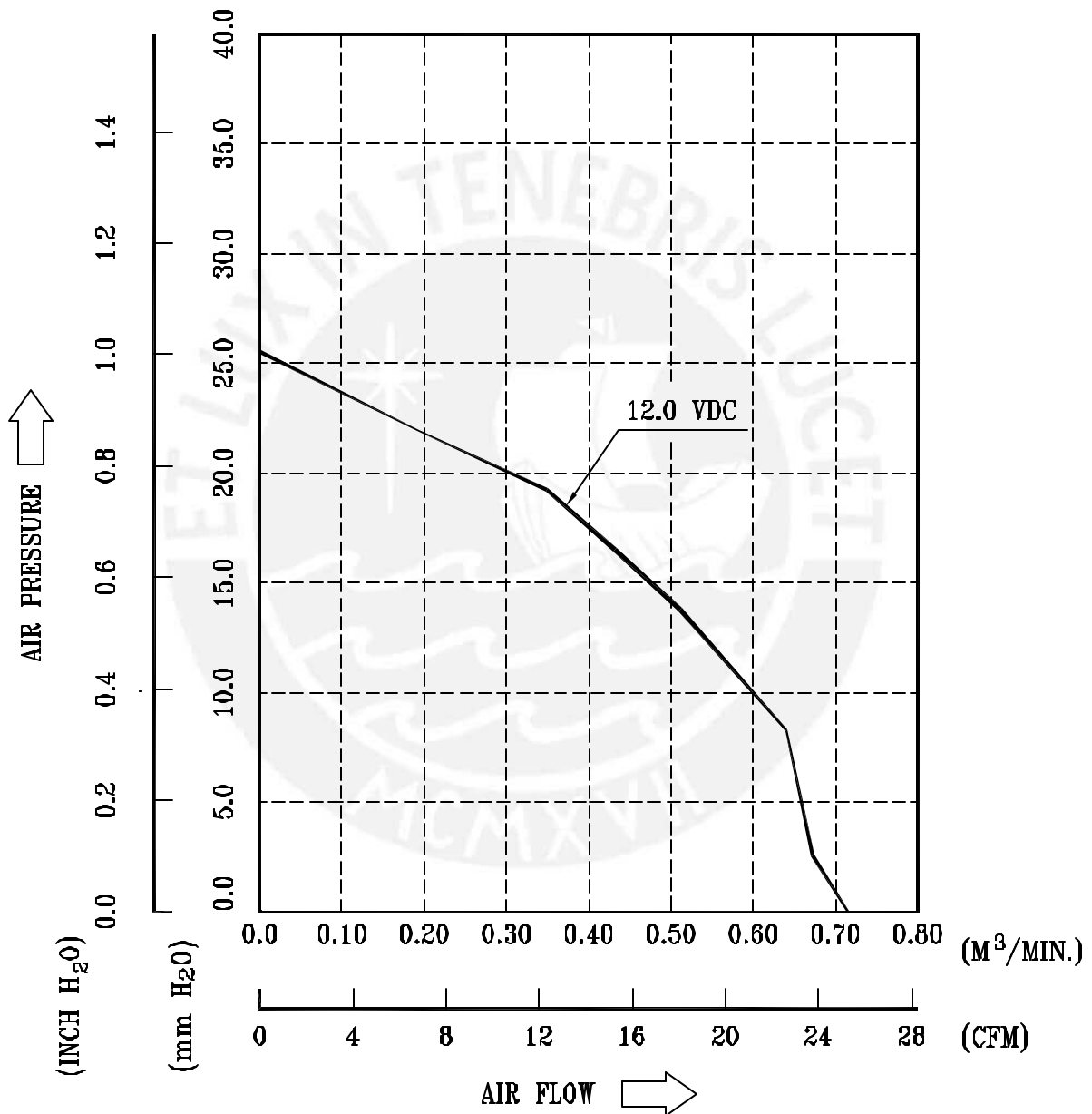
8-5. LIFE TEMPERATURE: MAX , OPERATING TEMPERATURE
 POWER: OPERATING
 DURATION: 1000 HOURS MIN.

PART NO:

DELTA MODEL:

BFB1012H

9. P & Q CURVE:



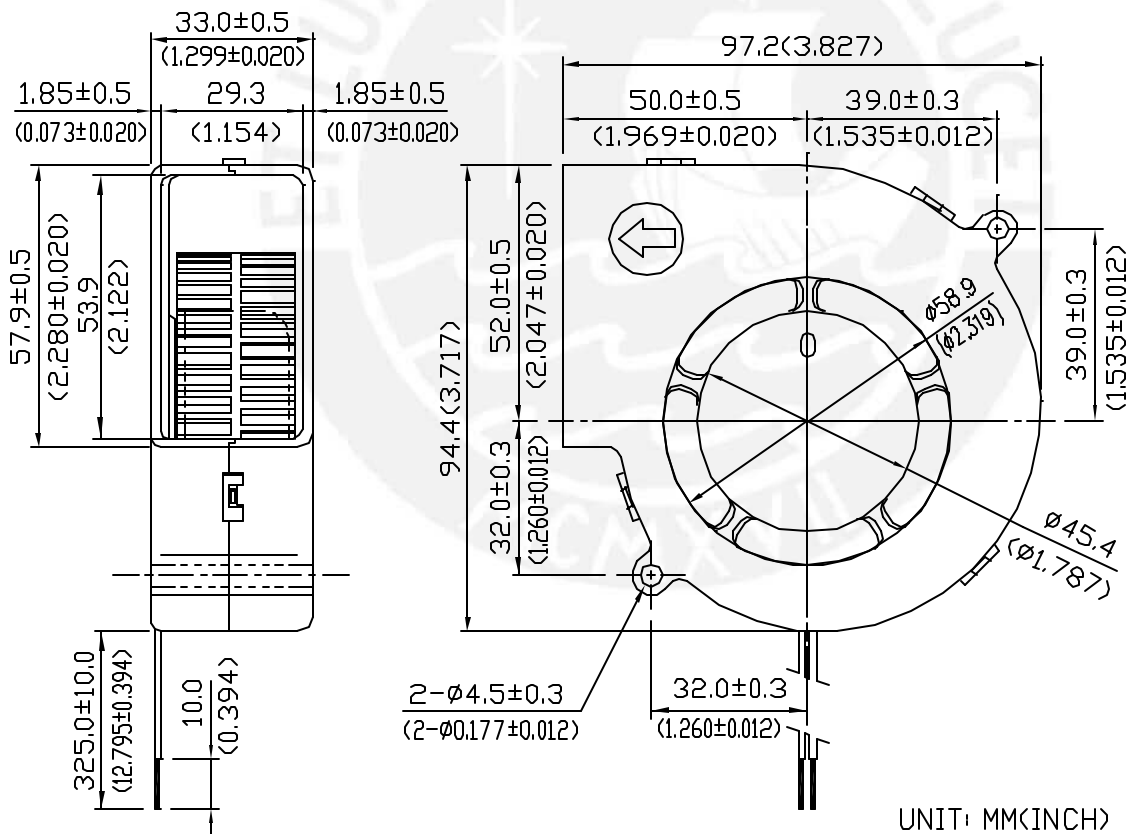
* TEST CONDITION: INPUT VOLTAGE ----- OPERATION VOLTAGE
TEMPERATURE ----- ROOM TEMPERATURE
HUMIDITY ----- 65%RH

PART NO:

DELTA MODEL: BFB1012H

10. DIMENSION DRAWING:

LABEL:

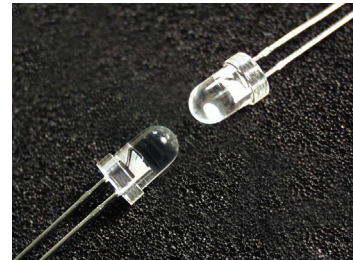


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Descriptions:

1. Delta will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.
2. A written request should be submitted to Delta prior to approval if deviation from this specification is required.
3. Please exercise caution when handling fans. Damage may be caused when pressure is applied to the impeller, if the fans are handled by the lead wires, or if the fans are hard-dropped to the production floor.
4. Except as pertains to some special designs, there is no guarantee that the products will be free from any such safety problems or failures as caused by the introduction of powder, droplets of water or encroachment of insect into the hub.
5. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.
6. It is very important to establish the correct polarity before connecting the fan to the power source. Positive (+) and Negative (-). Damage may be caused to the fans if connection is with reverse polarity, as there is no foolproof method to protect against such error.
7. Delta fans are not suitable where any corrosive fluids are introduced to their environment.
8. Please ensure all fans are stored according to the storage temperature limits specified. Do not store fans in a high humidity environment. We highly recommend performance testing is conducted before shipping, if the fans have been stored over 6 months.
9. Not all fans are provided with the Lock Rotor Protection feature. If you impair the rotation of the impeller for the fans that do not have this function, the performance of those fans will lead to failure.
10. Please be cautious when mounting the fan. Incorrect mounting of fans may cause excess resonance, vibration and subsequent noise.
11. It is important to consider safety when testing the fans. A suitable fan guard should be fitted to the fan to guard against any potential for personal injury.
12. Except where specifically stated, all tests are carried out at relative (ambient) temperature and humidity conditions of 25°C, 65%. The test value is only for fan performance itself.
13. Be certain to connect an “over 4.7 μ F” capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.

Cree® 5mm Round LED C503C-WAS/WAN



PRODUCT DESCRIPTION

Round LEDs offer superior light output for excellent readability in sunlight and dependable performance. They provide extremely stable light output over long periods of time.

These lamps are made with an advanced optical-grade epoxy offering superior high-temperature and high-moisture-resistance performance in lighting and illumination applications. This product utilizes an epoxy containing a UV inhibitor. It therefore provides a UV resistance and can be used in outdoor applications.

FEATURES

- Size (mm): 5
- Color Temperatures:
Cool White :
Min . (4600K) / Typical (9000K)
- Luminous Intensity (mcd)
C503C-WAS/WAN:
(20150-46100)
- Viewing angle: 15 degree
- Lead-Free
- RoHS Compliant

APPLICATIONS

- Torch
- Light Strip
- Channel Letter
- Retail Display Lighting

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Items	Symbol	Absolute Maximum Rating	Unit
Forward Current	I_F	30	mA
Peak Forward Current ^{Note}	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	120	mW
Operation Temperature	T_{opr}	-40 ~ +95	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
Lead Soldering Temperature	T_{sol}	Max. 260 $^\circ\text{C}$ for 3 sec. max. (3 mm from the base of the epoxy bulb)	

Note: Pulse width ≤ 0.1 msec, duty $\leq 1/10$.

TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

Characteristics	Color	Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage	WAS/WAN	V_F	$I_F = 20$ mA	V		3.2	4.0
Reverse Current	WAS/WAN	I_R	$V_R = 5$ V	μA			100
Luminous Intensity	WAS/WAN	I_V	$I_F = 20$ mA	mcd	20150	35000	
Chromaticity Coordinates	WAS/WAN	x	$I_F = 20$ mA			0.2895	
		y	$I_F = 20$ mA			0.2905	
50% Power Angle	WAS/WAN	$2\theta_{1/2}$	$I_F = 20$ mA	deg		15	

INTENSITY BIN LIMIT ($I_f = 20 \text{ mA}$)

Cool White(C503C-WAS/WAN)

Bin Code	Min.(mcd)	Max.(mcd)
Bb	20150	23500
Ca	23500	28200
Cb	28200	32900
Da	32900	39500
Db	39500	46100

- Tolerance of measurement of luminous intensity is $\pm 15\%$

VF BIN LIMIT ($I_f = 20 \text{ mA}$)

Cool White(C503C-WAS/WAN)

Bin Code	Min.(V)	Max.(V)
27	2.8	3.0
28	3.0	3.2
29	3.2	3.4
2a	3.4	3.6
2b	3.6	3.8
2c	3.8	4.0

- Tolerance of measurement of VF is $\pm 0.05\text{V}$.

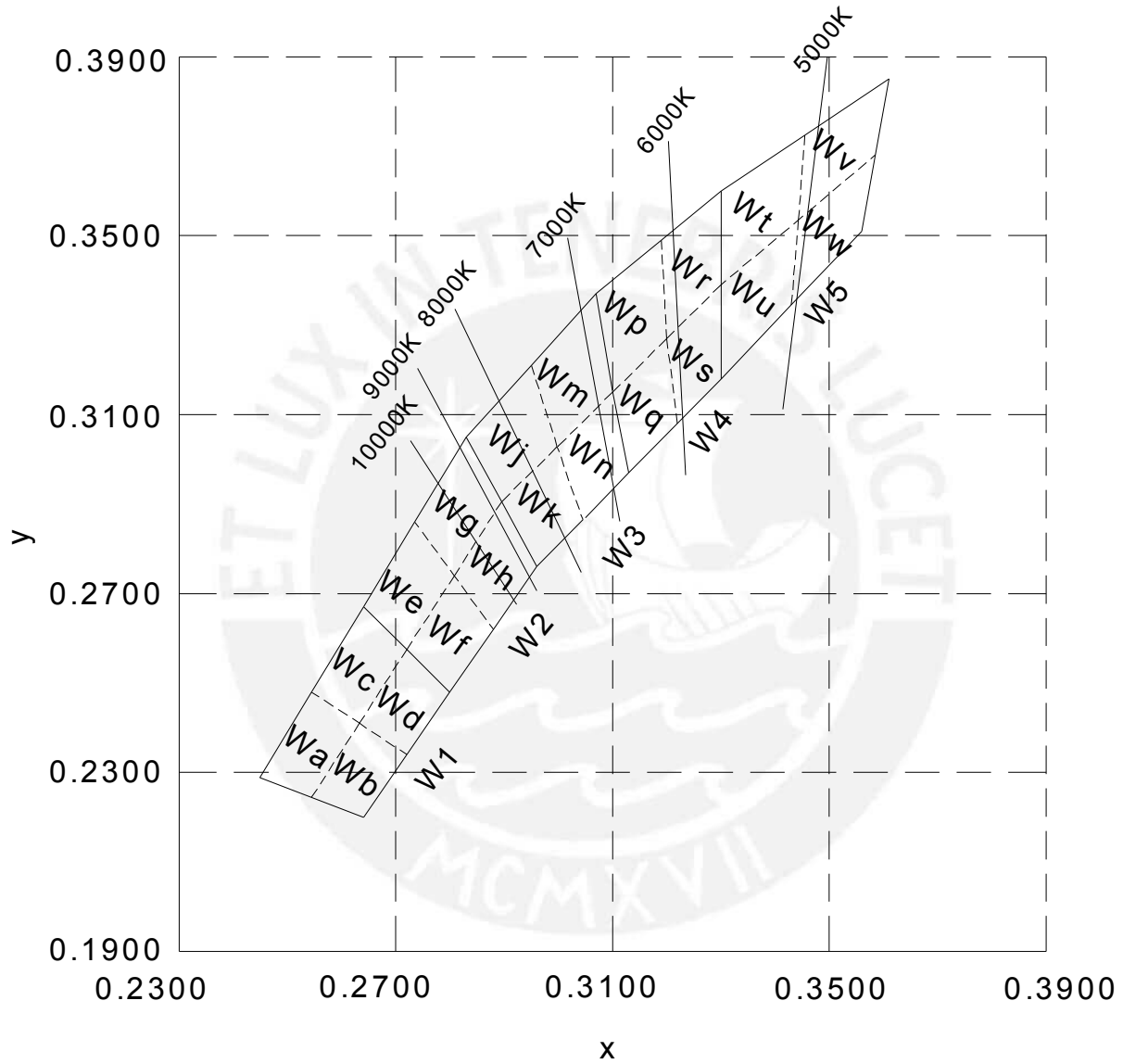
COLOR BIN LIMIT ($I_F = 20 \text{ mA}$)

Cool White

Bin Code	Sub-bin	x	y
W1	Wa	0.2545	0.2480
		0.2633	0.2410
		0.2545	0.2245
		0.2450	0.2290
	Wb	0.2633	0.2410
		0.2720	0.2340
		0.2640	0.2200
		0.2545	0.2245
	Wc	0.2545	0.2480
		0.2640	0.2670
		0.2720	0.2575
		0.2633	0.2410
	Wd	0.2633	0.2410
		0.2720	0.2575
		0.2800	0.2480
		0.2720	0.2340
W2	We	0.2640	0.2670
		0.2735	0.2860
		0.2808	0.2740
		0.2720	0.2575
	Wf	0.2720	0.2575
		0.2808	0.2740
		0.2880	0.2620
		0.2800	0.2480
	Wg	0.2735	0.2860
		0.2830	0.3050
		0.2895	0.2905
		0.2808	0.2740
	Wh	0.2808	0.2740
		0.2895	0.2905
		0.2960	0.2760
		0.2880	0.2620
W3	Wj	0.2830	0.3050
		0.2950	0.3210
		0.2998	0.3028
		0.2895	0.2905
	Wk	0.2895	0.2905
		0.2998	0.3028
		0.3045	0.2865
		0.2960	0.2760
	Wm	0.2950	0.3210
		0.3070	0.3370
		0.3100	0.3150
		0.2998	0.3028
	Wn	0.2998	0.3028
		0.3100	0.3150
		0.3130	0.2970
		0.3045	0.2865
W4	Wp	0.3070	0.3370
		0.3185	0.3485
		0.3200	0.3270
		0.3100	0.3150
	Wq	0.3100	0.3150
		0.3200	0.3270
		0.3215	0.3075
		0.3130	0.2970
	Wr	0.3185	0.3485
		0.3300	0.3600
		0.3300	0.3390
		0.3200	0.3270
	Ws	0.3200	0.3270
		0.3300	0.3390
		0.3300	0.3180
		0.3215	0.3075
W5	Wt	0.3300	0.3600
		0.3455	0.3725
		0.3443	0.3535
		0.3300	0.3390
	Wu	0.3300	0.3390
		0.3443	0.3535
		0.3430	0.3345
		0.3300	0.3180
	Wv	0.3455	0.3725
		0.3610	0.3850
		0.3585	0.3680
		0.3443	0.3535
	Ww	0.3443	0.3535
		0.3585	0.3680
		0.3560	0.3510
		0.3430	0.3345

- Tolerance of measurement of the color coordinates is ± 0.01 .

CIE CHROMATICITY DIAGRAM



ORDER CODE TABLE*

Color	Kit Number	Viewing Angle	Luminous Intensity (mcd)		Color Bin Code	Package	Standoff
			Min.	Max.			
Cool White	C503C-WAS-CBbDb151	15	20150	46100	W1,W2,W3,W4,W5	Bulk	Yes
Cool White	C503C-WAS-CBbDb231	15	20150	46100	W2,W3	Bulk	Yes
Cool White	C503C-WAS-CCaDb231	15	23500	46100	W2,W3	Bulk	Yes
Cool White	C503C-WAN-CBbDb151	15	20150	46100	W1,W2,W3,W4,W5	Bulk	No
Cool White	C503C-WAN-CBbDb231	15	20150	46100	W2,W3	Bulk	No
Cool White	C503C-WAN-CCaDb231	15	23500	46100	W2,W3	Bulk	No
Cool White	C503C-WAS-CBbDb152	15	20150	46100	W1,W2,W3,W4,W5	Ammo	Yes
Cool White	C503C-WAS-CBbDb232	15	20150	46100	W2,W3	Ammo	Yes
Cool White	C503C-WAS-CCaDb232	15	23500	46100	W2,W3	Ammo	Yes
Cool White	C503C-WAN-CBbDb152	15	20150	46100	W1,W2,W3,W4,W5	Ammo	No
Cool White	C503C-WAN-CBbDb232	15	20150	46100	W2,W3	Ammo	No
Cool White	C503C-WAN-CCaDb232	15	23500	46100	W2,W3	Ammo	No

Notes:

1. The above kit numbers represent order codes that include multiple intensity-bin and color-bin codes. Only one intensity-bin code and one color-bin code will be shipped on each bulk. Single intensity-bin code and single color-bin codes will not be orderable.
2. Please refer to the "Cree LED Lamp Reliability Test Standards" document for reliability test conditions.
3. Please refer to the "Cree LED Lamp Soldering & Handling" document for information about how to use this LED product safely.

GRAPHS

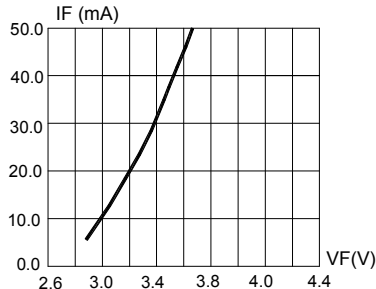


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

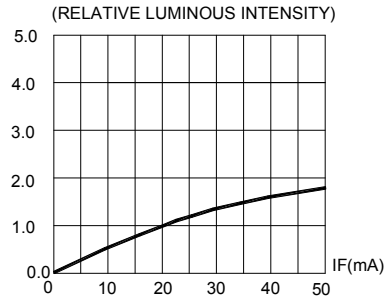


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

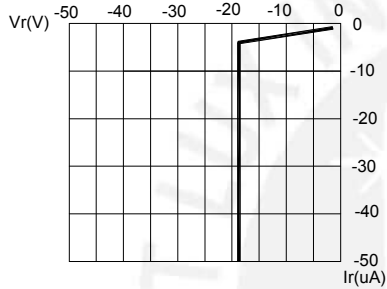


FIG.3 REVERSE CURRENT VS. REVERSE VOLTAGE.

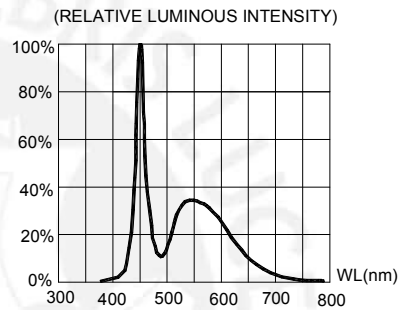


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

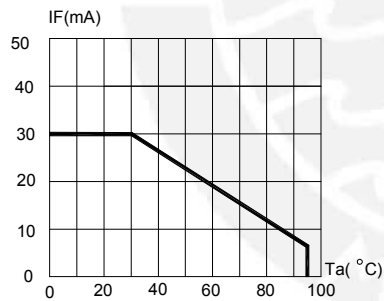


FIG.5 MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE (Tjmax=105°C)

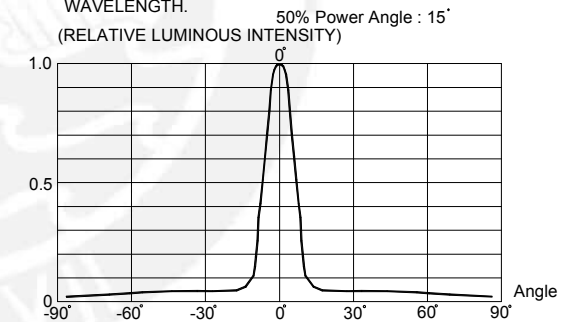


FIG.6 FAR FIELD PATTERN

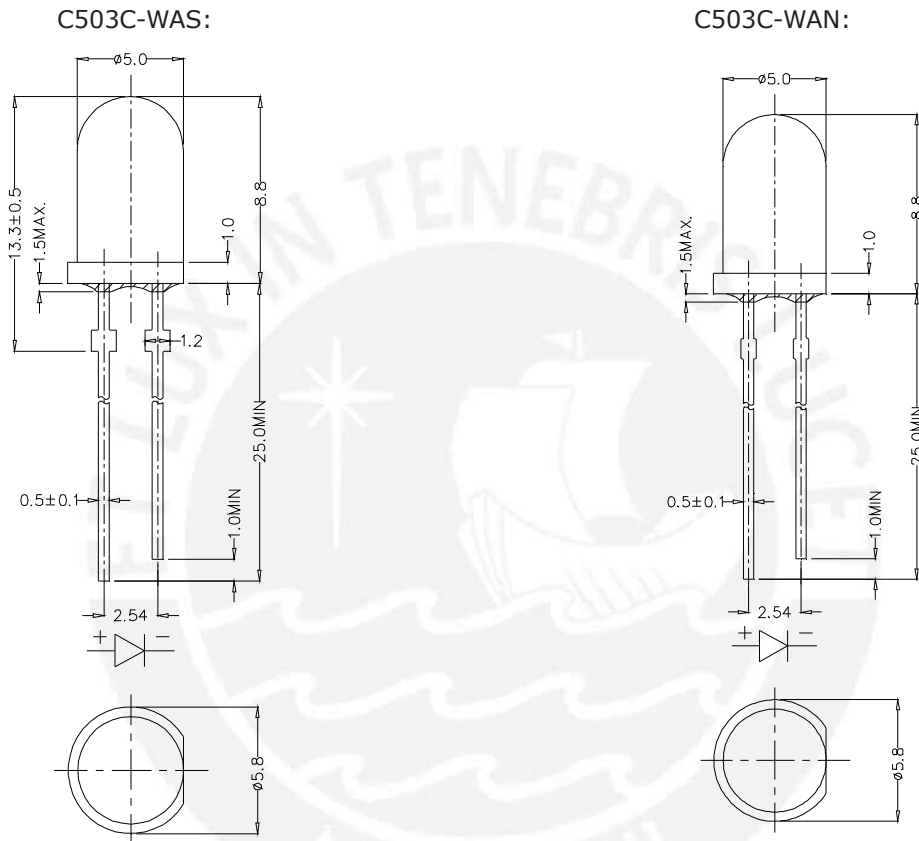
The above data are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.

MECHANICAL DIMENSIONS

All dimensions are in mm. Tolerance is ± 0.25 mm unless otherwise noted.

An epoxy meniscus may extend about 1.5 mm down the leads.

Burr around bottom of epoxy may be 0.5 mm max.



NOTES

RoHS Compliance

The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended through April 21, 2006.

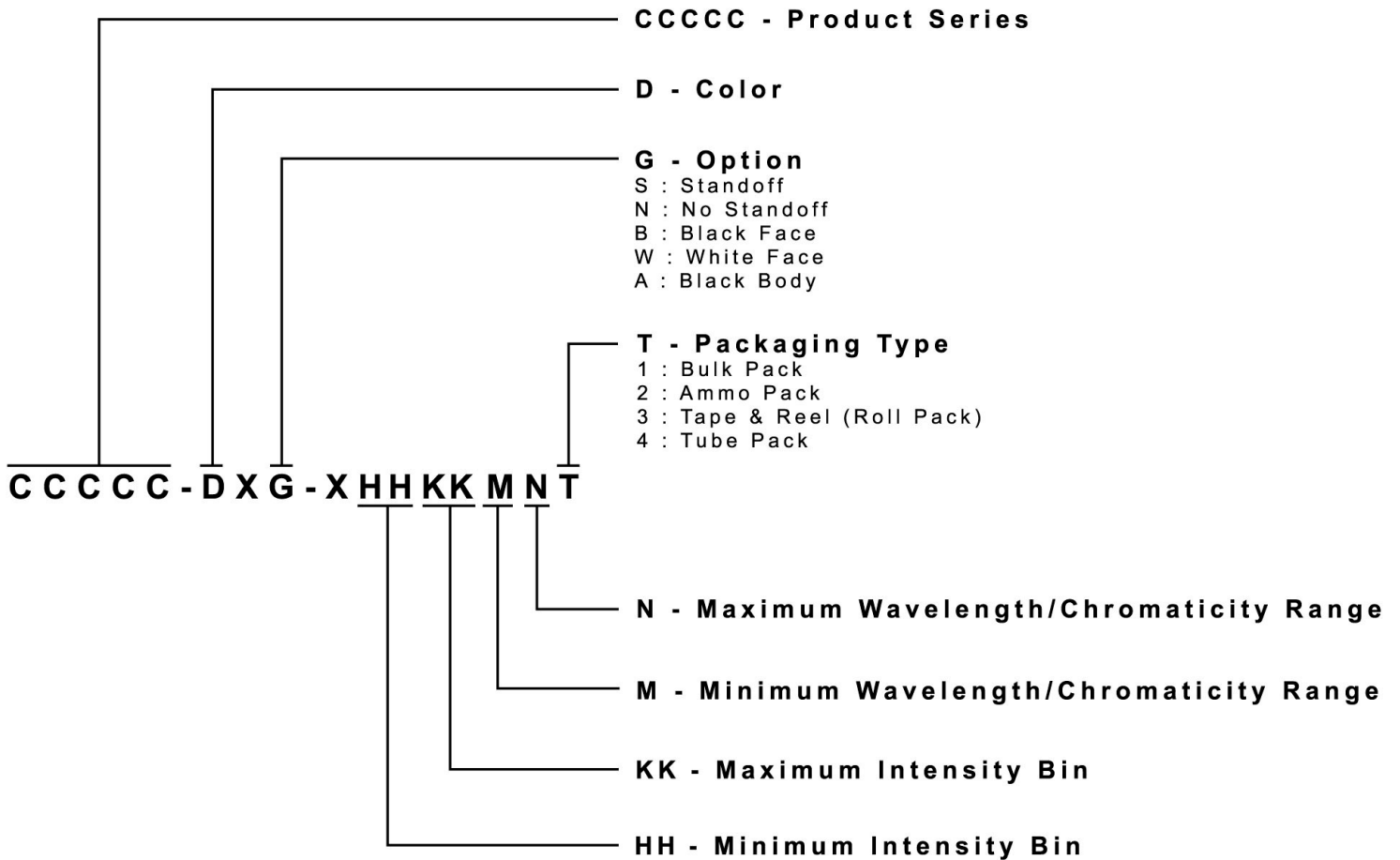
Vision Advisory Claim

Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

KIT NUMBER SYSTEM

All dimensions in mm. Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness. Sorted LEDs are packaged for shipping in various convenient options. Please refer to the "Cree LED Lamp Packaging Standard" document for more information about shipping and packaging options.

Cree LEDs are sold by order codes in combinations of bins called kits. Order codes are configured in the following manner:

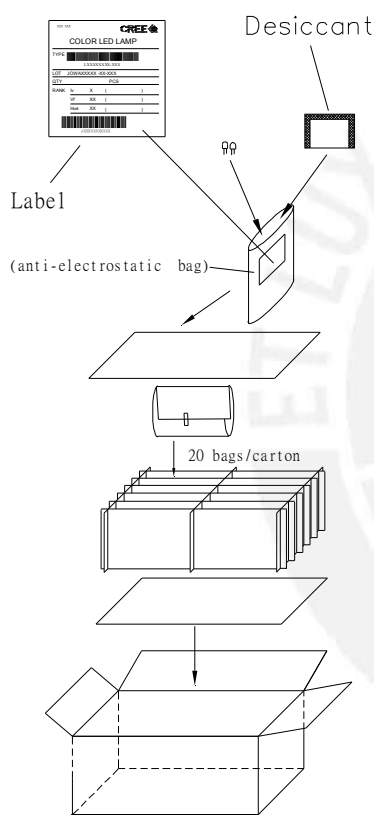


PACKAGING

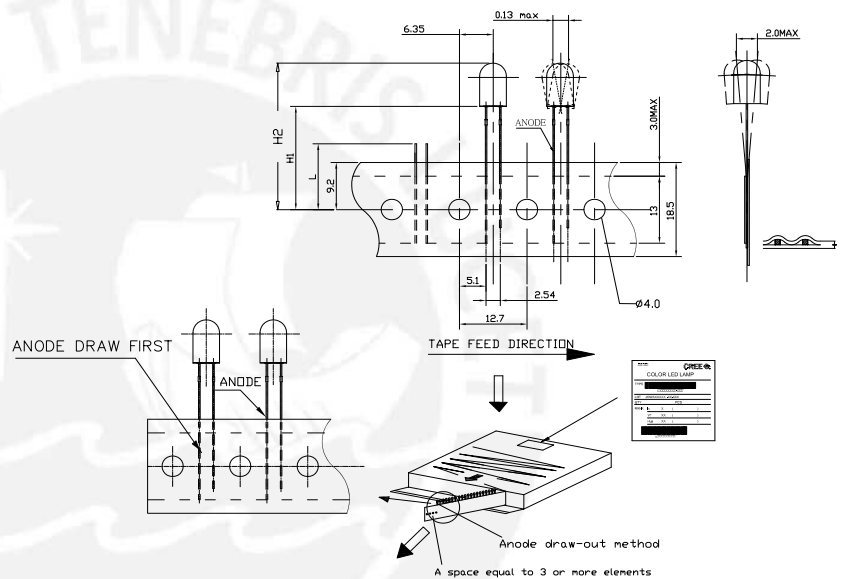
Features:

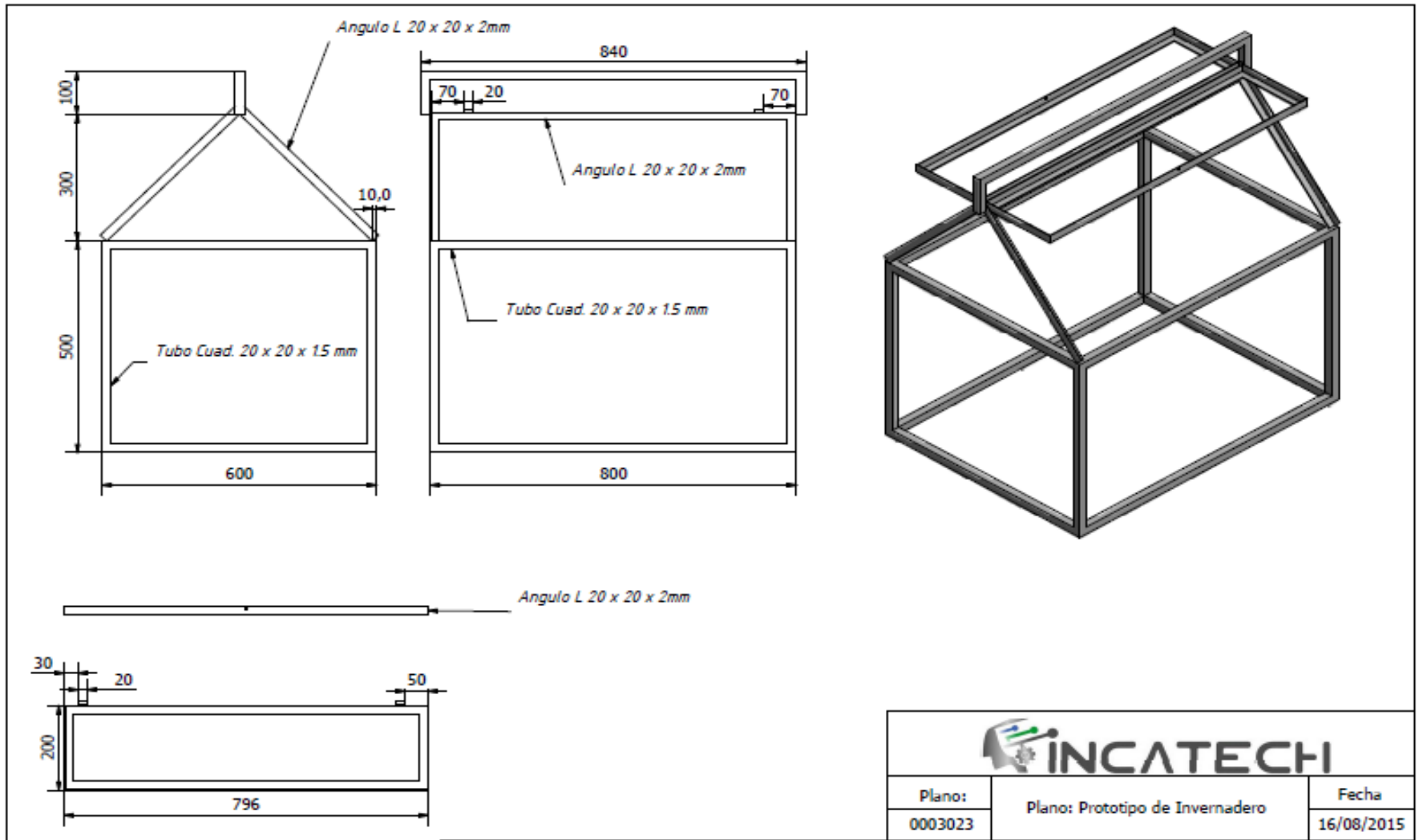
- The LEDs are packed in cardboard boxes after packaging in normal or anti-electrostatic bags.
- Cardboard boxes will be used to protect the LEDs from mechanical shock during transportation.
- The boxes are not water resistant, and they must be kept away from water and moisture.
- The Bulk Pack types of packaging.
- Max 500 pcs per bulk and Max 2500 pcs per ammo.

Bulk Pack Packaging Type:



Ammo Pack Packaging Type:





Anexo 8: Código de programación del sistema de control en la placa Arduino Uno

```
#include <dht.h>// libreria del sensor de T y HR
//*****

//      HR 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
float Arr_seco[21] = {1.0,1.0,1.0,1.0,1.0 ,1.0,1.0 ,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0};
float Arr_hume[21] = {0.0,0.0,0.0,0.0,0.0 ,0.0,0.0 ,1.0,1.0,1.0,1.0,1.0,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0};
float Arr_mhume[21] = {0.0,0.0,0.0,0.0,0.0 ,0.0,0.0 ,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,1.0,1.0,1.0,1.0,1.0};

//      T= 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46
float Arr_frio[24] = {1.0,1.0,1.0,1.0,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0};
float Arr_templa[24] = {0.0,0.0,0.0,0.0,0.0,0.0,1.0,1.0,1.0,1.0,1.0,0.0,0.0,0.0 ,0.0,0.0 ,0.0,0.0,0.0,0.0,0.0,0.0};
float Arr_cali[24] = {0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,1.0,1.0,0.0 ,0.0,0.0 ,0.0,0.0,0.0,0.0,0.0,0.0};
float Arr_mcali[24] = {0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,1.0 ,1.0,1.0 ,1.0,1.0,1.0,1.0,1.0,1.0,1.0};
//*****

////////// variables difusas//////////

int H=0,T=0;
int frio1=0,templa=0,cali=0,mcali=0;
int bandera_enf=0;
int seco=0,hume=0,mhume=0;
int c_frio=10,c_templa=20,c_cali=30,c_mcali=40;
int c_seco=10,c_hume=20,c_mhume=30;
float valor=0.0,evalua=0.0;
int estado=0;
float perte_tempe=0,perte_hume=0;
int grado_tempe=0,grado_hume=0;
int estado_tempe=0,estado_hume=0;
//*****

//////variables de reloj//////

unsigned long previo=0;
unsigned long intervalo=5000;//5 seg
unsigned long reloj=0;
//*****

////////// sensores //////////
//LDR =A5
#define DHT22_PIN 2
dht DHT;
int chk=0;
//*****
```

```

///// variables de salida/////

int humidificacion=7;          // 220 VAC
int calefaccion=10;           // 220 VAC
int refrigeracion=9;          // pwm
int ventilacion=5;            // pwm
int luz=6;                     // pwm
int deshumidificacion=3;      //pwm
//*****

/////////////////PARAMETROS DE INTERFAZ/////////////////
int tipo_modo =0,tipo_clima=0;
int valor_cal=0,valor_enf=0, valor_hum=0,valor_vent=0, valor_deshum=0;
int valor_deshumA=0,valor_humA=0;
float humed=0,tempe=0,LDR=0;
int estado_sistema=0;

int T_sensor=0,HR_sensor=0,L_sensor=0;
int temperatura_referencia=0, humedad_referencia=0;
int error_t=0,error_h=0;
int humidificador=0, deshumidificador=0;
//*****

///////////////////////////////// PROGRAMA PRINCIPAL ///////////////////////////////////

void setup()
{
  Serial.begin(9600); /// CONFIG SERIAL 9600 baudios
}

void loop()
{
  reloj=millis(); // inicializa reloj

  //lee datos interfaz
  lee_serial();// los 8 valores (modo,clima,cal,enf,hum,vent,estado,deshum)

  if(estado_sistema ==22)
  { /// si el sistema esta encendido
    if (reloj > previo + intervalo) //trasmite valores cada 5 seg
    {
      tx_datos_lee_sensores();
    }
    //empieza funcionamiento
    evalua_modos_operacion();
  }

  if(estado_sistema ==33)

```

```

    // si el sistema esta apagado
    actuadores_manual(0,0,0,0,0);
    analogWrite(luz,0);
  }
}
//*****

/////////////////////////////////////////FUNCIONES/////////////////////////////////////////

void evalua_modos_operacion()
{
  if (tipo_modos==100)//automatico
  {
    modos_automatico();
  }
  if (tipo_modos==1)//manual
  {
    modos_manual();
  }
}
//*****

void fuzificacion(int HR_fuz,int T_fuz)
{
  detecta_humedad(HR_fuz);
  humedad_pertenencia(HR_fuz); // asigma seco humedo muy_humedo

  detecta_temperatura(T_fuz);
  tempe_pertenencia(T_fuz); //frio templa calido muy calido
}
//*****

void modos_automatico()
{
  analogWrite(luz,L_sensor*255); // inicia iluminaci3n

      ///se identifica el clima a replicar//
  if(L_sensor==0){ /////// SI ES DE DIA
  if(tipo_clima==1) // BH_PM
  {
    temperatura_referencia= 20; //aprox (17+24)/2
    humedad_referencia = 65 ; //aprox (50+75)/2
  }
  if(tipo_clima==2) //BMH_PM
  {
    temperatura_referencia= 20; //aprox (17+24)/2
    humedad_referencia = 80 ; //aprox (75+85)/2
  }
}
}

```



```

}
if(tipo_clima==3) //PH_TB
{
temperatura_referencia= 27; //aprox (24+30)/2
humedad_referencia = 65 ; //aprox (50+75)/2
}
}
else {////////// SI ES DE NOCHE

if(tipo_clima==1) // BH_PM
{
temperatura_referencia= 18; //TEMP MIN
humedad_referencia = 60 ; //aprox (50+75)/2
}
if(tipo_clima==2) //BMH_PM
{
temperatura_referencia= 18; //TEMP MIN
humedad_referencia = 80 ;//
}
if(tipo_clima == 3) //PH_TB
{
temperatura_referencia= 20; //aprox TEMP MIN
humedad_referencia = 60 ; //aprox (50+75)/2
}
}
aplica_reglas(temperatura_referencia,humedad_referencia);
}
//*****

void aplica_reglas(int temp_ref,int hum_ref)
{
error_t=temp_ref- T_sensor ; // error_temperatura
error_h=hum_ref- HR_sensor ; // error_humedad

/////respuesta temperatura
respuesta_temp(error_t); // obtiene: regula_t y pot_t

//////////respuesta humedad
respuesta_hum(error_h); // obtiene: regula_h y pot_h

/// PARA AYUDA AL SISTEMA DE ENFRIAMIENTO
if((valor_hum ==0) && (valor_deshum==0)) // SI ESTAN DESOCUPADOS
{
valor_hum=valor_humA;
valor_deshum=valor_deshumA;
}
////////// ENVIA SEÑALES A ACTUADORES
actuadores_auto(valor_cal,valor_enf,valor_hum ,valor_vent,valor_deshum);
}
//*****

```

```

void respuesta_temp(int error_temp)
{
    if(( error_temp <= (-4) )) //SI ES MUY CALIENTE
    {
        Enf_Max();
    }
    if( (error_temp > (-4) ) && (error_temp <= (-1) ) ) // SI ES POCO CALIENTE
    {
        Enf_Min();
    }
    if( (error_temp > (-1)) && (error_temp <= 1 ) ) // SI ES ADECUADO
    {
        Zero_T();
    }
    if( (error_t > 1) && ( error_temp <=4) ) // SI ES POCO FRIO
    {
        Calef_Min();
    }
    if(error_temp > 4) // SI ES MUY FRIO
    {
        Calef_Max();
    }
}
//*****

```

```

void respuesta_hum(int error_hume)
{
    if ( (error_hume <= (-4)) )///SI ES MUY HUMEDO
    {
        Desh_Max();
    }
    if ( (error_hume > (-4) ) && (error_hume <= (-2)) ) // SI ES POCO HUMEDO
    {
        Desh_Min();
    }
    if ( (error_hume >(-2)) && (error_hume <= (2)) ) // SI ES ADECUADO
    {
        Zero_H();
    }
    if ( (error_hume > (2)) && (error_hume <= (4)) ) ///SI ES POCO SECO
    {
        Hum_Min();
    }
    if (error_hume > 4) // SI ES MUY SECO
    { Hum_Max(); }
}
//*****

```

```

void Enf_Max()
{
  valor_enf= 255;
  valor_cal=0;
  valor_vent=60;
  if(humidificador==0)//no activo
  {
    valor_humA= 255;
  }
  else
  {
    valor_humA= 0;
  }

  if (deshumidificador ==0)//no activo
  {
    valor_deshumA=70;
  }
  else
  {
    valor_deshumA=0;
  }
}
//*****

void Enf_Min()
{
  valor_enf= 200;
  valor_cal=0;
  valor_vent=60;
  valor_humA= 0;
  valor_deshumA= 0;
}
//*****

void Zero_T()
{
  valor_enf= 0;
  valor_cal=0;
  valor_vent=60;
  valor_humA= 0;
  valor_deshumA=0;
}
//*****

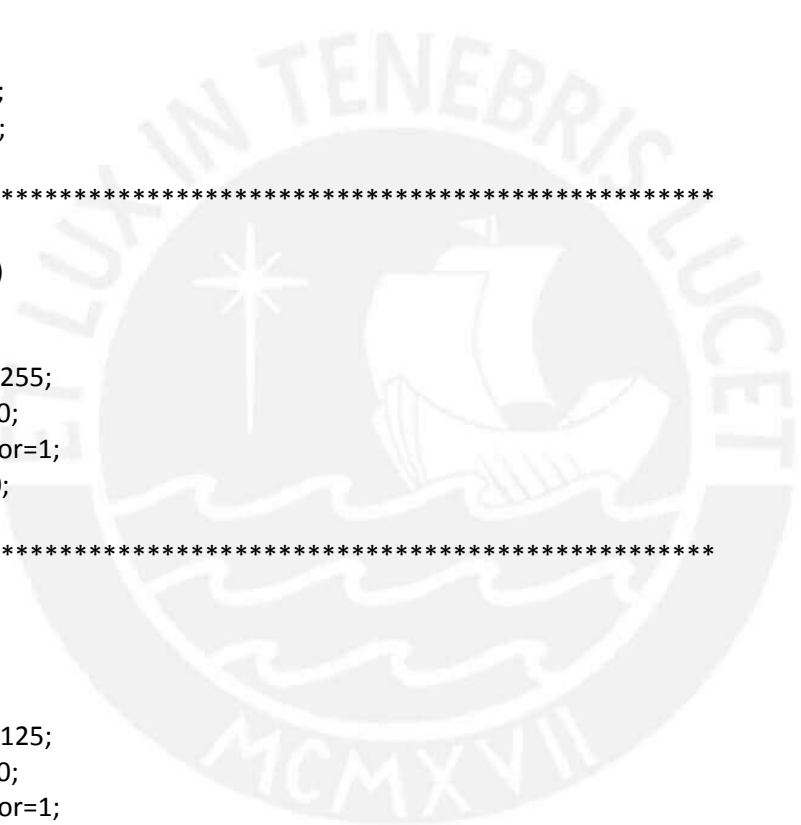
```

```
void Calef_Min()
{
    valor_enf= 0;
    valor_cal=255;
    valor_vent=125;
    valor_humA= 0;
    valor_deshumA=0;
}
//*****
```

```
void Calef_Max()
{
    valor_enf= 0;
    valor_cal=255;
    valor_vent=70;
    valor_humA= 0;
    ;valor_humA=0;
}
//*****
```

```
void Desh_Max()
{
    valor_hum= 0;
    valor_deshum=255;
    humidificador=0;
    deshumidificador=1;
    valor_vent=180;
}
//*****
```

```
void Desh_Min()
{
    valor_hum= 0;
    valor_deshum=125;
    humidificador=0;
    deshumidificador=1;
    valor_vent=60;
}
//*****
```



```

void Zero_H()
{
  valor_hum= 0;
  valor_deshum=0;
  humidificador=0;
  deshumidificador=0;
  valor_vent=60;
}
//*****

void Hum_Min()
{
  valor_hum= 255;
  valor_deshum=0;
  humidificador=1;
  deshumidificador=0;
  valor_vent=70;
}
//*****

void Hum_Max()
{
  valor_hum= 255;
  valor_deshum=0;
  humidificador=1;
  deshumidificador=0;
  valor_vent=80;
}
//*****

void tx_datos_lee_sensores()
{
  ///envia datos a la interfaz
  Serial.print(String (HR_sensor)+", "+String (T_sensor)+", "+String(L_sensor)+".");
  //lee sensores
  lee_sensores(); // LEE VALOR DE DTH22: t_sensor y H_sensor y L_sensor
  previo=reloj; //ACTUALIZA RELOJ
}
//*****

void modo_manual()
{
  //asigna valores que el usuario ENVÍA;
  actuadores_manual(valor_cal,valor_enf,valor_hum ,valor_vent,valor_deshum);
  analogWrite(luz,L_sensor*255); //ILUMINACIÓN AUTOMÁTICA
}
//*****

```

```

void lee_serial()
{
  if (Serial.available() > 0)
    { // If data is available to read,
      tipo_modo = Serial.read(); // 1=manual 100=auto
      tipo_clima = Serial.read(); // auto: 1 2 3
      valor_cal = Serial.read(); // on off
      valor_enf = Serial.read(); // pwm
      valor_hum = Serial.read(); // onf off
      valor_vent = Serial.read(); // on off (manual) y pwm(auto)
      valor_deshum = Serial.read(); // deshum pwm
      estado_sistema= Serial.read(); // 22: empieza 33: termina
    }
  delay(200);
}
//*****

void lee_sensores()
{
  ////////////ADQUISICION DE DATOS//////////
  // int chk = DHT11.read(DHT11PIN);

  int chk = DHT.read22(DHT22_PIN); // lee humedad y temperatura
  float humed = DHT.humidity;
  float tempe = DHT.temperature;
  int valorLDR = analogRead(A5); //lee adc 5
  float LDR= valorLDR*(5.0/1023.0); //se convierte a voltios
  ////////////

  HR_sensor= int(humed);
  T_sensor=int (tempe);

  if(LDR < 2.0) // cuando ya es de noche
  {
    L_sensor=1; //apaga
  }
  if ((LDR >=2.0) && (LDR <=3.0)) //ldr aumenta resistencia oscuridad
  { // compensa iluminación
    L_sensor=0; //prende
  }
  if (LDR > 3) ////resistencia pequeña luz hay mas voltaje
  {
    L_sensor=1; //apaga
  }
}
//*****

```



```

void actuadores_manual(int calA,int refA,int humA,int ventA,int deshumA)
{
  deshumA= map(deshumA,0,150,0,255);
  refA = map(refA,0,150,0,255);

  if(calA==1) // on off
  {calA=255;}
  else
  {calA=0;}

  if(ventA==1) // pwm
  {ventA=255;}
  else
  {ventA=0;}

  if(humA==1)
  {humA=255;}
  else
  {humA=0;}

  analogWrite(calefaccion,calA);
  analogWrite(humidificacion,humA);
  analogWrite(refrigeracion,refA);
  analogWrite(ventilacion,ventA);
  analogWrite(deshumidificacion,deshumA);
}
//*****

void actuadores_auto(int calB,int refB,int humB,int ventB,int deshumB)
{
  analogWrite(calefaccion,calB);
  analogWrite(humidificacion,humB);
  analogWrite(refrigeracion,refB);
  analogWrite(ventilacion,ventB);
  analogWrite(deshumidificacion,deshumB);
}
//*****

void detecta_humedad(int hr1)
{
  if ((hr1>=0) && (hr1<35))
  {
    seco=1;
  }
  else
  {seco=0;}

  if ((hr1>25) && (hr1<75))

```

```

{
    hume=1;
}
else
{hume=0;}

if ((hr1>65) && (hr1<=100))
{
    mhume=1;
}
else
{mhume=0;}
}
//*****

void humedad_pertenencia(int hr2)
{
    float H_acond= (hr2/(5.0)+0.5);
    hr2= int(H_acond);

    if ((seco==1)&&(hume==0)&&(mhume==0))
    {
        estado=c_seco;
        valor=Arr_seco[hr2];
    }
    if ((seco==0)&&(hume==1)&&(mhume==0))
    {
        estado=c_hume;
        valor=Arr_hume[hr2];
    }
    if ((seco==1)&&(hume==1)&&(mhume==0))
    {
        evalua_seco_hume(hr2);
    }
    if ((seco==0)&&(hume==0)&&(mhume==1))
    {
        estado=c_mhume;
        valor=Arr_mhume[hr2];
    }
    if((seco==0)&&(hume==1)&&(mhume==1))
    {
        evalua_hume_mhume(hr2);
    }
    perte_hume=valor;
    estado_hume=estado;
    grado_hume= int(perte_hume*10.0);
}
//*****

```

```

void evalua_seco_hume(int hr3)
{
    evalua = (Arr_seco[hr3])-(Arr_hume[hr3]);
    if(evalua >=(0.0))
    {
        estado=c_seco;
        valor=Arr_seco[hr3];
    }
    if(evalua <(0.0))
    {
        estado=c_hume;
        valor=Arr_hume[hr3];
    }
}
//*****

void evalua_hume_mhume(int hr4)
{
    evalua= Arr_hume[hr4]-Arr_mhume[hr4];
    if(evalua >=(0.0))
    {
        estado=c_hume;
        valor=Arr_hume[hr4];
    }
    else
    {
        estado=c_mhume;
        valor=Arr_mhume[hr4];
    }
}
//*****

void detecta_temperatura(int t1)
{
    if ((t1>=0) && (t1<12))
    {
        frio1=1;
    }
    else
    {frio1=0;}

    if ((t1>10) && (t1<22))
    {
        templa=1;
    }
    else
    {templa=0;}
}

```

```

if ((t1>=20) && (t1<26))
{
    cali=1;
}
else
{cali=0;}
if ((t1>24) && (t1<=46))
{
    mcali=1;
}
else
{mcali=0;}
}
//*****

```

```

void tempe_pertenencia(int t3)
{
    float T_acond= (t3/(2.0));
    t3= int(T_acond);

    if ((frio1==1)&&(templa==0)&&(cali==0)&&(mcali==0))
    {
        estado=c_frio;
        valor=Arr_frio[t3];
    }
    if ((frio1==0)&&(templa==1)&&(cali==0)&&(mcali==0))
    {
        estado=c_templa;
        valor=Arr_templa[t3];
    }
    if ((frio1==1)&&(templa==1)&&(cali==0)&&(mcali==0))
    {
        evalua_frio_temp(t3);
    }
    if ((frio1==0)&&(templa==0)&&(cali==1)&&(mcali==0))
    {
        estado=c_cali;
        valor=Arr_cali[t3];
    }
    if((frio1==0)&&(templa==0)&&(cali==0)&&(mcali==1))
    {
        estado=c_mcali;
        valor=Arr_mcali[t3];
    }
    if ((frio1==0)&&(templa==1)&&(cali==1)&&(mcali==0))
    {
        evalua_temp_cali(t3);
    }
}

```

```

        if ((frio1==0)&&(templa==0)&&(cali==1)&&(mcali==1))
        {
            evalua_cali_mcali(t3);
        }
    perte_tempe=valor;
    estado_tempe=estado;
    grado_tempe= int(perte_tempe*10.0);
}
//*****

void evalua_frio_temp(int t4)
{
    evalua = (Arr_frio[t4])-(Arr_templa[t4]);
    if(evalua >=(0.0))
    {
        estado=c_frio;
        valor=Arr_frio[t4];
    }
    if(evalua <(0.0))
    {
        estado=c_templa;
        valor=Arr_templa[t4];
    }
}
//*****

void evalua_temp_cali(int t5)
{
    evalua= (Arr_templa[t5])-(Arr_cali[t5]);

    if(evalua >=(0.0))
    {
        estado=c_templa;
        valor=Arr_templa[t5];
    }
    if(evalua <(0.0))
    {
        estado=c_cali;
        valor=Arr_cali[t5];
    }
}
//*****

```

```
void evalua_cali_mcali(int t6)
{
    evalua= Arr_cali[t6]-Arr_mcali[t6];

    if(evalua >=(0.0))
    {
        estado=c_cali;
        valor=Arr_cali[t6];
    }
    else
    {
        estado=c_mcali;
        valor=Arr_mcali[t6];
    }
}
//*****
```



Anexo 9: Código de programación de la interfaz de usuario en Processing

```
import processing.serial.*; //inicia comunicación con ARDUINO
Serial port;

PrintWriter base_datos; // crea archivo de temperatura y humedad

int[] arreglo = {0,0,0,0,0,0,0,0};
String hr="";
String temp="";
String luz="";
String data="";
PFont font;
int index=0;
int index2=0;

// se definen gráficas de control
PImage start;
PImage caja;
PImage ilu;
PImage hume;
PImage cal;
PImage frio;
PImage vent;
PImage fondo;
PImage check;

// se define gráficas de interacción
PImage bh_pm;
PImage bmh_pm;
PImage bh_tb;
PImage enviar;
PImage automa;
PImage manu;
PImage clima;
PImage modos;
PImage climas;
PImage sistemas;
PImage s_cal;
PImage s_enf;
PImage s_hum;
PImage s_vent;
PImage s_deshum;
```

```

        //variables de control
int auto =0;
int manual =0;
int clima1=0,clima2=0,clima3 =0;
int value_cal=0,value_enf=0,value_hum=0,value_vent=0,value_deshum=0;
int play=0;
int color_boton1=0,color_boton2=0,boton=0;

float ilu1=0;
float hume1=0;
float tempe1=0;

int tempe_min=0,tempe_max=0, hum_min=0,hum_max=0;
int t_ref=0,h_ref=0;

int f_mode=0,f_clima=0;
String estado_luz="test";

//***** PROGRAMA PRINCIPAL *****/
void setup()
{
    size(800, 640);           // se define dimensiones de la pantalla
    base_datos=createWriter("temp_hum.txt"); // se genera el archivo de texto con los resultados

    port= new Serial(this,"COM6",9600);

    port.bufferUntil('.');           //almacena hasta encontrar el punto
    font=loadFont("ARCHRISTY-40.vlw");
    carga_imagenes();           // carga imágenes
}

void draw()
{
    background(0);           //fondo negro
        //empezar
    boton_start();
        //terminar
    boton_finish();
    muestra_sensores();

        // selecciona modo
    select_modo();
        //selecciona climas
    select_clima();
        //selecciona niveles de regulación
    select_potencia();

```

```

        // mostrar niveles en barras
muestra_niveles();

        //muestra porcentaje de potencia del deshumificador
float value_deshum1=0;
value_deshum1= map(value_deshum,0,150,0,100);
text(value_deshum1 + "%", 200,465);

        //muestra variables del programa
imprime_datos();
}
//*****//

void mouseClicked() { // cuando se hace clic con el mouse

        //SECCION FUNCIONAMIENTO

if ((mouseX >= 50) && (mouseX <= 110 )) //EMPEZAR
{
if ((mouseY >= 525) && (mouseY <= 585 ))
{
color_boton1 =255;
color_boton2 =0;
boton= 22; // para empezar
}
}

if ((mouseX >= 620) && (mouseX <= 680 )) //TERMINAR
{
if ((mouseY >= 525) && (mouseY <= 585 ))
{
color_boton1 =0;
color_boton2 =255;
boton= 33; // para terminar
//terminar archivo de texto
base_datos.flush();
base_datos.close();
}
}

if (boton==22)
{ //empezamos
// SECCION MODO
// automatico
if ((mouseX >= 125) && (mouseX <= 175 ))
{
if ((mouseY >= 15) && (mouseY <= 65 )){
auto= 255;

```

```

manual = 0;
f_mode= 100;    //auto
}
}
        //manual
if ((mouseX >= 225) && (mouseX <= 275 ))
{
if ((mouseY >= 15) && (mouseY <= 65 )){
manual = 255;
auto = 0;
clima1=0;
clima2=0;
clima3=0;
f_mode= 1;    //manual
f_clima=0;
}
}

        // SECCION CLIMAS
if ((mouseX >= 120) && (mouseX <= 160 ))
{
if(auto==255)
{
if ((mouseY >= 185) && (mouseY <= 205 )){
clima1=255;
clima2=0;
clima3=0;
f_clima=1;    // bosque humedo pm
tempe_min=17;
tempe_max=24;
hum_min=50;
hum_max=75;
t_ref=20;
h_ref=65;
}
if ((mouseY >= 225) && (mouseY <= 245 )){
clima1=0;
clima2=255;
clima3=0;
f_clima=2;    //bosque muy humedo_pm
tempe_min=17;
tempe_max=24;
hum_min=75;
hum_max=85;
t_ref=20;
h_ref=80;
}
}
}

```

```

if ((mouseY >= 265) && (mouseY <= 285 )){
    clima1=0;
    clima2=0;
    clima3=255;
    f_clima=3;      // bosque_tropical pm
    tempe_min=24;
    tempe_max=30;
    hum_min=50;
    hum_max=75;
    t_ref=27;
    h_ref=65;
}
}
else
{
    clima1=0;
    clima2=0;
    clima3=0;
    f_clima=0;
}
}
//SECCION SISTEMAS

if(manual==255)
{
    //calefaccion
    if ((mouseX >= 50) && (mouseX <= 90 ))
    {
        if ((mouseY >= 385) && (mouseY <= 425 ))
        {value_cal=1;}
        }
    if ((mouseX >= 50) && (mouseX <= 90 ))
    {
        if ((mouseY >= 426) && (mouseY <= 440 ))
        {value_cal=0;}
        }
    //humedad
    if ((mouseX >= 144) && (mouseX <= 184 ))
    {
        if ((mouseY >= 385) && (mouseY <= 425 ))
        {value_hum=1;}
        }
    if ((mouseX >= 144) && (mouseX <= 184 ))
    {
        if ((mouseY >= 426) && (mouseY <= 440 ))
        {value_hum=0;}
        }
    }
}

```

```

    //ventilacion
    if ((mouseX >= 230) && (mouseX <= 270 ))
    {
        if ((mouseY >= 385) && (mouseY <= 425 ))
        {value_vent=1;}
        }
    if ((mouseX >= 230) && (mouseX <= 270 ))
    {
        if ((mouseY >= 426) && (mouseY <= 440 ))
        {value_vent=0;}
        }

    //deshumidificacion
    if ((mouseX >= 140) && (mouseX <= 290 ))
    {
        //deshumidificacion
        if ((mouseY >= 450) && (mouseY <= 470 ))
        {value_deshum=mouseX-140;

        }
        //ventilación
        if ((mouseY >= 480) && (mouseY <= 500 ))
        {value_enf=mouseX-140;}
        }
    }
else
{
    value_cal=0;
    value_enf=0;
    value_hum=0;
    value_vent=0;
    value_deshum=0;
}
}
else
{
    auto=0;
    manual=0;
    clima1=0;
    clima2=0;
    clima3=0;
    f_clima=0;
    value_cal=0;
    value_enf=0;
    value_hum=0;
    value_deshum=0;
    value_vent=0;
    f_mode=0;
}

```

```

        hr="0";
        temp="0";
        estado_luz= "test";
    }
}
//*****//

void serialEvent(Serial port) //funcion para cuando llegue un serial
{
    //eliminar el punto de la cadena
    data=port.readStringUntil('.');           // ubicamos el punto
    data=data.substring(0,data.length()-1);   //guardamos sin el punto

    //guardamos los valores en index
    index=data.indexOf(",");//ubicamos la coma
    hr= data.substring(0,index);// guardamos hr

    index2=data.indexOf(",");//ubicamos la doble coma
    temp= data.substring(index+1,index2);// temperatura
    luz= data.substring(index2+2,data.length());//luz

    base_datos.print(hr + " %, " + temp + " °C " );
    base_datos.print(hour()+ ":");
    base_datos.print(minute()+ ":");
    base_datos.println(second());
    base_datos.println("");
}
//*****//

void select_modo()
{
    //MODO
    textSize(16) ;
    image(modos,10,5);
    modos.resize(100,60);
    //auto
    stroke(255);
    fill(0,auto,0);
    ellipse(150,40,60,60);
    image(automa,126,17);
    automa.resize(50,50);
    fill(0,auto,0);
    text("AUTO", 128, 92);

    //manual
    textSize(16) ;
    fill(0>manual,0);
    ellipse(250,40,60,60);
}

```



```

image(manu,228,17);
manu.resize(50,50);
fill(0,manual,0);
text("MANUAL", 220, 92);
}
//*****//

void muestra_sensores()
{
stroke(255);
fill(0);
rect(400,320,300,205,30);
int luz1= int(luz);
if(luz1==1)
{
estado_luz = "on";
}
if(luz1==0)
{
estado_luz = "off";
}

fill(255,255,0);
textFont(font,40);
text("RH: "+hr+"%",440,385);
text("T: "+temp+"°C",440,445);
text("Ilu: "+ estado_luz,440,500);
}
//*****//

void select_clima()
{
//CLIMAS SELECCION
stroke(255);
fill(0);
rect(20,100,300,200,30);

image(climas,50,105);
climas.resize(100,60);

image (clima, 220,100);
clima.resize(80,80);

//bosque humedo premontano
fill(clima1,0,0);
rect(120,185,20,20);
image(bh_pm,150,180);
bh_pm.resize(100, 40);

```

```

        //bosque muy húmedo premontano
fill(clima2,0,0);
rect(120,225,20,20);
image(bmh_pm,150,220);
bmh_pm.resize(100, 40);

        //Bosque tropical
fill(clima3,0,0);
rect(120,265,20,20);
image(bh_tb,150,260);
bh_tb.resize(100, 40);
}
//*****//

void select_potencia()
{
        //sistemas
stroke(255);
fill(0);
rect(20,320,300,205,30);

image(sistemas,50,322);
sistemas.resize(100,60);

        //calefaccion : resistencia AC
//value_cal
fill(value_cal*255,value_cal*255,0);
ellipse(70,405,40,40);
image(s_cal,55,389);
s_cal.resize(30,30);

        //humidificador: ultrasonido AC
stroke(0);
fill(value_hum*255,value_hum*255,0);
ellipse(164,405,40,40);
image(s_hum,144,385);
s_hum.resize(41,41);

        //enfriar: ventiladores
stroke(255);
fill(value_vent*255,value_vent*255,0);
ellipse(250,405,40,40);
image(s_vent,235,389);
s_vent.resize(30,30);

        //deshumificador extractor: 12 VDC
fill(0);

```

```

rect(140,450,150,20);
image(s_deshum,88,445);
s_deshum.resize(30,25);
fill(0,180,0); //barra de poder
rect(140,450,value_deshum,20,5);

    //enfriar
fill(0);
rect(140,480,150,20);
image(s_enf,88,477);
s_enf.resize(30,30);
fill(100,10,100); //barra de poder
rect(140,480,value_enf,20,5);

    //boton enviar
fill(0,play,0);
ellipse(185,555,50,50);
image(enviar,155,525);
enviar.resize(60, 60);
}
//*****//

void muestra_niveles()
{
stroke(255);
fill(0);
rect(400,20,300,270,30);
line(440,260,670,260);
int tsensor = parseInt(temp);
int hrsensor = parseInt(hr);

fill(0);
rect(450,60,40,200);
fill(0,(100-hrsensor)*2,(hrsensor)*2);
rect(450,260,40,-(hrsensor*2));
textSize(18) ;
    //HUMEDAD
fill(0,230,123);
text("HR", 455, 55);
textSize(12) ;
text("100 %", 496, 60);
text(hr+"%",500,260-(hrsensor*2));
text("0 %", 496, 260);

    //limites
fill(200,100,200);
text(hum_min + "%", 426,260-(hum_min*2));
line(450,260-(hum_min*2),490,260-(hum_min*2));

```

```

text(hum_max + "%", 426,260-(hum_max*2));
line(450,260-(hum_max*2),490,260-(hum_max*2));
    //referencias
fill(255,10,80);
text(h_ref + "%", 426,260-(h_ref*2));
line(450,260-(h_ref*2),490,260-(h_ref*2));
    //TEMPERATURA
fill(0);
rect(580,60,40,200);
fill((50-tsensor)*4,150,10);
rect(580,260,40,-(tsensor*4));
textSize(18) ;
fill(0,230,123);
text("T", 585, 55);
textSize(12) ;
text("50 °C", 626, 60);
text(temp+"°C",626,260-(tsensor*4));
text("0 °C", 626, 260);
    //limites
fill(200,100,200);
text(tempe_min + "°C", 552,260-(tempe_min*4));
line(580,260-(tempe_min*4),620,260-(tempe_min*4));
text(tempe_max + "°C", 552,260-(tempe_max*4));
line(580,260-(tempe_max*4),620,260-(tempe_max*4));
    //referencias
fill(255,10,80);
text(t_ref + "°C", 552,260-(t_ref*4));
line(580,260-(t_ref*4),620,260-(t_ref*4));
}
//*****//

void imprime_datos()
{
    if ((mouseX >= 160) && (mouseX <= 210 ))
    {
        if ((mouseY >= 530) && (mouseY <= 580 )){
            if (mousePressed==true){
                play=255;
                println(" auto: " +auto);
                println(" manual: " +manual);
                println(" clima1: " +clima1);
                println(" clima2: " +clima2);
                println(" clima3: " +clima3);
                println(" calef " + value_cal);
                println(" enf " + value_enf);
                println(" humi " + value_hum);
            }
        }
    }
}

```

```

println(" deshum " + value_deshum);
println(" vent " + value_vent);

arreglo[0]=f_mode;
arreglo[1]=f_clima;
arreglo[2]=value_cal;
arreglo[3]=value_enf;
arreglo[4]=value_hum;
arreglo[5]=value_vent;
arreglo[6]= boton;
arreglo[7]=value_deshum;

println(arreglo[0],arreglo[1],arreglo[2],arreglo[3],arreglo[4],arreglo[5],arreglo[6],arreglo[7]);
envia_datos();
        // envía datos a ARDUINO
    envia_datos();
}
else
play=0;
}
}
}
}
//*****//

void carga_imagenes()
{
bh_pm = loadImage("bh_pm.png");
bmh_pm = loadImage("bmh_pm.png");
bh_tb = loadImage("bh_tb.png");
enviar = loadImage("env.png");
automa = loadImage("auto.png");
manu = loadImage("mano.png");
clima = loadImage("clima.png");
modos= loadImage("modos.png");
climas= loadImage("climas.png");
sistemas= loadImage("sistemas.png");

s_cal=loadImage("calor.png");
s_enf=loadImage("hielo.png");
s_hum=loadImage("humedad.png");
s_vent=loadImage("frio.png");
s_deshum= loadImage("wind.png");

caja= loadImage("caja.png");
cal= loadImage("calor.png");
frio= loadImage("frio.png");
hume= loadImage("hume.png");
ilu= loadImage("luz.png");

```

```

vent= loadImage("venti.png");
fondo= loadImage("fondo.png");
check= loadImage("check.png");
start= loadImage("start.png");
}
//*****//

void envia_datos()
{
    port.write(arreglo[0]); // modo 100 o 1 o 0
    port.write(arreglo[1]); // clima 1 2 3 o 0
    port.write(arreglo[2]); // calef
    port.write(arreglo[3]); // enfri
    port.write(arreglo[4]); //humidif
    port.write(arreglo[5]); // vent
    port.write(arreglo[7]); // deshumidif
    port.write(arreglo[6]); // estado de conexion o desconexión

delay(200);
}
//*****//

void boton_start()
{
    stroke(255);
    fill(0,color_boton1,0);
    ellipse(80,558,52,52);
    image(start,55,533);
    start.resize(50,50);
    textSize(18) ;
    fill(0,230,123);
    text("EMPEZAR", 50, 615);
}
//*****//

void boton_finish()
{
    stroke(255);
    fill(color_boton2,0,0);
    ellipse(650,558,52,52);
    image(start,625,533);
    start.resize(50,50);
    textSize(18) ;
    fill(0,230,123);
    text("TERMINAR", 622, 615);
}
//*****//

```

Anexo 10: Diagramas esquemáticos de los circuitos de potencia

1) CIRCUITO CALEFACCIÓN

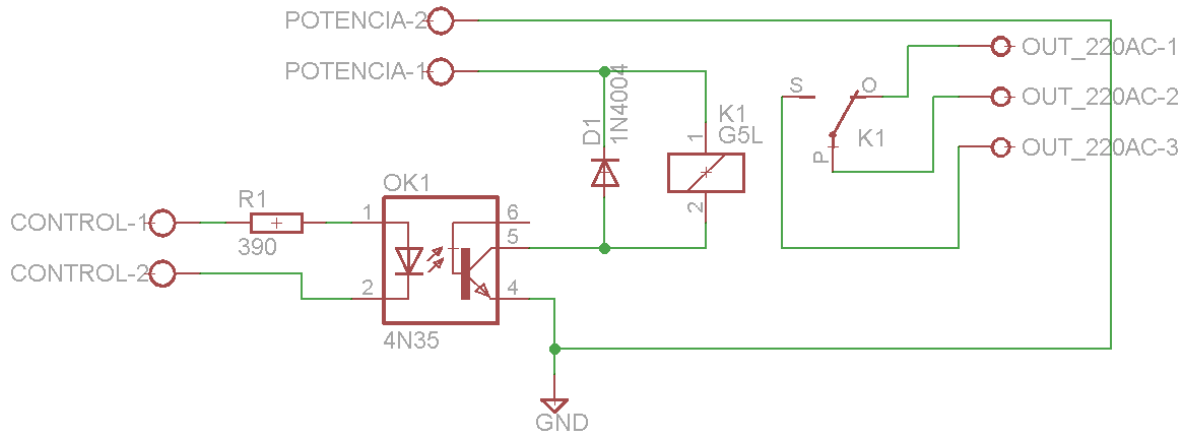


Figura 1.1. Circuito esquemático del sistema de calefacción

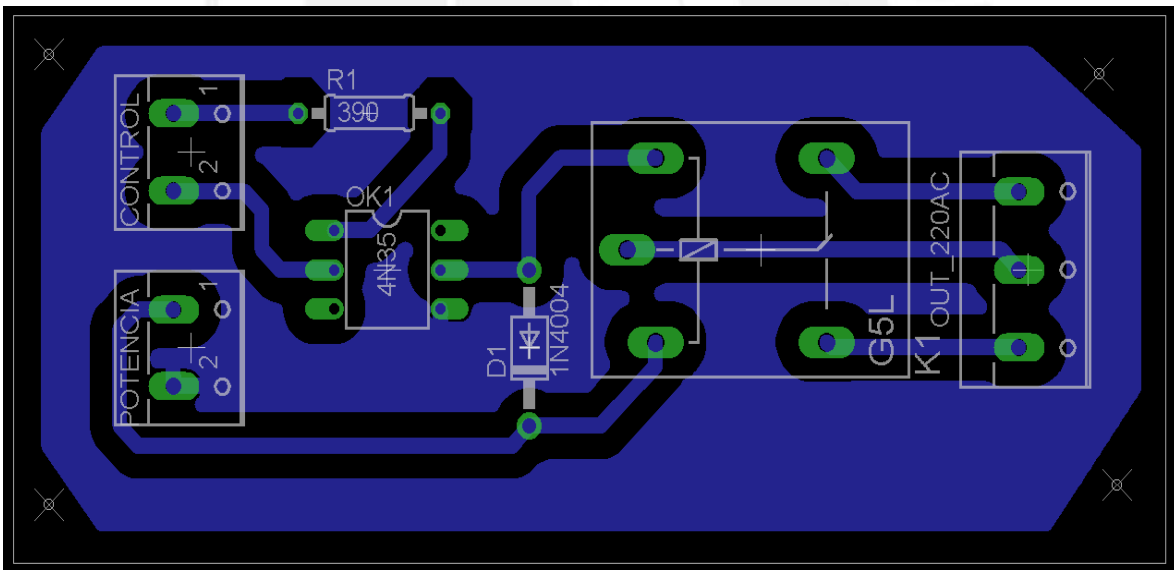


Figura 1.2. Tarjeta del sistema de calefacción

2) ENFRIAMIENTO

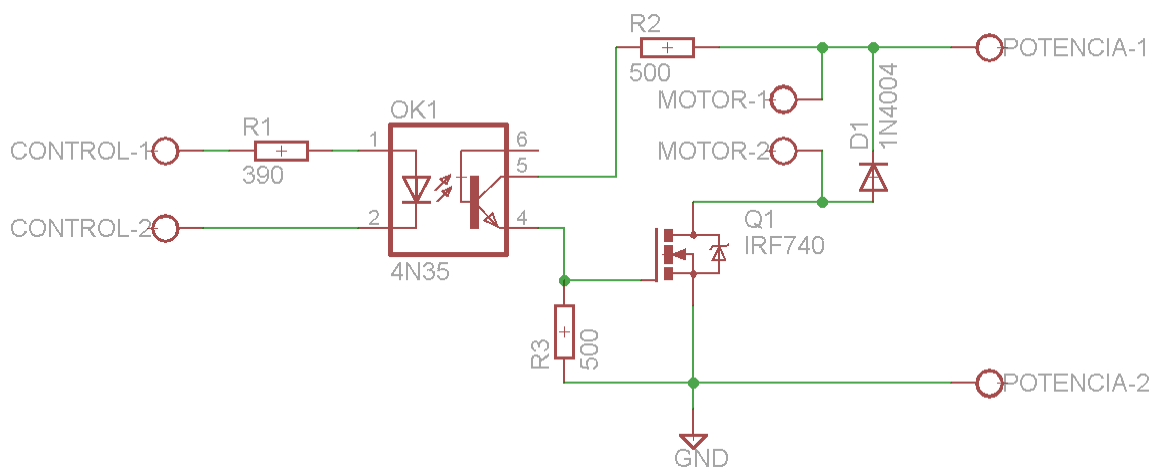


Figura 1.3. Circuito esquemático del sistema de enfriamiento

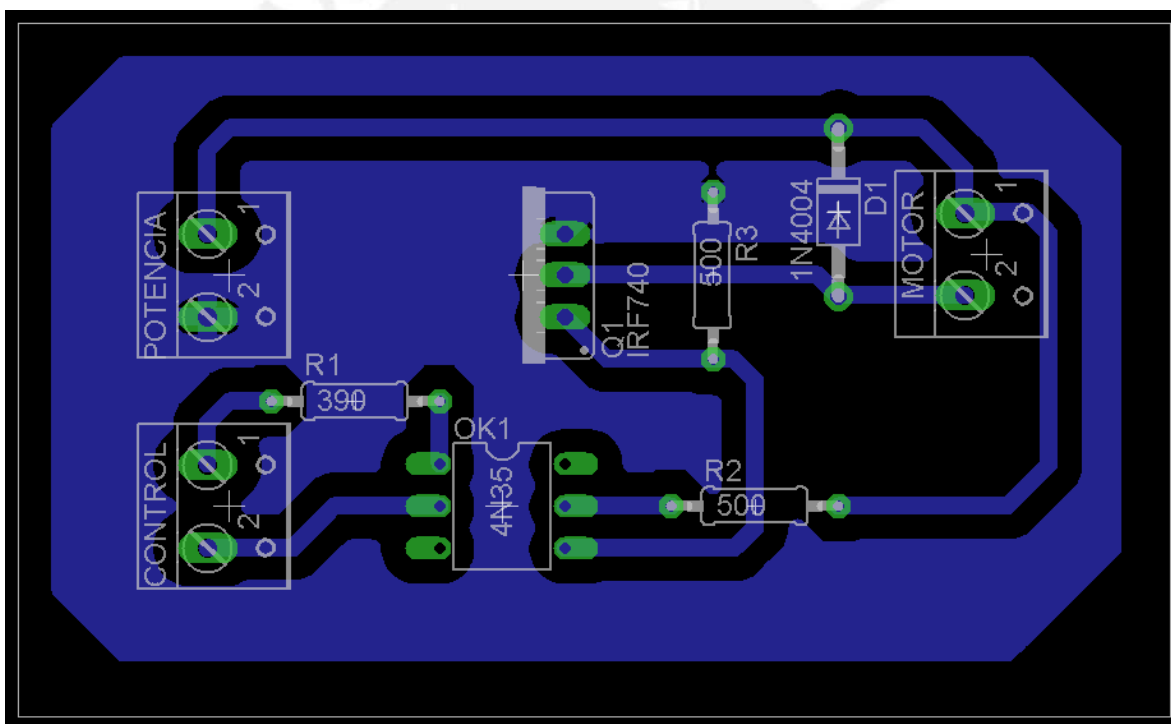


Figura 1.4. Tarjeta del sistema de enfriamiento

3) HUMIDIFICACIÓN

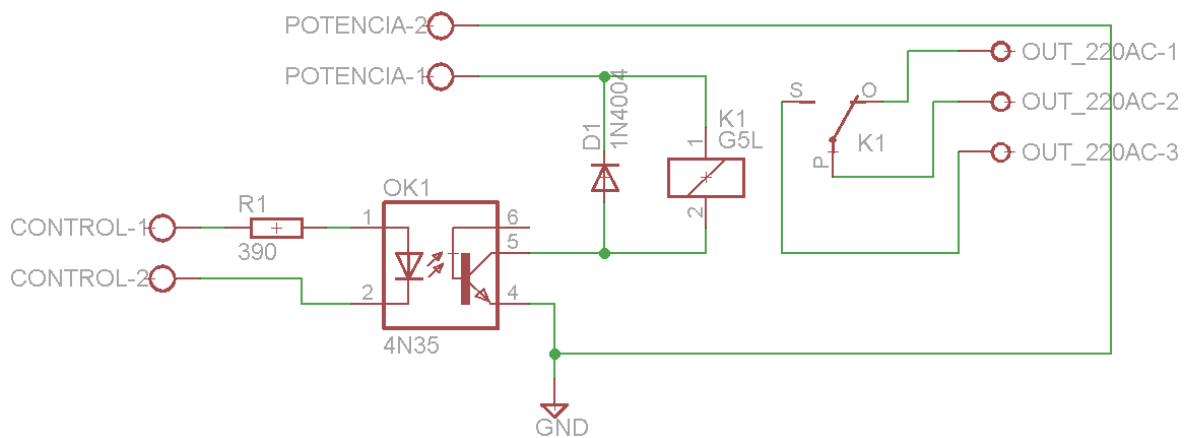


Figura 1.5. Circuito esquemático del sistema de humidificación

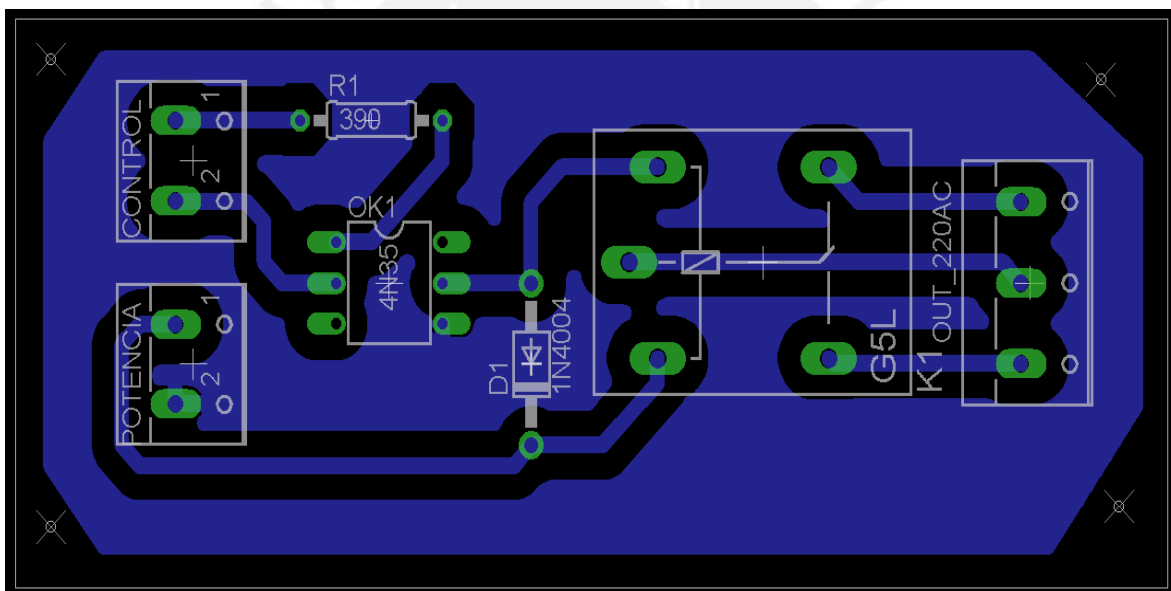


Figura 1.6. Tarjeta del sistema de humidificación

4) DESHUMUDIFICACIÓN

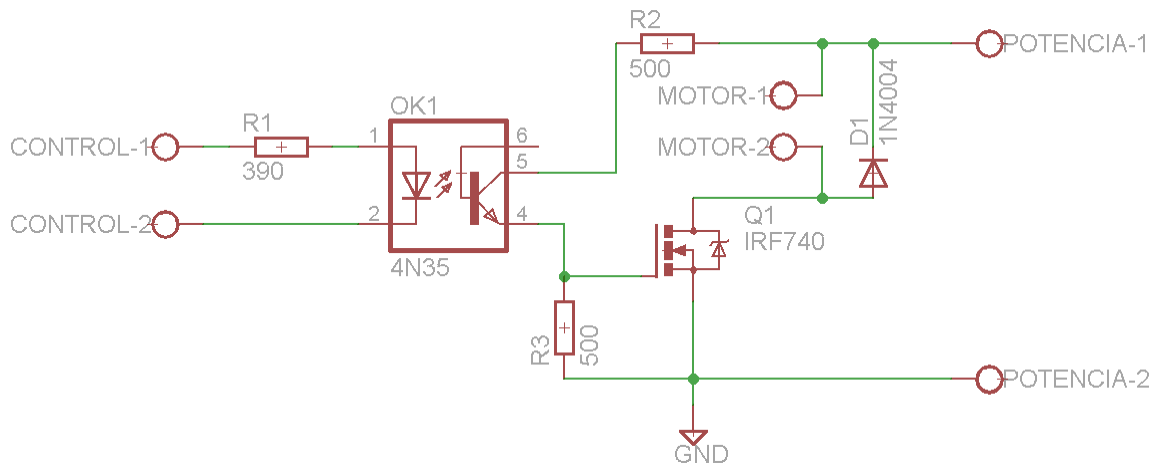


Figura 1.7. Circuito esquemático del sistema de deshumidificación

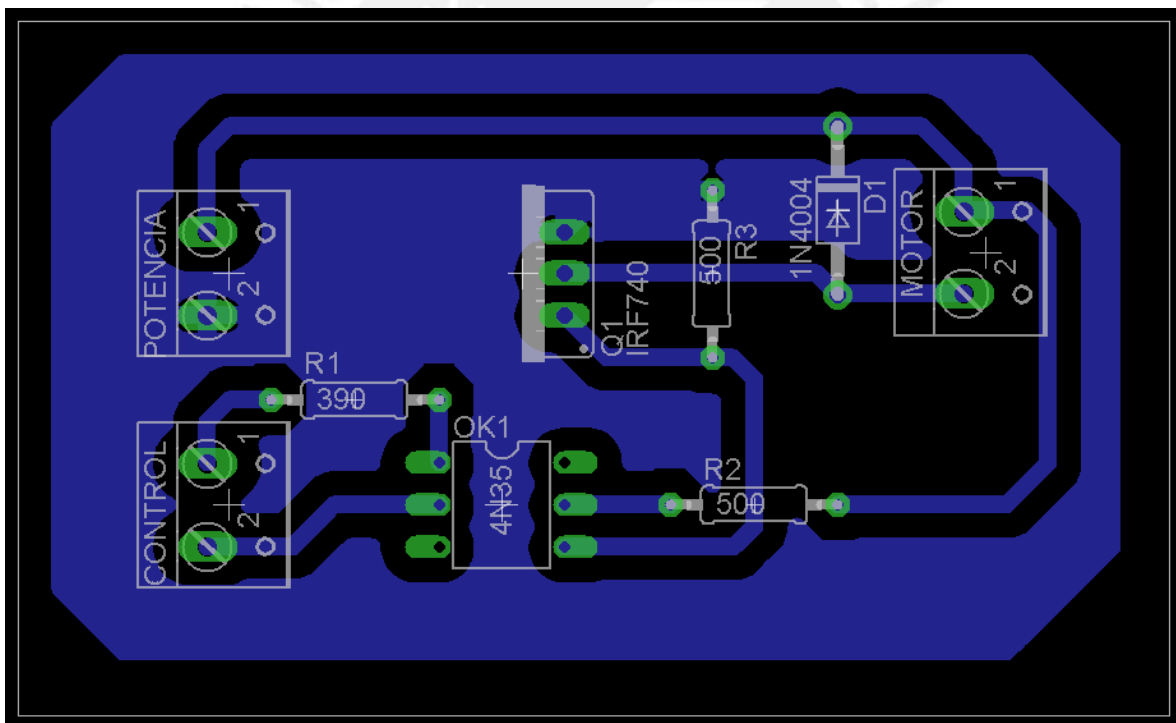


Figura 1.8. Tarjeta del sistema de deshumidificación

5) ILUMINACIÓN

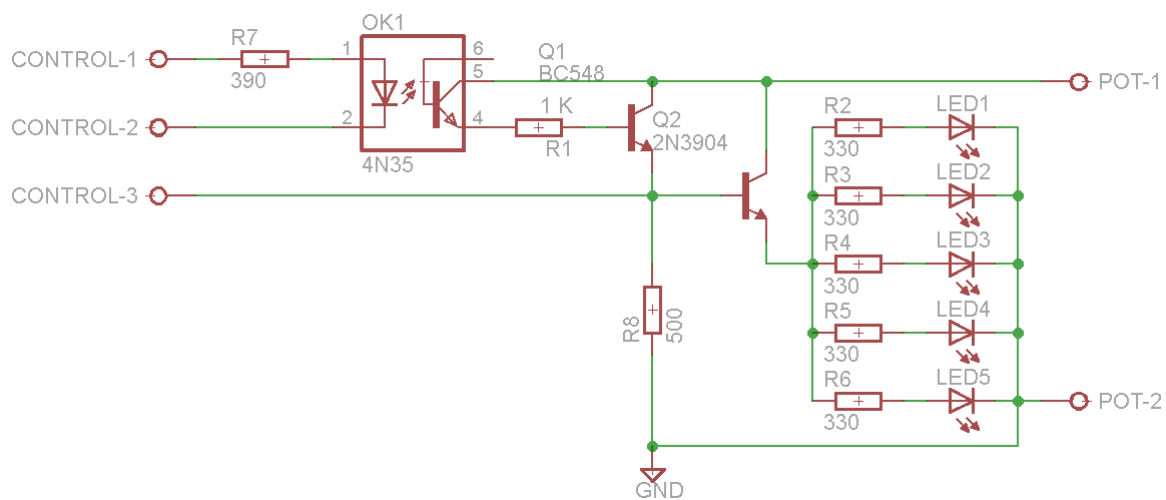


Figura 1.9. Circuito esquemático del sistema de iluminación principal

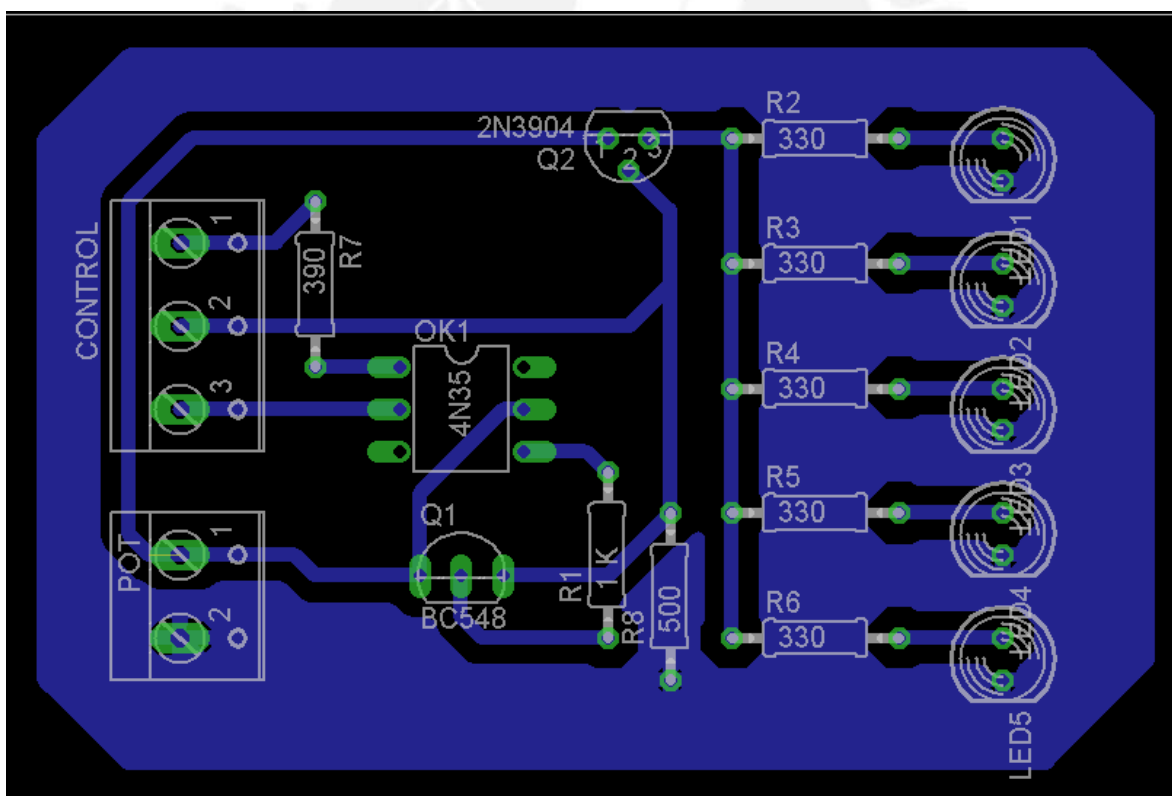


Figura 1.10. Tarjeta del sistema de iluminación principal

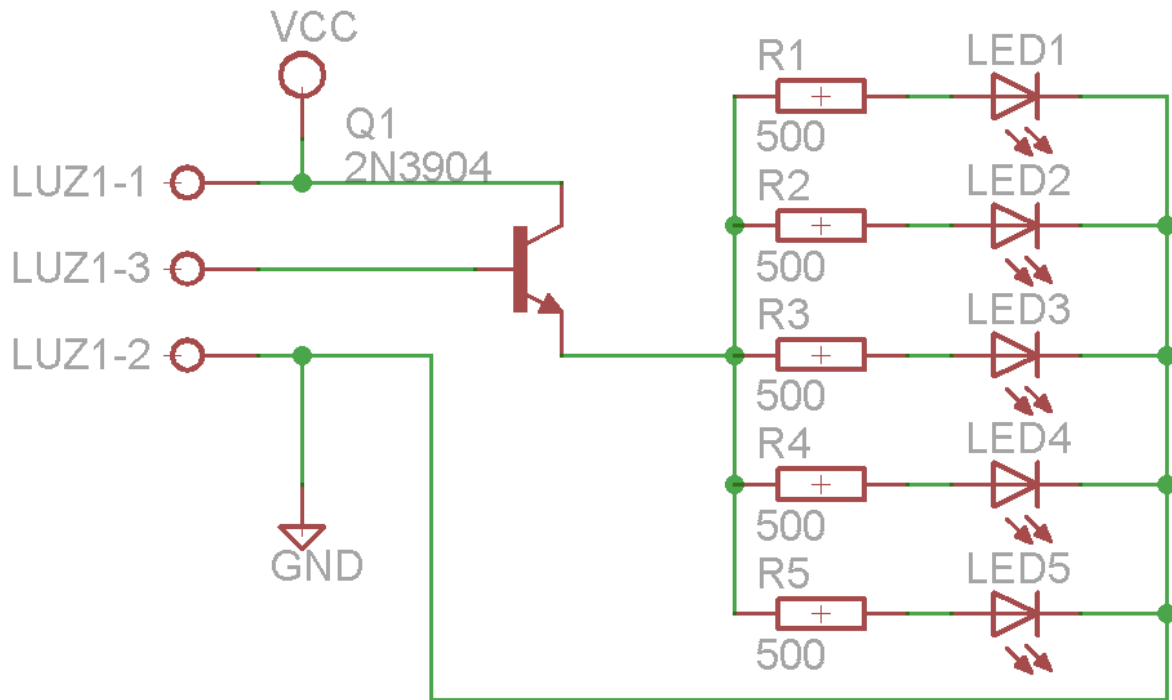


Figura 1.11. Circuito esquemático del sistema de iluminación (x3)

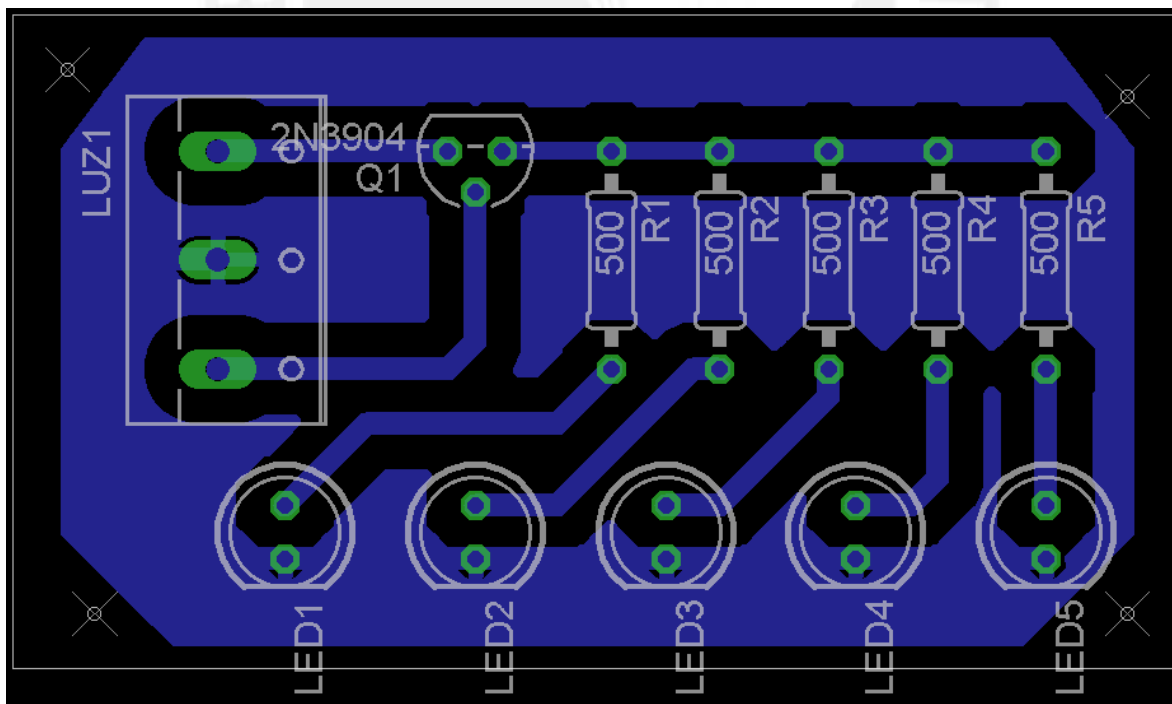


Figura 1.12. Tarjeta del sistema de iluminación (x3)

6) CIRCULACIÓN

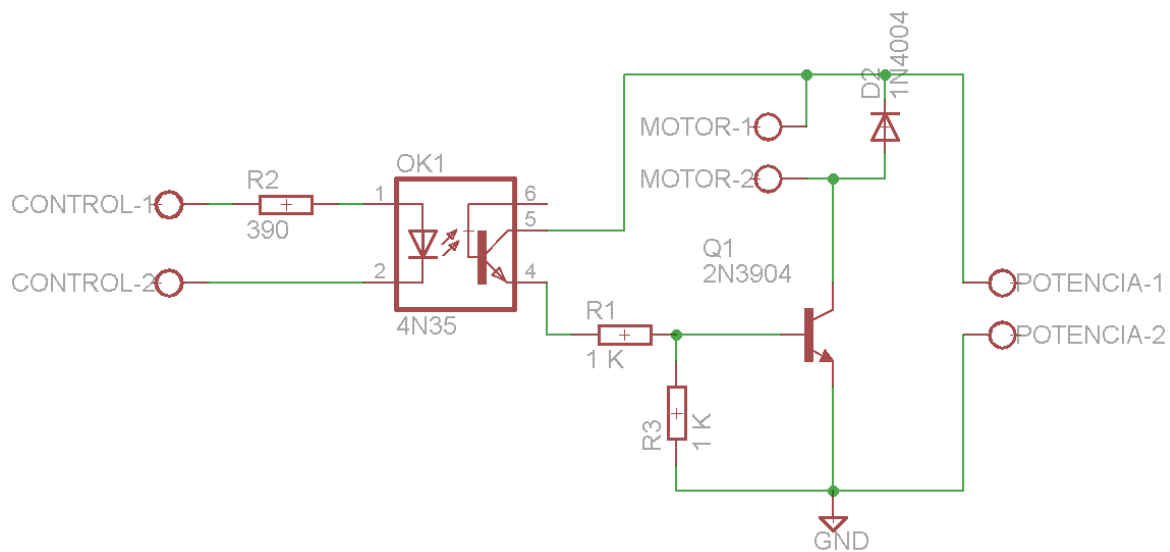


Figura 1.13. Circuito esquemático del sistema de circulación

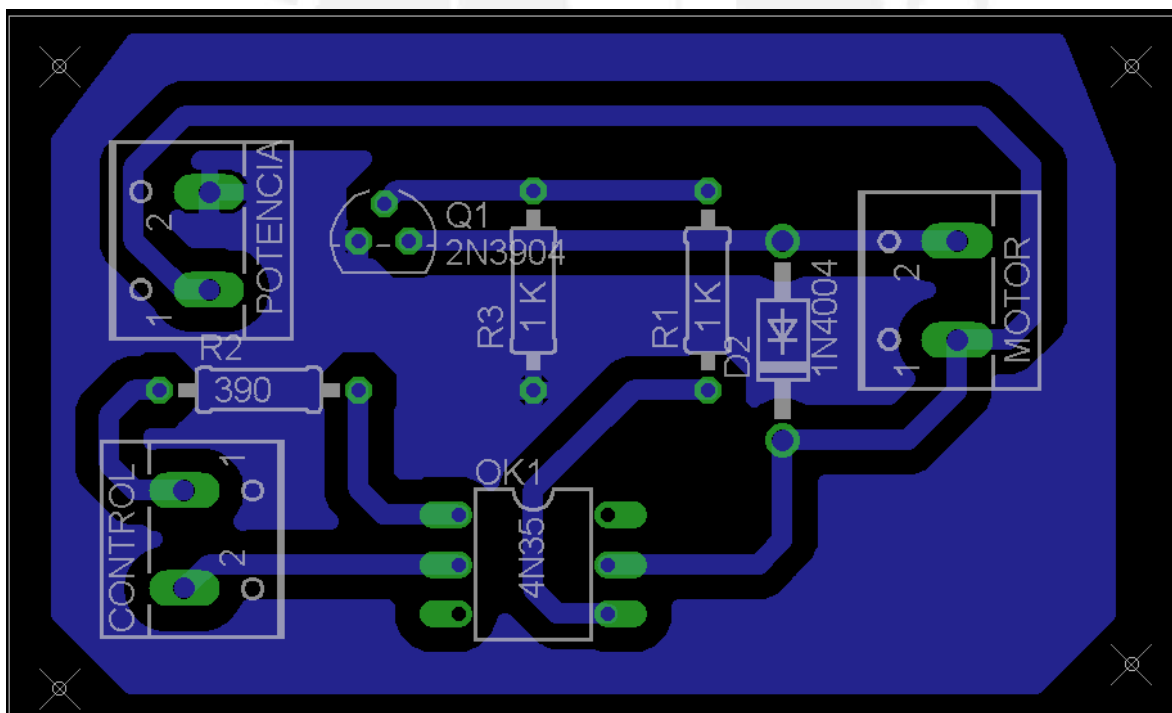


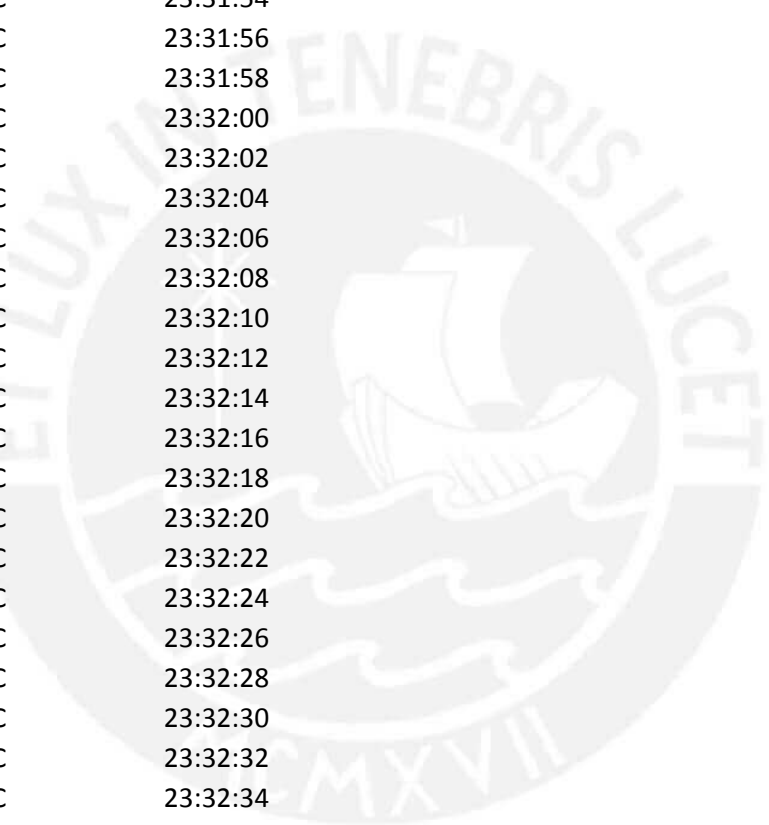
Figura 1.14. Tarjeta del sistema de circulación

Anexo 11: Datos del archivo: "Manual_mode_deshum.txt"

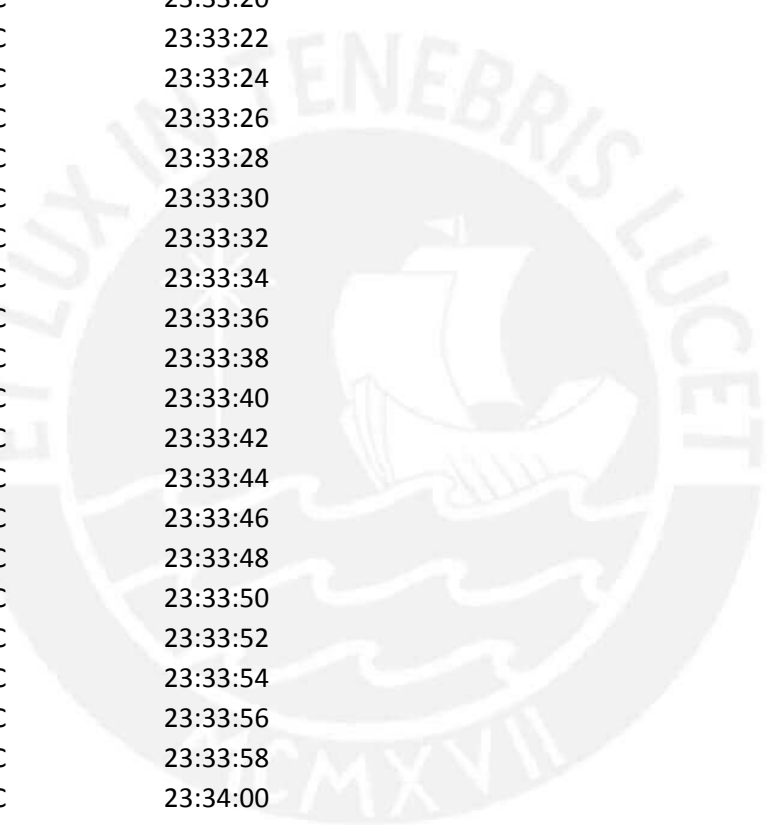
Humedad	Temperatura	Tiempo
0 %	0 °C	23:28:48
99 %	21 °C	23:28:50
99 %	21 °C	23:28:52
99 %	21 °C	23:28:54
99 %	21 °C	23:28:56
99 %	21 °C	23:28:58
99 %	21 °C	23:29:00
99 %	21 °C	23:29:02
99 %	21 °C	23:29:04
99 %	21 °C	23:29:06
99 %	21 °C	23:29:08
99 %	21 °C	23:29:10
99 %	21 °C	23:29:12
99 %	21 °C	23:29:14
99 %	21 °C	23:29:16
99 %	21 °C	23:29:18
99 %	21 °C	23:29:20
99 %	21 °C	23:29:22
99 %	21 °C	23:29:24
99 %	21 °C	23:29:26
99 %	21 °C	23:29:28
99 %	21 °C	23:29:30
99 %	21 °C	23:29:32
99 %	21 °C	23:29:34
99 %	21 °C	23:29:36
99 %	21 °C	23:29:38
99 %	21 °C	23:29:40
99 %	21 °C	23:29:42
99 %	20 °C	23:29:44
99 %	20 °C	23:29:46
99 %	20 °C	23:29:48
99 %	20 °C	23:29:50
99 %	20 °C	23:29:52
99 %	20 °C	23:29:54
99 %	20 °C	23:29:56
99 %	20 °C	23:29:58
99 %	20 °C	23:30:00
99 %	20 °C	23:30:02
99 %	20 °C	23:30:04

99 %	20 °C	23:30:06
99 %	20 °C	23:30:08
99 %	20 °C	23:30:10
99 %	20 °C	23:30:12
99 %	20 °C	23:30:14
99 %	20 °C	23:30:16
99 %	20 °C	23:30:18
99 %	20 °C	23:30:20
99 %	20 °C	23:30:22
99 %	20 °C	23:30:24
99 %	19 °C	23:30:26
99 %	19 °C	23:30:28
99 %	19 °C	23:30:30
99 %	19 °C	23:30:32
99 %	19 °C	23:30:34
99 %	19 °C	23:30:36
99 %	19 °C	23:30:38
99 %	19 °C	23:30:40
99 %	19 °C	23:30:42
99 %	19 °C	23:30:44
99 %	19 °C	23:30:46
99 %	19 °C	23:30:48
99 %	19 °C	23:30:50
99 %	19 °C	23:30:52
99 %	19 °C	23:30:54
99 %	19 °C	23:30:56
99 %	19 °C	23:30:58
99 %	19 °C	23:31:00
99 %	19 °C	23:31:02
99 %	19 °C	23:31:04
99 %	19 °C	23:31:06
99 %	19 °C	23:31:08
99 %	19 °C	23:31:10
99 %	19 °C	23:31:12
99 %	19 °C	23:31:14
99 %	19 °C	23:31:16
99 %	19 °C	23:31:18
99 %	19 °C	23:31:20
99 %	19 °C	23:31:22
99 %	19 °C	23:31:24
99 %	19 °C	23:31:26
99 %	19 °C	23:31:28
99 %	19 °C	23:31:30

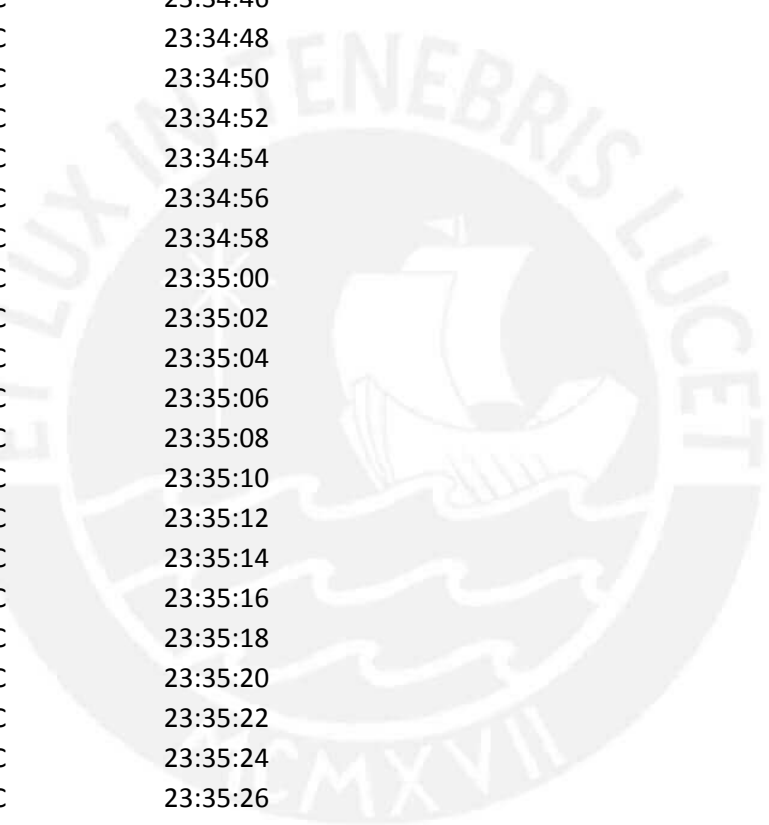
99 %	19 °C	23:31:32
99 %	19 °C	23:31:34
99 %	19 °C	23:31:36
99 %	19 °C	23:31:38
99 %	19 °C	23:31:40
99 %	19 °C	23:31:42
99 %	19 °C	23:31:44
99 %	19 °C	23:31:46
99 %	19 °C	23:31:48
98 %	19 °C	23:31:50
98 %	19 °C	23:31:52
97 %	19 °C	23:31:54
97 %	19 °C	23:31:56
96 %	19 °C	23:31:58
96 %	19 °C	23:32:00
96 %	19 °C	23:32:02
95 %	19 °C	23:32:04
95 %	19 °C	23:32:06
94 %	19 °C	23:32:08
93 %	19 °C	23:32:10
93 %	19 °C	23:32:12
92 %	19 °C	23:32:14
92 %	19 °C	23:32:16
92 %	19 °C	23:32:18
91 %	19 °C	23:32:20
91 %	19 °C	23:32:22
91 %	19 °C	23:32:24
90 %	19 °C	23:32:26
90 %	19 °C	23:32:28
90 %	19 °C	23:32:30
89 %	19 °C	23:32:32
88 %	19 °C	23:32:34
88 %	19 °C	23:32:36
88 %	19 °C	23:32:38
88 %	19 °C	23:32:40
87 %	19 °C	23:32:42
87 %	19 °C	23:32:44
87 %	19 °C	23:32:46
87 %	19 °C	23:32:48
87 %	19 °C	23:32:50
87 %	19 °C	23:32:52
87 %	19 °C	23:32:54
86 %	19 °C	23:32:56



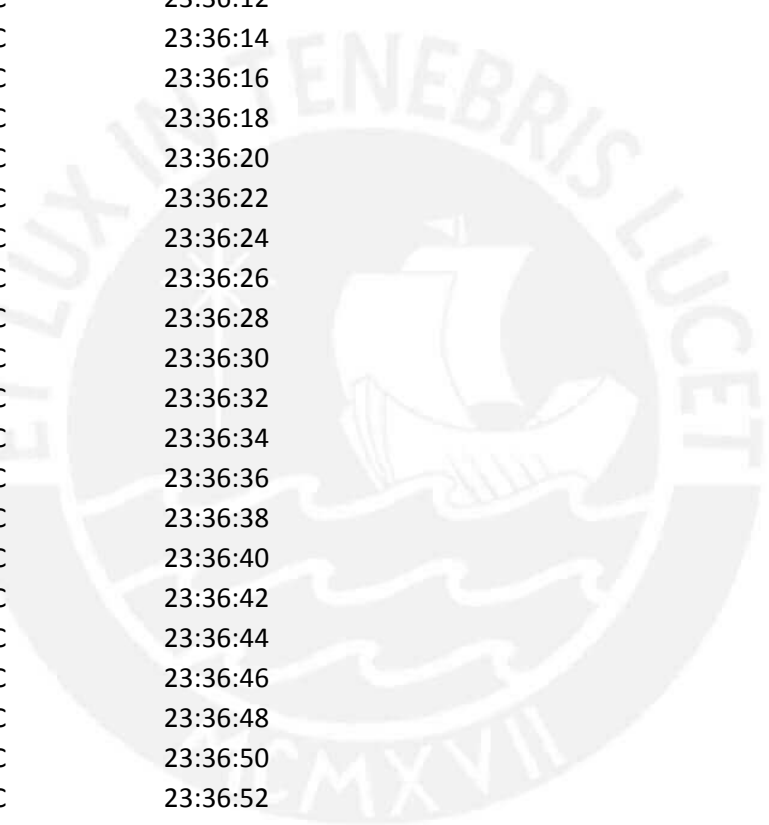
86 %	19 °C	23:32:58
86 %	19 °C	23:33:00
85 %	19 °C	23:33:02
85 %	19 °C	23:33:04
85 %	19 °C	23:33:06
85 %	20 °C	23:33:08
85 %	19 °C	23:33:10
85 %	19 °C	23:33:12
85 %	20 °C	23:33:14
84 %	20 °C	23:33:16
84 %	20 °C	23:33:18
84 %	20 °C	23:33:20
84 %	20 °C	23:33:22
84 %	20 °C	23:33:24
84 %	20 °C	23:33:26
83 %	20 °C	23:33:28
83 %	20 °C	23:33:30
83 %	20 °C	23:33:32
83 %	20 °C	23:33:34
83 %	20 °C	23:33:36
83 %	20 °C	23:33:38
83 %	20 °C	23:33:40
83 %	20 °C	23:33:42
83 %	20 °C	23:33:44
83 %	20 °C	23:33:46
83 %	20 °C	23:33:48
83 %	20 °C	23:33:50
83 %	20 °C	23:33:52
82 %	20 °C	23:33:54
82 %	20 °C	23:33:56
82 %	20 °C	23:33:58
82 %	20 °C	23:34:00
82 %	20 °C	23:34:02
82 %	20 °C	23:34:04
82 %	20 °C	23:34:06
82 %	20 °C	23:34:08
82 %	20 °C	23:34:10
82 %	20 °C	23:34:12
82 %	20 °C	23:34:14
81 %	20 °C	23:34:16
81 %	20 °C	23:34:18
81 %	20 °C	23:34:20
81 %	20 °C	23:34:22



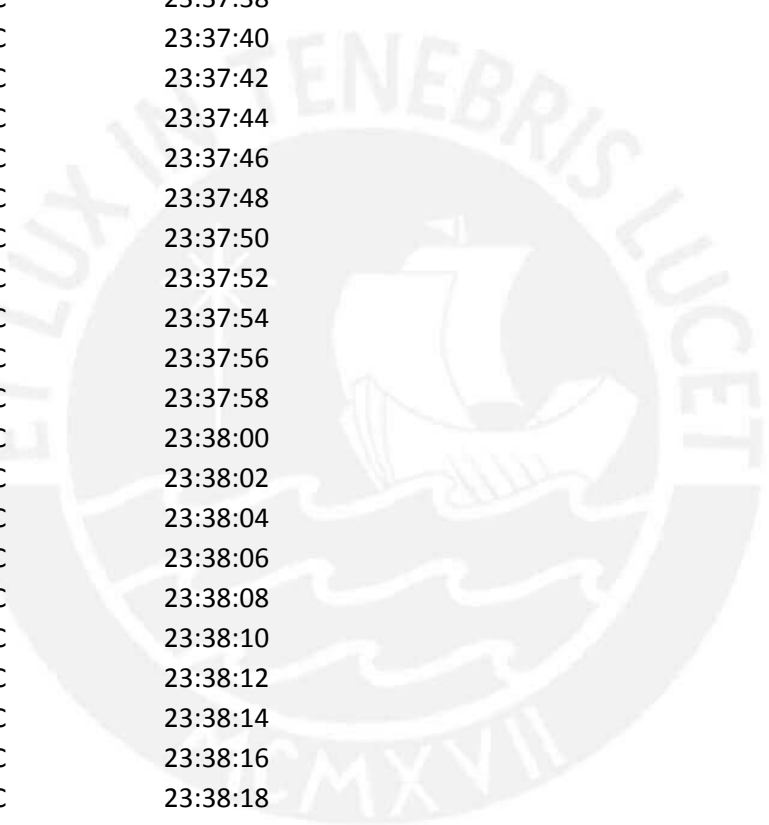
81 %	20 °C	23:34:24
81 %	20 °C	23:34:26
81 %	20 °C	23:34:28
81 %	20 °C	23:34:30
81 %	20 °C	23:34:32
81 %	20 °C	23:34:34
81 %	20 °C	23:34:36
81 %	20 °C	23:34:38
81 %	20 °C	23:34:40
81 %	20 °C	23:34:42
81 %	20 °C	23:34:44
81 %	20 °C	23:34:46
81 %	20 °C	23:34:48
81 %	20 °C	23:34:50
81 %	20 °C	23:34:52
81 %	20 °C	23:34:54
81 %	20 °C	23:34:56
80 %	20 °C	23:34:58
80 %	20 °C	23:35:00
80 %	20 °C	23:35:02
80 %	20 °C	23:35:04
80 %	20 °C	23:35:06
80 %	20 °C	23:35:08
80 %	20 °C	23:35:10
80 %	20 °C	23:35:12
80 %	20 °C	23:35:14
80 %	20 °C	23:35:16
80 %	20 °C	23:35:18
79 %	20 °C	23:35:20
80 %	20 °C	23:35:22
79 %	20 °C	23:35:24
79 %	20 °C	23:35:26
79 %	20 °C	23:35:28
79 %	20 °C	23:35:30
79 %	20 °C	23:35:32
79 %	20 °C	23:35:34
80 %	20 °C	23:35:36
80 %	20 °C	23:35:38
80 %	20 °C	23:35:40
79 %	20 °C	23:35:42
79 %	20 °C	23:35:44
79 %	20 °C	23:35:46
79 %	20 °C	23:35:48



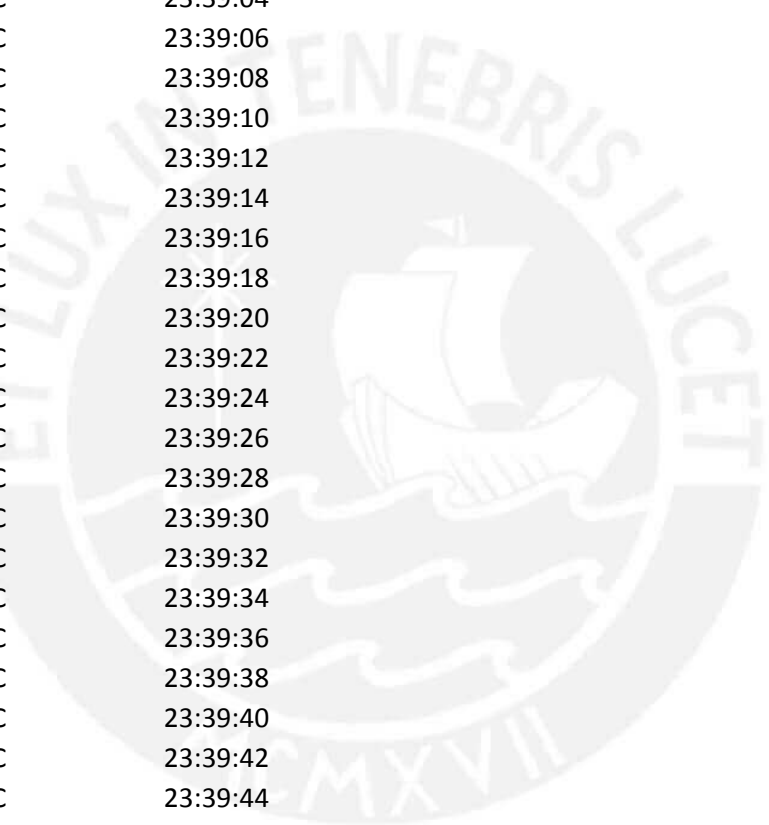
79 %	20 °C	23:35:50
79 %	20 °C	23:35:52
79 %	20 °C	23:35:54
79 %	20 °C	23:35:56
79 %	20 °C	23:35:58
79 %	20 °C	23:36:00
79 %	20 °C	23:36:02
79 %	20 °C	23:36:04
79 %	20 °C	23:36:06
79 %	20 °C	23:36:08
79 %	20 °C	23:36:10
79 %	20 °C	23:36:12
79 %	20 °C	23:36:14
79 %	20 °C	23:36:16
79 %	20 °C	23:36:18
79 %	20 °C	23:36:20
79 %	20 °C	23:36:22
79 %	20 °C	23:36:24
79 %	20 °C	23:36:26
79 %	20 °C	23:36:28
79 %	20 °C	23:36:30
78 %	20 °C	23:36:32
78 %	20 °C	23:36:34
78 %	20 °C	23:36:36
78 %	20 °C	23:36:38
78 %	20 °C	23:36:40
78 %	20 °C	23:36:42
78 %	20 °C	23:36:44
78 %	20 °C	23:36:46
78 %	20 °C	23:36:48
78 %	20 °C	23:36:50
78 %	20 °C	23:36:52
78 %	20 °C	23:36:54
78 %	20 °C	23:36:56
78 %	20 °C	23:36:58
78 %	20 °C	23:37:00
78 %	20 °C	23:37:02
78 %	20 °C	23:37:04
78 %	20 °C	23:37:06
78 %	20 °C	23:37:08
78 %	20 °C	23:37:10
78 %	20 °C	23:37:12
78 %	20 °C	23:37:14



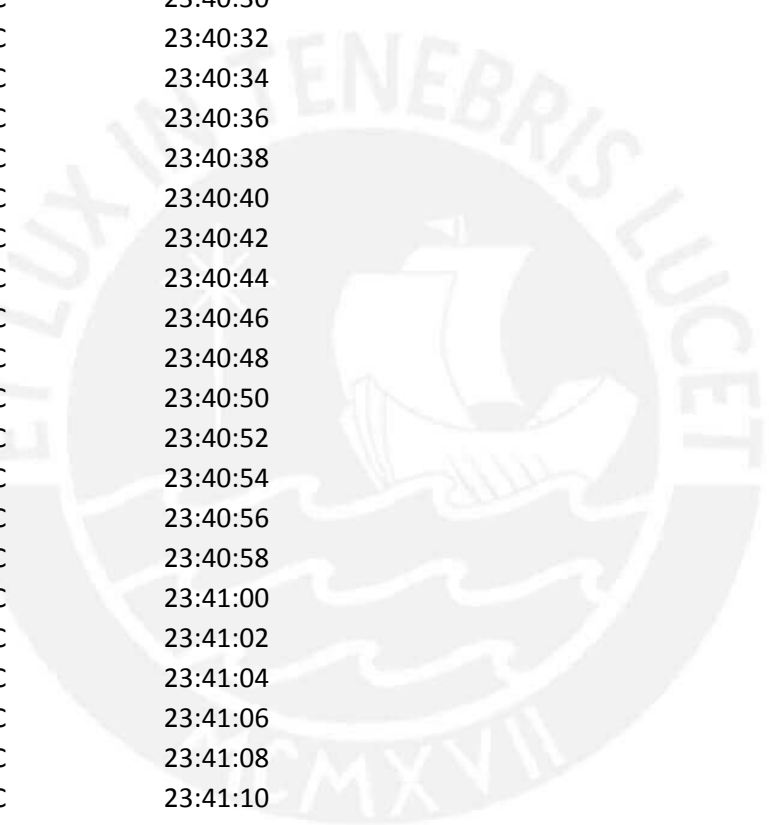
78 %	20 °C	23:37:16
78 %	20 °C	23:37:18
78 %	20 °C	23:37:20
78 %	20 °C	23:37:22
78 %	20 °C	23:37:24
78 %	20 °C	23:37:26
78 %	20 °C	23:37:28
78 %	20 °C	23:37:30
78 %	20 °C	23:37:32
78 %	20 °C	23:37:34
78 %	20 °C	23:37:36
78 %	20 °C	23:37:38
78 %	20 °C	23:37:40
78 %	20 °C	23:37:42
78 %	20 °C	23:37:44
78 %	20 °C	23:37:46
78 %	20 °C	23:37:48
78 %	20 °C	23:37:50
78 %	20 °C	23:37:52
78 %	20 °C	23:37:54
78 %	20 °C	23:37:56
78 %	20 °C	23:37:58
77 %	20 °C	23:38:00
77 %	20 °C	23:38:02
77 %	21 °C	23:38:04
77 %	21 °C	23:38:06
77 %	20 °C	23:38:08
77 %	21 °C	23:38:10
77 %	21 °C	23:38:12
77 %	20 °C	23:38:14
77 %	20 °C	23:38:16
77 %	20 °C	23:38:18
77 %	21 °C	23:38:20
77 %	21 °C	23:38:22
77 %	21 °C	23:38:24
77 %	21 °C	23:38:26
77 %	21 °C	23:38:28
77 %	21 °C	23:38:30
77 %	21 °C	23:38:32
77 %	21 °C	23:38:34
77 %	21 °C	23:38:36
77 %	21 °C	23:38:38
77 %	21 °C	23:38:40



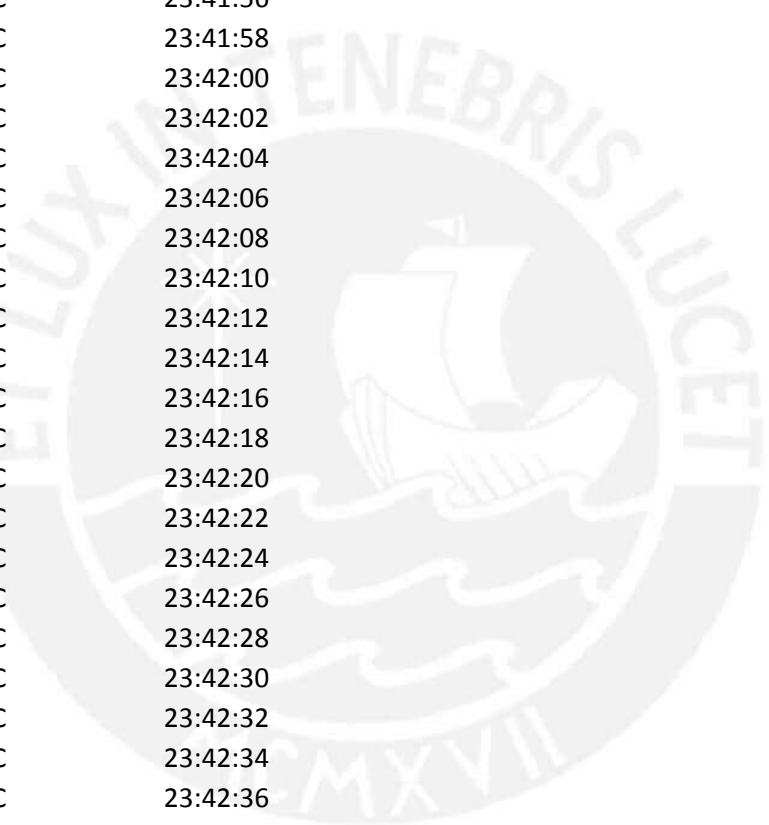
77 %	21 °C	23:38:42
77 %	21 °C	23:38:44
77 %	21 °C	23:38:46
77 %	21 °C	23:38:48
77 %	21 °C	23:38:50
77 %	21 °C	23:38:52
77 %	21 °C	23:38:54
77 %	21 °C	23:38:56
77 %	21 °C	23:38:58
77 %	21 °C	23:39:00
77 %	21 °C	23:39:02
77 %	21 °C	23:39:04
77 %	21 °C	23:39:06
77 %	21 °C	23:39:08
77 %	21 °C	23:39:10
77 %	21 °C	23:39:12
77 %	21 °C	23:39:14
77 %	21 °C	23:39:16
77 %	21 °C	23:39:18
77 %	21 °C	23:39:20
77 %	21 °C	23:39:22
77 %	21 °C	23:39:24
77 %	21 °C	23:39:26
77 %	21 °C	23:39:28
77 %	21 °C	23:39:30
77 %	21 °C	23:39:32
77 %	21 °C	23:39:34
77 %	21 °C	23:39:36
77 %	21 °C	23:39:38
77 %	21 °C	23:39:40
77 %	21 °C	23:39:42
77 %	21 °C	23:39:44
77 %	21 °C	23:39:46
77 %	21 °C	23:39:48
77 %	21 °C	23:39:50
77 %	21 °C	23:39:52
77 %	21 °C	23:39:54
77 %	21 °C	23:39:56
77 %	21 °C	23:39:58
77 %	21 °C	23:40:00
77 %	21 °C	23:40:02
77 %	21 °C	23:40:04
77 %	21 °C	23:40:06



77 %	21 °C	23:40:08
76 %	21 °C	23:40:10
76 %	21 °C	23:40:12
76 %	21 °C	23:40:14
76 %	21 °C	23:40:16
76 %	21 °C	23:40:18
76 %	21 °C	23:40:20
76 %	21 °C	23:40:22
77 %	21 °C	23:40:24
77 %	21 °C	23:40:26
76 %	21 °C	23:40:28
76 %	21 °C	23:40:30
76 %	21 °C	23:40:32
76 %	21 °C	23:40:34
76 %	21 °C	23:40:36
76 %	21 °C	23:40:38
76 %	21 °C	23:40:40
76 %	21 °C	23:40:42
76 %	21 °C	23:40:44
76 %	21 °C	23:40:46
76 %	21 °C	23:40:48
76 %	21 °C	23:40:50
76 %	21 °C	23:40:52
76 %	21 °C	23:40:54
76 %	21 °C	23:40:56
76 %	21 °C	23:40:58
76 %	21 °C	23:41:00
76 %	21 °C	23:41:02
76 %	21 °C	23:41:04
76 %	21 °C	23:41:06
76 %	21 °C	23:41:08
76 %	21 °C	23:41:10
76 %	21 °C	23:41:12
76 %	21 °C	23:41:14
76 %	21 °C	23:41:16
76 %	21 °C	23:41:18
76 %	21 °C	23:41:20
76 %	21 °C	23:41:22
76 %	21 °C	23:41:24
76 %	21 °C	23:41:26
76 %	21 °C	23:41:28
76 %	21 °C	23:41:30
76 %	21 °C	23:41:32

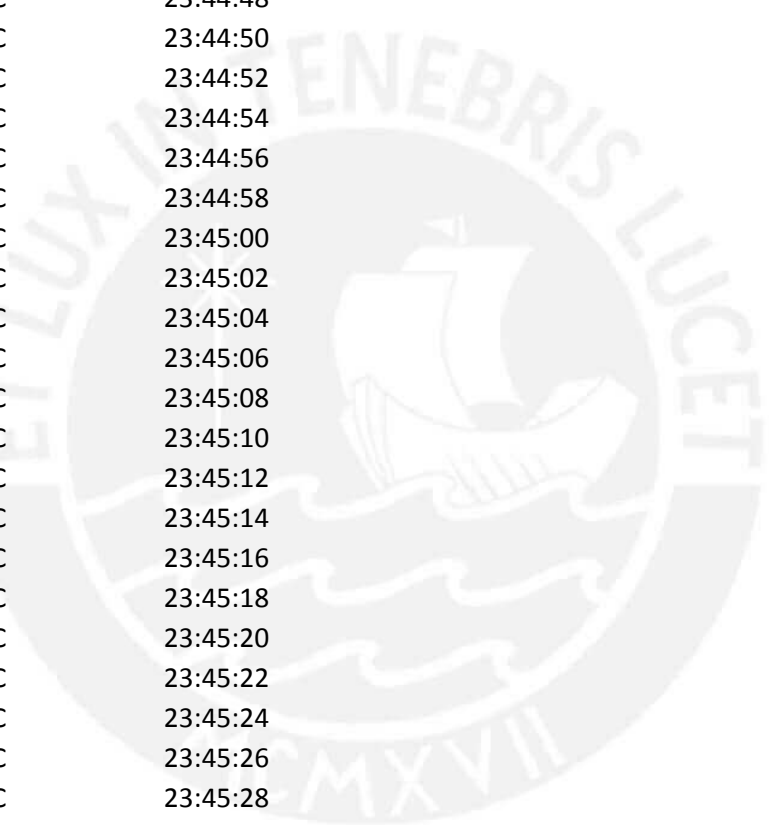


76 %	21 °C	23:41:34
76 %	21 °C	23:41:36
76 %	21 °C	23:41:38
76 %	21 °C	23:41:40
76 %	21 °C	23:41:42
76 %	21 °C	23:41:44
76 %	21 °C	23:41:46
76 %	21 °C	23:41:48
76 %	21 °C	23:41:50
76 %	21 °C	23:41:52
76 %	21 °C	23:41:54
76 %	21 °C	23:41:56
76 %	21 °C	23:41:58
76 %	21 °C	23:42:00
76 %	21 °C	23:42:02
76 %	21 °C	23:42:04
76 %	21 °C	23:42:06
76 %	21 °C	23:42:08
76 %	21 °C	23:42:10
76 %	21 °C	23:42:12
76 %	21 °C	23:42:14
76 %	21 °C	23:42:16
76 %	21 °C	23:42:18
76 %	21 °C	23:42:20
76 %	21 °C	23:42:22
76 %	21 °C	23:42:24
76 %	21 °C	23:42:26
76 %	21 °C	23:42:28
76 %	21 °C	23:42:30
76 %	21 °C	23:42:32
76 %	21 °C	23:42:34
76 %	21 °C	23:42:36
76 %	21 °C	23:42:38
76 %	21 °C	23:42:40
76 %	21 °C	23:42:42
76 %	21 °C	23:42:44
76 %	21 °C	23:42:46
76 %	21 °C	23:42:48
76 %	21 °C	23:42:50
76 %	21 °C	23:42:52
75 %	21 °C	23:42:54
75 %	21 °C	23:42:56
75 %	21 °C	23:42:58



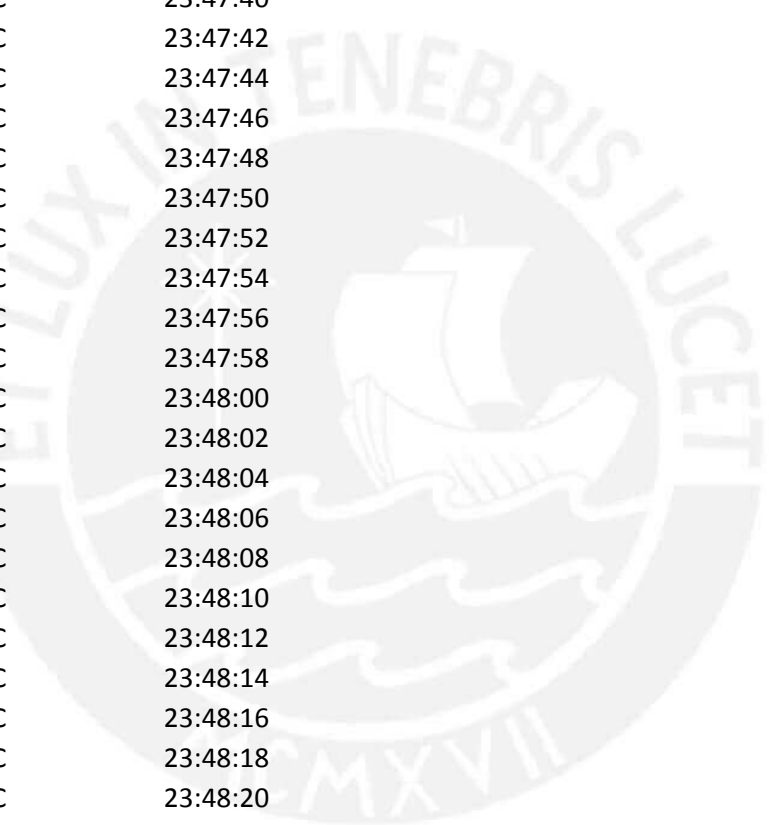
75 %	21 °C	23:43:00
75 %	21 °C	23:43:02
75 %	21 °C	23:43:04
76 %	21 °C	23:43:06
76 %	21 °C	23:43:08
75 %	21 °C	23:43:10
75 %	21 °C	23:43:12
75 %	21 °C	23:43:14
75 %	21 °C	23:43:16
75 %	21 °C	23:43:18
75 %	21 °C	23:43:20
75 %	21 °C	23:43:22
75 %	21 °C	23:43:24
75 %	21 °C	23:43:26
75 %	21 °C	23:43:28
75 %	21 °C	23:43:30
75 %	21 °C	23:43:32
75 %	21 °C	23:43:34
75 %	21 °C	23:43:36
75 %	21 °C	23:43:38
75 %	21 °C	23:43:40
75 %	21 °C	23:43:42
75 %	21 °C	23:43:44
75 %	21 °C	23:43:46
75 %	21 °C	23:43:48
75 %	21 °C	23:43:50
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75 %	21 °C	23:43:56
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75 %	21 °C	23:44:04
75 %	21 °C	23:44:06
75 %	21 °C	23:44:08
75 %	21 °C	23:44:10
75 %	21 °C	23:44:12
75 %	21 °C	23:44:14
75 %	21 °C	23:44:16
75 %	21 °C	23:44:18
75 %	21 °C	23:44:20
75 %	21 °C	23:44:22
75 %	21 °C	23:44:24

75 %	21 °C	23:44:26
75 %	21 °C	23:44:28
75 %	21 °C	23:44:30
75 %	21 °C	23:44:32
75 %	21 °C	23:44:34
75 %	21 °C	23:44:36
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75 %	21 °C	23:45:08
75 %	21 °C	23:45:10
75 %	21 °C	23:45:12
75 %	21 °C	23:45:14
75 %	21 °C	23:45:16
75 %	21 °C	23:45:18
75 %	21 °C	23:45:20
75 %	21 °C	23:45:22
75 %	21 °C	23:45:24
75 %	21 °C	23:45:26
75 %	21 °C	23:45:28
75 %	21 °C	23:45:30
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75 %	21 °C	23:45:34
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75 %	21 °C	23:45:40
75 %	21 °C	23:45:42
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75 %	21 °C	23:45:48
75 %	21 °C	23:45:50

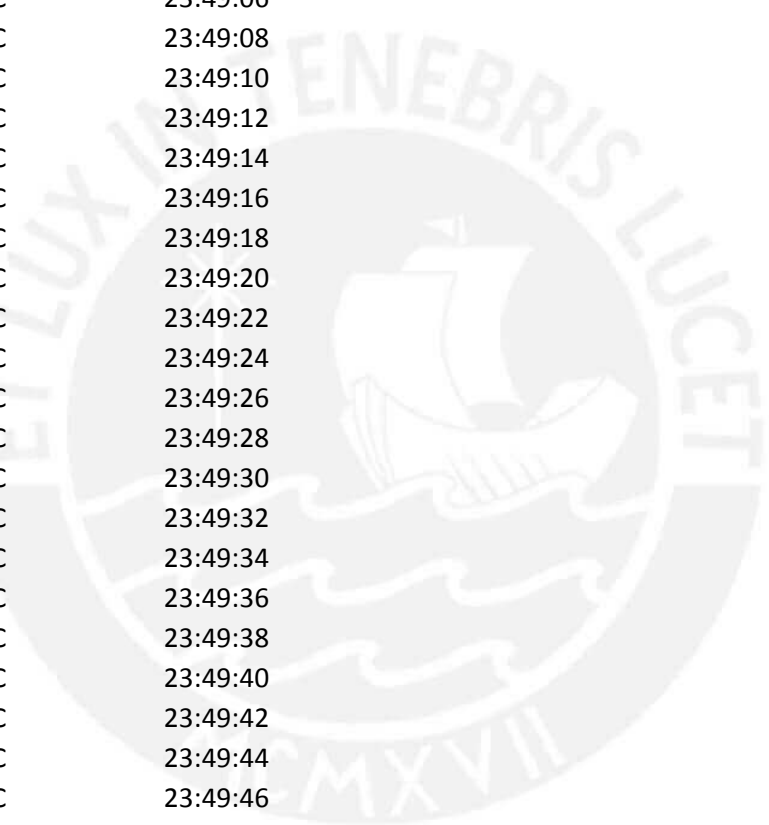


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75 %	21 °C	23:45:56
75 %	21 °C	23:45:58
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75 %	21 °C	23:46:08
75 %	21 °C	23:46:10
75 %	21 °C	23:46:12
75 %	21 °C	23:46:14
75 %	21 °C	23:46:16
75 %	21 °C	23:46:18
75 %	21 °C	23:46:20
75 %	21 °C	23:46:22
74 %	21 °C	23:46:24
75 %	21 °C	23:46:26
75 %	21 °C	23:46:28
75 %	21 °C	23:46:30
75 %	21 °C	23:46:32
75 %	21 °C	23:46:34
74 %	21 °C	23:46:36
74 %	21 °C	23:46:38
74 %	21 °C	23:46:40
75 %	21 °C	23:46:42
74 %	21 °C	23:46:44
74 %	21 °C	23:46:46
74 %	21 °C	23:46:48
74 %	21 °C	23:46:50
74 %	21 °C	23:46:52
74 %	21 °C	23:46:54
74 %	21 °C	23:46:56
74 %	21 °C	23:46:58
74 %	21 °C	23:47:00
74 %	21 °C	23:47:02
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74 %	21 °C	23:47:06
74 %	21 °C	23:47:08
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74 %	21 °C	23:47:14
74 %	21 °C	23:47:16

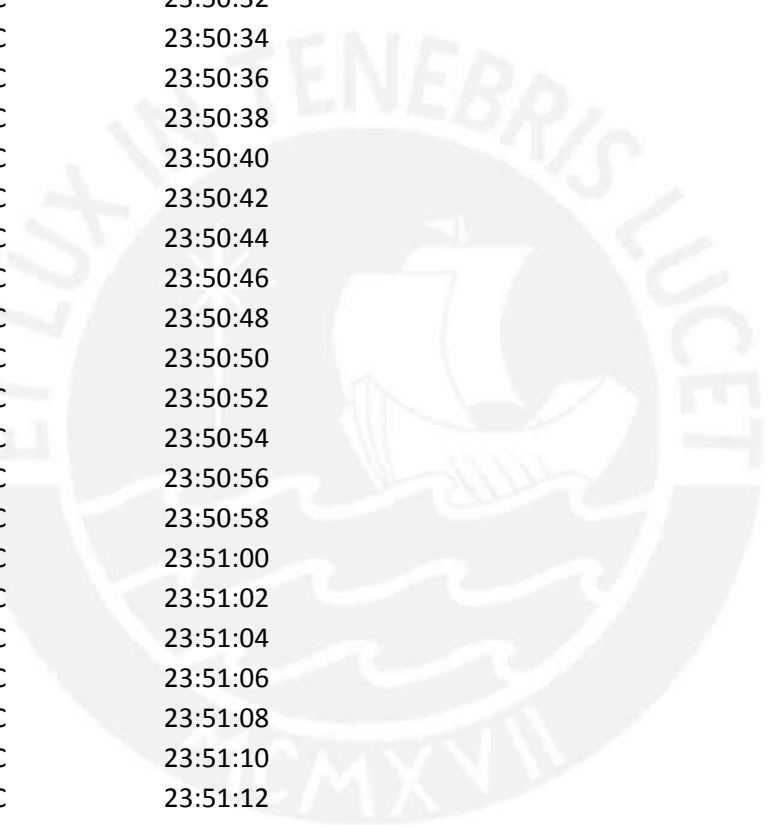
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75 %	21 °C	23:47:22
75 %	21 °C	23:47:24
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74 %	21 °C	23:47:28
74 %	21 °C	23:47:30
74 %	21 °C	23:47:32
75 %	21 °C	23:47:34
74 %	21 °C	23:47:36
75 %	21 °C	23:47:38
74 %	21 °C	23:47:40
74 %	21 °C	23:47:42
74 %	21 °C	23:47:44
74 %	21 °C	23:47:46
74 %	21 °C	23:47:48
74 %	21 °C	23:47:50
74 %	21 °C	23:47:52
74 %	21 °C	23:47:54
74 %	21 °C	23:47:56
74 %	21 °C	23:47:58
74 %	21 °C	23:48:00
74 %	21 °C	23:48:02
74 %	21 °C	23:48:04
74 %	21 °C	23:48:06
74 %	21 °C	23:48:08
74 %	21 °C	23:48:10
74 %	21 °C	23:48:12
74 %	21 °C	23:48:14
74 %	21 °C	23:48:16
74 %	21 °C	23:48:18
74 %	21 °C	23:48:20
74 %	21 °C	23:48:22
74 %	21 °C	23:48:24
74 %	21 °C	23:48:26
74 %	21 °C	23:48:28
74 %	21 °C	23:48:30
74 %	21 °C	23:48:32
74 %	21 °C	23:48:34
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74 %	21 °C	23:48:40
74 %	21 °C	23:48:42



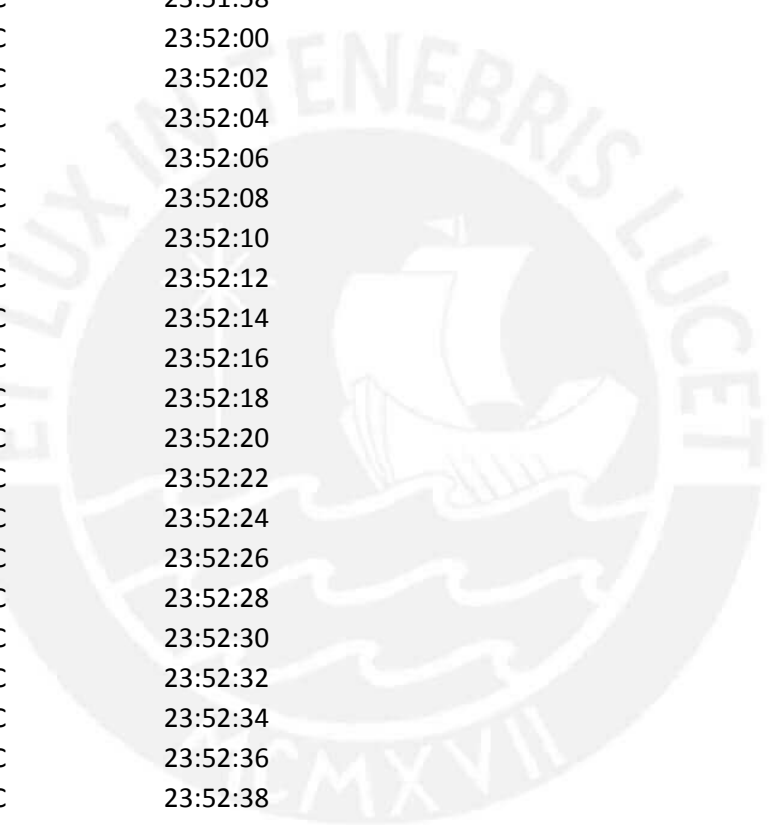
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74 %	21 °C	23:48:46
74 %	21 °C	23:48:48
74 %	21 °C	23:48:50
74 %	21 °C	23:48:52
74 %	21 °C	23:48:54
74 %	21 °C	23:48:56
74 %	21 °C	23:48:58
74 %	21 °C	23:49:00
74 %	21 °C	23:49:02
74 %	21 °C	23:49:04
74 %	21 °C	23:49:06
74 %	21 °C	23:49:08
74 %	21 °C	23:49:10
74 %	21 °C	23:49:12
74 %	21 °C	23:49:14
74 %	21 °C	23:49:16
74 %	21 °C	23:49:18
74 %	21 °C	23:49:20
74 %	21 °C	23:49:22
74 %	21 °C	23:49:24
74 %	21 °C	23:49:26
74 %	21 °C	23:49:28
74 %	21 °C	23:49:30
74 %	21 °C	23:49:32
74 %	21 °C	23:49:34
74 %	21 °C	23:49:36
74 %	21 °C	23:49:38
74 %	21 °C	23:49:40
74 %	21 °C	23:49:42
74 %	21 °C	23:49:44
74 %	21 °C	23:49:46
74 %	21 °C	23:49:48
74 %	21 °C	23:49:50
74 %	21 °C	23:49:52
74 %	21 °C	23:49:54
74 %	21 °C	23:49:56
74 %	21 °C	23:49:58
74 %	21 °C	23:50:00
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75 %	21 °C	23:50:06
75 %	21 °C	23:50:08



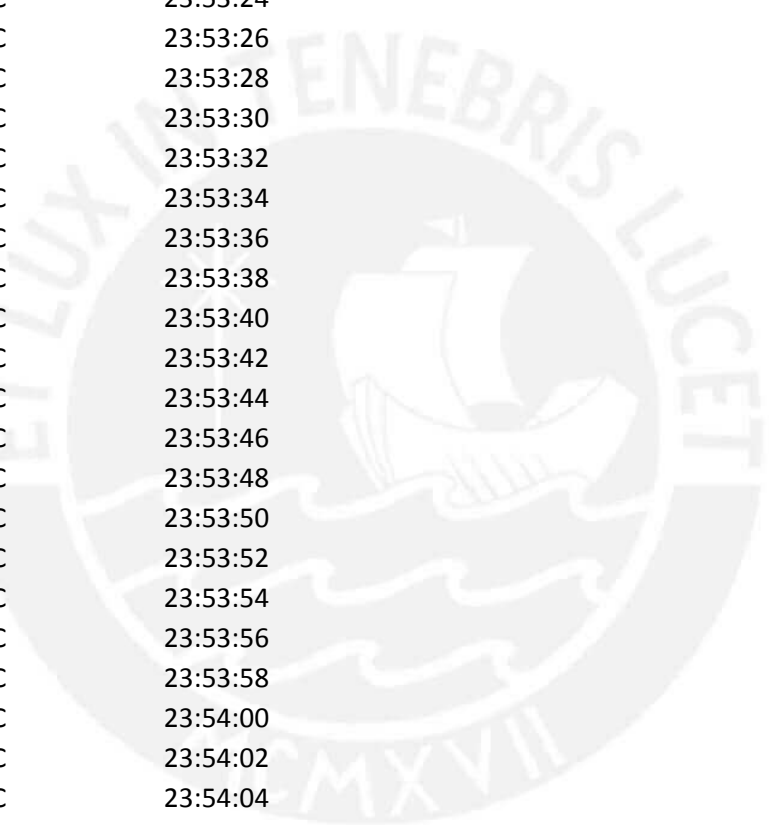
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75 %	21 °C	23:50:12
75 %	21 °C	23:50:14
76 %	21 °C	23:50:16
76 %	21 °C	23:50:18
76 %	21 °C	23:50:20
76 %	21 °C	23:50:22
76 %	21 °C	23:50:24
76 %	21 °C	23:50:26
76 %	21 °C	23:50:28
76 %	21 °C	23:50:30
76 %	21 °C	23:50:32
76 %	21 °C	23:50:34
76 %	21 °C	23:50:36
77 %	21 °C	23:50:38
77 %	21 °C	23:50:40
77 %	21 °C	23:50:42
77 %	21 °C	23:50:44
77 %	21 °C	23:50:46
77 %	21 °C	23:50:48
77 %	21 °C	23:50:50
77 %	21 °C	23:50:52
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77 %	21 °C	23:51:08
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77 %	21 °C	23:51:12
77 %	21 °C	23:51:14
77 %	21 °C	23:51:16
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77 %	21 °C	23:51:20
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77 %	21 °C	23:51:26
77 %	21 °C	23:51:28
77 %	21 °C	23:51:30
77 %	21 °C	23:51:32
77 %	21 °C	23:51:34



77 %	21 °C	23:51:36
77 %	21 °C	23:51:38
77 %	21 °C	23:51:40
77 %	21 °C	23:51:42
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77 %	21 °C	23:51:48
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77 %	21 °C	23:51:56
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77 %	21 °C	23:52:08
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77 %	21 °C	23:52:12
77 %	21 °C	23:52:14
77 %	21 °C	23:52:16
77 %	21 °C	23:52:18
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77 %	21 °C	23:52:26
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77 %	21 °C	23:52:30
77 %	21 °C	23:52:32
77 %	21 °C	23:52:34
77 %	21 °C	23:52:36
77 %	21 °C	23:52:38
77 %	21 °C	23:52:40
77 %	21 °C	23:52:42
77 %	21 °C	23:52:44
77 %	21 °C	23:52:46
77 %	21 °C	23:52:48
77 %	21 °C	23:52:50
77 %	21 °C	23:52:52
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77 %	21 °C	23:52:58
77 %	21 °C	23:53:00

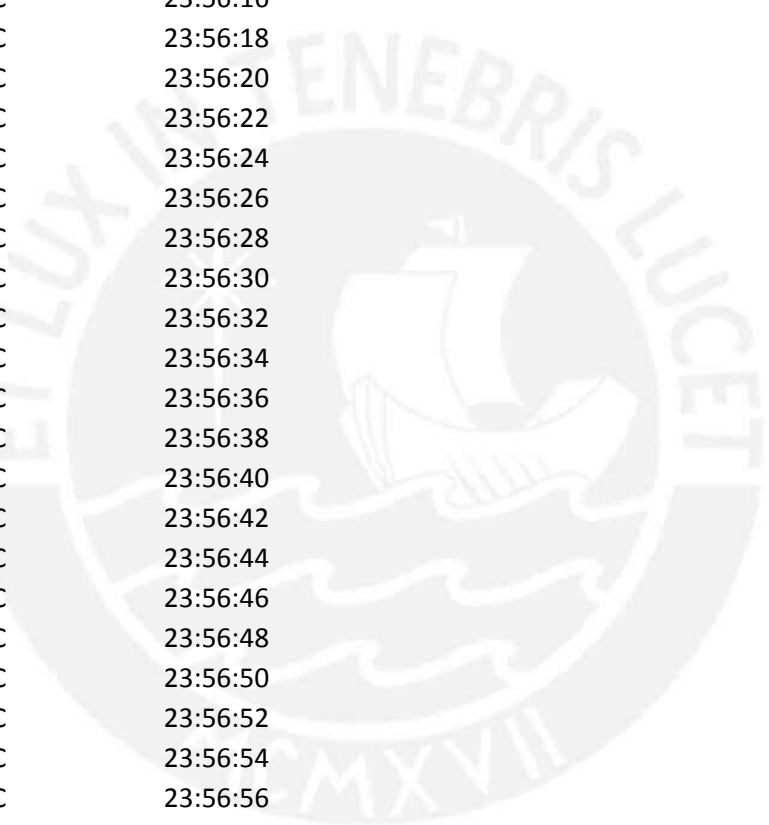


77 %	21 °C	23:53:02
77 %	21 °C	23:53:04
77 %	21 °C	23:53:06
77 %	21 °C	23:53:08
77 %	21 °C	23:53:10
77 %	21 °C	23:53:12
77 %	21 °C	23:53:14
77 %	21 °C	23:53:16
77 %	21 °C	23:53:18
77 %	21 °C	23:53:20
77 %	21 °C	23:53:22
77 %	20 °C	23:53:24
77 %	21 °C	23:53:26
77 %	21 °C	23:53:28
77 %	21 °C	23:53:30
77 %	21 °C	23:53:32
77 %	21 °C	23:53:34
77 %	21 °C	23:53:36
77 %	21 °C	23:53:38
77 %	21 °C	23:53:40
77 %	21 °C	23:53:42
77 %	21 °C	23:53:44
77 %	21 °C	23:53:46
77 %	20 °C	23:53:48
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77 %	21 °C	23:53:56
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77 %	21 °C	23:54:08
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77 %	21 °C	23:54:12
77 %	21 °C	23:54:14
77 %	21 °C	23:54:16
77 %	21 °C	23:54:18
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77 %	21 °C	23:54:24
77 %	20 °C	23:54:26

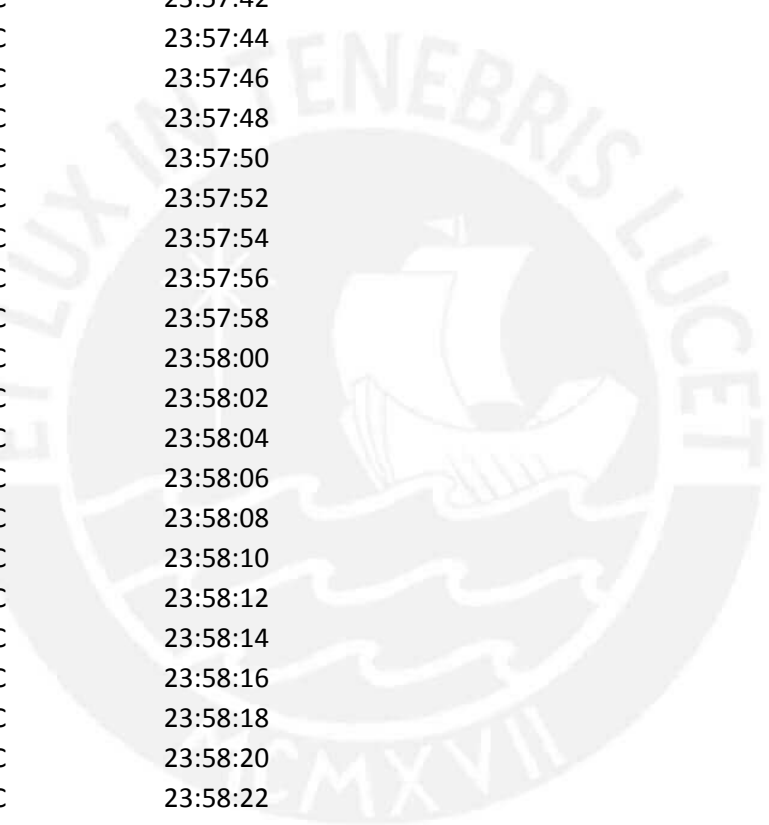


77 %	21 °C	23:54:28
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77 %	20 °C	23:54:38
77 %	21 °C	23:54:40
77 %	21 °C	23:54:42
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77 %	21 °C	23:55:04
77 %	21 °C	23:55:06
77 %	21 °C	23:55:08
77 %	21 °C	23:55:10
77 %	21 °C	23:55:12
76 %	21 °C	23:55:14
76 %	21 °C	23:55:16
76 %	21 °C	23:55:18
76 %	21 °C	23:55:20
76 %	21 °C	23:55:22
76 %	21 °C	23:55:24
76 %	21 °C	23:55:26
76 %	21 °C	23:55:28
76 %	21 °C	23:55:30
76 %	21 °C	23:55:32
76 %	21 °C	23:55:34
76 %	21 °C	23:55:36
76 %	21 °C	23:55:38
76 %	21 °C	23:55:40
76 %	21 °C	23:55:42
76 %	21 °C	23:55:44
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76 %	21 °C	23:55:50
76 %	21 °C	23:55:52

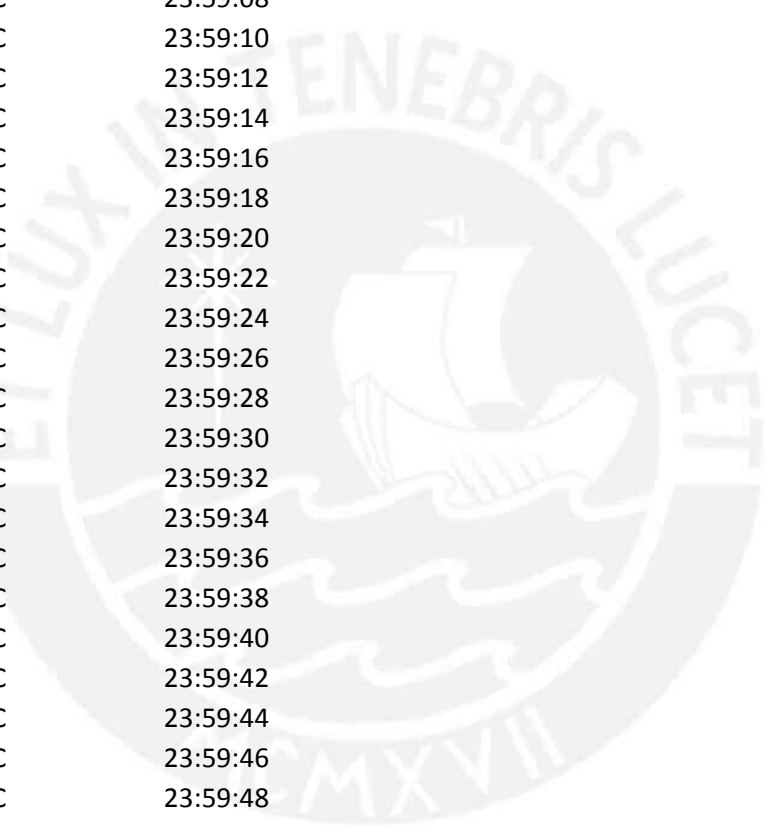
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76 %	21 °C	23:55:56
76 %	21 °C	23:55:58
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76 %	21 °C	23:56:04
76 %	21 °C	23:56:06
76 %	21 °C	23:56:08
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76 %	21 °C	23:56:18
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76 %	21 °C	23:57:16
76 %	21 °C	23:57:18



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75 %	21 °C	23:58:32
75 %	21 °C	23:58:34
75 %	21 °C	23:58:36
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75 %	21 °C	23:58:42
75 %	21 °C	23:58:44

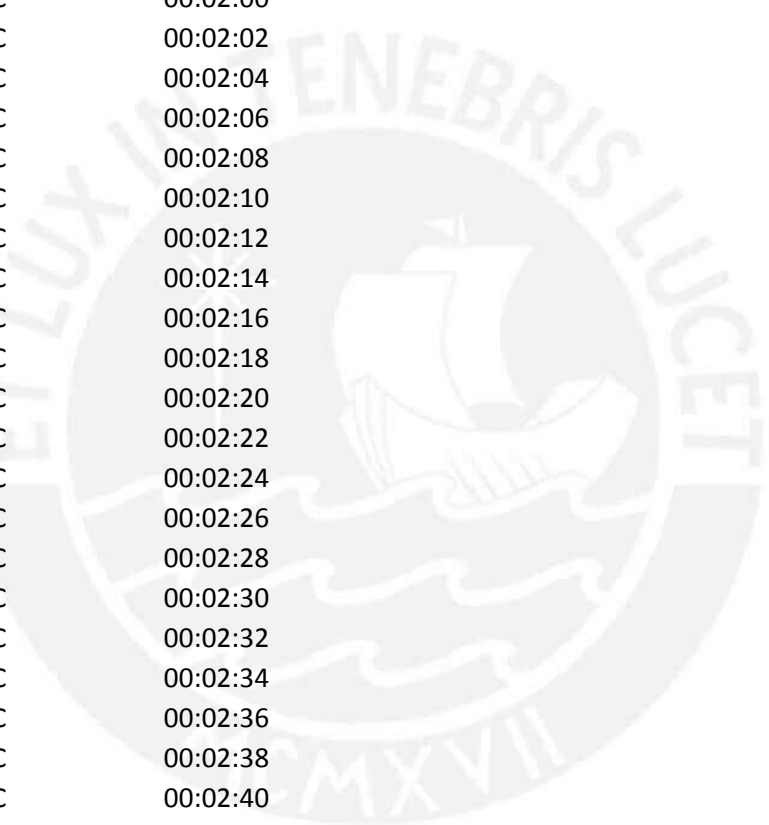


75 %	21 °C	23:58:46
75 %	21 °C	23:58:48
75 %	21 °C	23:58:50
75 %	21 °C	23:58:52
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75 %	21 °C	23:59:12
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75 %	21 °C	23:59:58
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75 %	21 °C	00:00:02
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75 %	21 °C	00:00:06
75 %	21 °C	00:00:08
75 %	21 °C	00:00:10

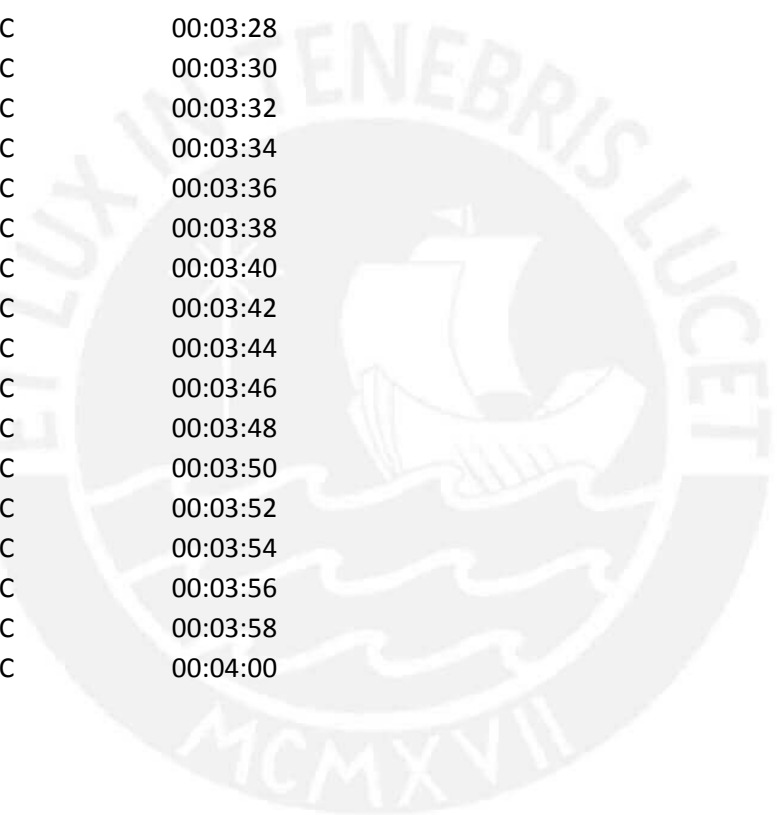


75 %	21 °C	00:00:12
75 %	21 °C	00:00:14
74 %	21 °C	00:00:16
74 %	21 °C	00:00:18
74 %	21 °C	00:00:20
74 %	21 °C	00:00:22
74 %	21 °C	00:00:24
74 %	21 °C	00:00:26
74 %	21 °C	00:00:28
74 %	21 °C	00:00:30
74 %	21 °C	00:00:32
74 %	21 °C	00:00:34
74 %	21 °C	00:00:36
74 %	21 °C	00:00:38
74 %	21 °C	00:00:40
74 %	21 °C	00:00:42
74 %	21 °C	00:00:44
74 %	21 °C	00:00:46
74 %	21 °C	00:00:48
74 %	21 °C	00:00:50
74 %	21 °C	00:00:52
74 %	21 °C	00:00:54
74 %	21 °C	00:00:56
74 %	21 °C	00:00:58
74 %	21 °C	00:01:00
74 %	21 °C	00:01:02
74 %	21 °C	00:01:04
74 %	21 °C	00:01:06
74 %	21 °C	00:01:08
74 %	21 °C	00:01:10
74 %	21 °C	00:01:12
74 %	21 °C	00:01:14
74 %	21 °C	00:01:16
74 %	21 °C	00:01:18
74 %	21 °C	00:01:20
74 %	21 °C	00:01:22
74 %	21 °C	00:01:24
74 %	21 °C	00:01:26
74 %	21 °C	00:01:28
74 %	21 °C	00:01:30
74 %	21 °C	00:01:32
74 %	21 °C	00:01:34
74 %	21 °C	00:01:36

74 %	21 °C	00:01:38
74 %	21 °C	00:01:40
74 %	21 °C	00:01:42
74 %	21 °C	00:01:44
74 %	21 °C	00:01:46
74 %	21 °C	00:01:48
74 %	21 °C	00:01:50
74 %	21 °C	00:01:52
74 %	21 °C	00:01:54
74 %	21 °C	00:01:56
74 %	21 °C	00:01:58
74 %	21 °C	00:02:00
74 %	21 °C	00:02:02
74 %	21 °C	00:02:04
74 %	21 °C	00:02:06
74 %	21 °C	00:02:08
74 %	21 °C	00:02:10
74 %	21 °C	00:02:12
74 %	21 °C	00:02:14
74 %	21 °C	00:02:16
74 %	21 °C	00:02:18
74 %	21 °C	00:02:20
73 %	21 °C	00:02:22
73 %	21 °C	00:02:24
73 %	21 °C	00:02:26
73 %	21 °C	00:02:28
73 %	21 °C	00:02:30
73 %	21 °C	00:02:32
73 %	21 °C	00:02:34
73 %	21 °C	00:02:36
73 %	21 °C	00:02:38
72 %	21 °C	00:02:40
73 %	21 °C	00:02:42
72 %	21 °C	00:02:44
72 %	21 °C	00:02:46
72 %	21 °C	00:02:48
73 %	21 °C	00:02:50
72 %	21 °C	00:02:52
72 %	21 °C	00:02:54
72 %	21 °C	00:02:56
72 %	21 °C	00:02:58
72 %	21 °C	00:03:00
72 %	21 °C	00:03:02



72 %	21 °C	00:03:04
72 %	21 °C	00:03:06
72 %	21 °C	00:03:08
72 %	21 °C	00:03:10
73 %	21 °C	00:03:12
73 %	21 °C	00:03:14
73 %	21 °C	00:03:16
73 %	21 °C	00:03:18
73 %	21 °C	00:03:20
73 %	21 °C	00:03:22
73 %	21 °C	00:03:24
73 %	21 °C	00:03:26
73 %	21 °C	00:03:28
73 %	21 °C	00:03:30
73 %	21 °C	00:03:32
73 %	21 °C	00:03:34
73 %	21 °C	00:03:36
73 %	21 °C	00:03:38
73 %	21 °C	00:03:40
73 %	21 °C	00:03:42
73 %	21 °C	00:03:44
73 %	21 °C	00:03:46
72 %	21 °C	00:03:48
73 %	21 °C	00:03:50
73 %	21 °C	00:03:52
73 %	21 °C	00:03:54
73 %	21 °C	00:03:56
72 %	21 °C	00:03:58
72 %	21 °C	00:04:00



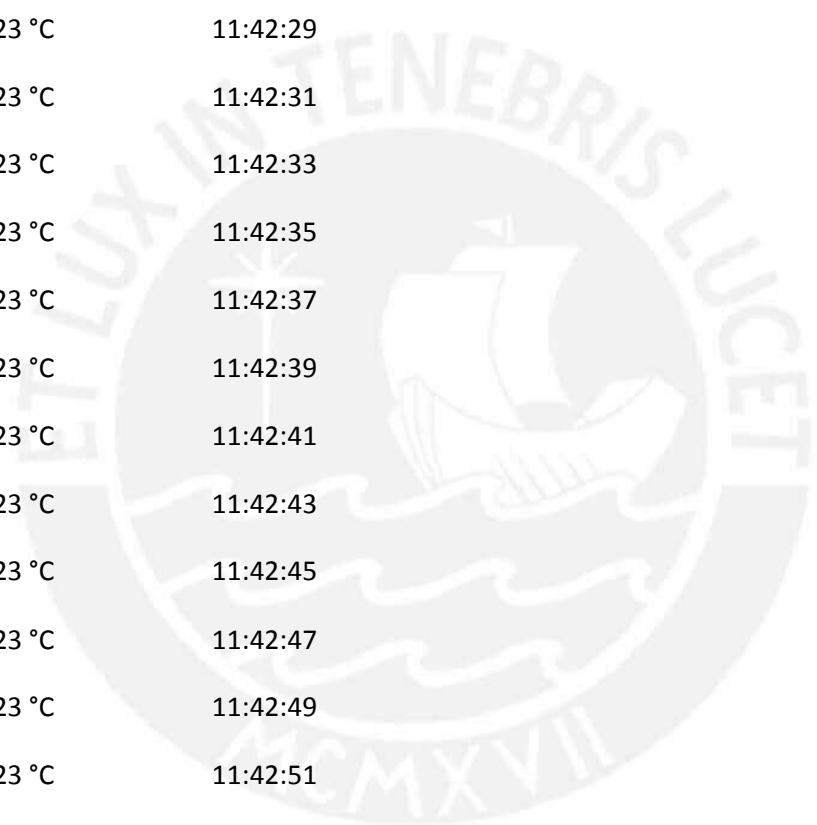
Anexo 12: Datos del archivo: "Manual_mode_hum1.txt"

Humedad	Temperatura	Tiempo
0 %	0 °C	11:40:39
64 %	24 °C	11:40:41
64 %	24 °C	11:40:43
64 %	24 °C	11:40:45
64 %	24 °C	11:40:47
64 %	24 °C	11:40:49
64 %	24 °C	11:40:51
64 %	24 °C	11:40:53
64 %	24 °C	11:40:55
64 %	24 °C	11:40:57
64 %	24 °C	11:40:59
64 %	24 °C	11:41:01
64 %	24 °C	11:41:03
64 %	24 °C	11:41:05
64 %	24 °C	11:41:07
64 %	24 °C	11:41:09
64 %	24 °C	11:41:11
64 %	24 °C	11:41:13
64 %	24 °C	11:41:15
65 %	24 °C	11:41:17
65 %	24 °C	11:41:19
66 %	24 °C	11:41:21
66 %	24 °C	11:41:23

67 %	24 °C	11:41:25
67 %	24 °C	11:41:27
68 %	24 °C	11:41:29
68 %	24 °C	11:41:31
69 %	24 °C	11:41:33
69 %	24 °C	11:41:35
70 %	24 °C	11:41:37
71 %	24 °C	11:41:39
71 %	24 °C	11:41:41
72 %	24 °C	11:41:43
73 %	24 °C	11:41:45
73 %	24 °C	11:41:47
74 %	24 °C	11:41:49
75 %	24 °C	11:41:51
75 %	24 °C	11:41:53
76 %	24 °C	11:41:55
77 %	24 °C	11:41:57
77 %	24 °C	11:41:59
78 %	24 °C	11:42:01
78 %	24 °C	11:42:03
79 %	24 °C	11:42:05
80 %	24 °C	11:42:07
80 %	23 °C	11:42:09
81 %	23 °C	11:42:11
81 %	23 °C	11:42:13



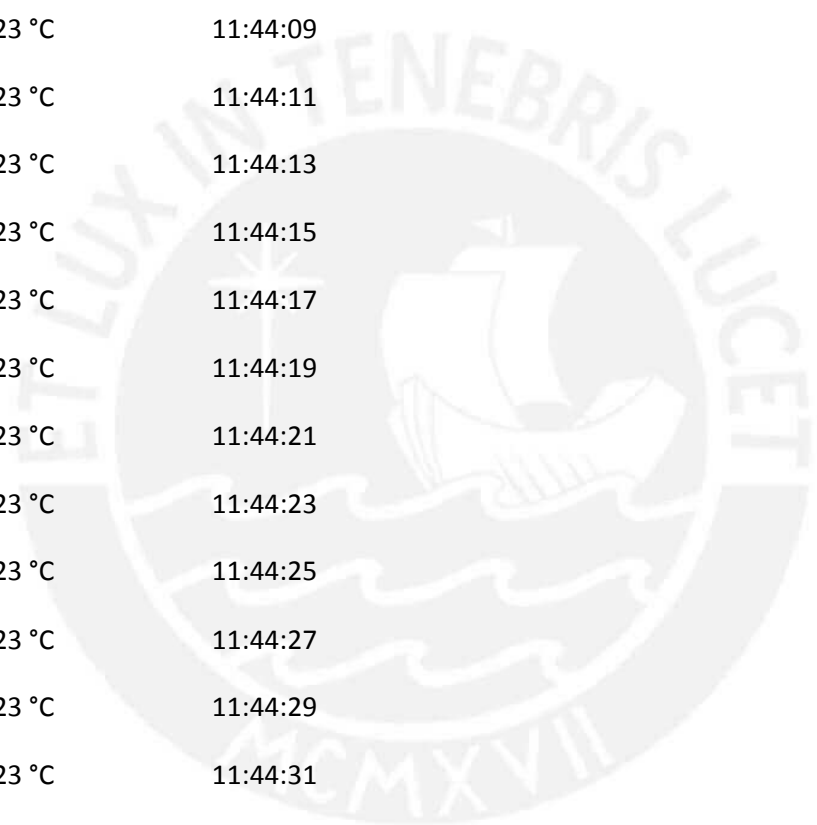
82 %	23 °C	11:42:15
82 %	23 °C	11:42:17
83 %	23 °C	11:42:19
83 %	23 °C	11:42:21
84 %	23 °C	11:42:23
84 %	23 °C	11:42:25
84 %	23 °C	11:42:27
85 %	23 °C	11:42:29
85 %	23 °C	11:42:31
86 %	23 °C	11:42:33
86 %	23 °C	11:42:35
86 %	23 °C	11:42:37
87 %	23 °C	11:42:39
87 %	23 °C	11:42:41
87 %	23 °C	11:42:43
88 %	23 °C	11:42:45
88 %	23 °C	11:42:47
88 %	23 °C	11:42:49
89 %	23 °C	11:42:51
89 %	23 °C	11:42:53
89 %	23 °C	11:42:55
89 %	23 °C	11:42:57
90 %	23 °C	11:42:59
90 %	23 °C	11:43:01
90 %	23 °C	11:43:03



90 %	23 °C	11:43:05
91 %	23 °C	11:43:07
91 %	23 °C	11:43:09
91 %	23 °C	11:43:11
91 %	23 °C	11:43:13
92 %	23 °C	11:43:15
92 %	23 °C	11:43:17
92 %	23 °C	11:43:19
92 %	23 °C	11:43:21
92 %	23 °C	11:43:23
93 %	23 °C	11:43:25
93 %	23 °C	11:43:27
93 %	23 °C	11:43:29
93 %	23 °C	11:43:31
93 %	23 °C	11:43:33
93 %	23 °C	11:43:35
93 %	23 °C	11:43:37
94 %	23 °C	11:43:39
94 %	23 °C	11:43:41
94 %	23 °C	11:43:43
94 %	23 °C	11:43:45
94 %	23 °C	11:43:47
94 %	23 °C	11:43:49
94 %	23 °C	11:43:51
94 %	23 °C	11:43:53



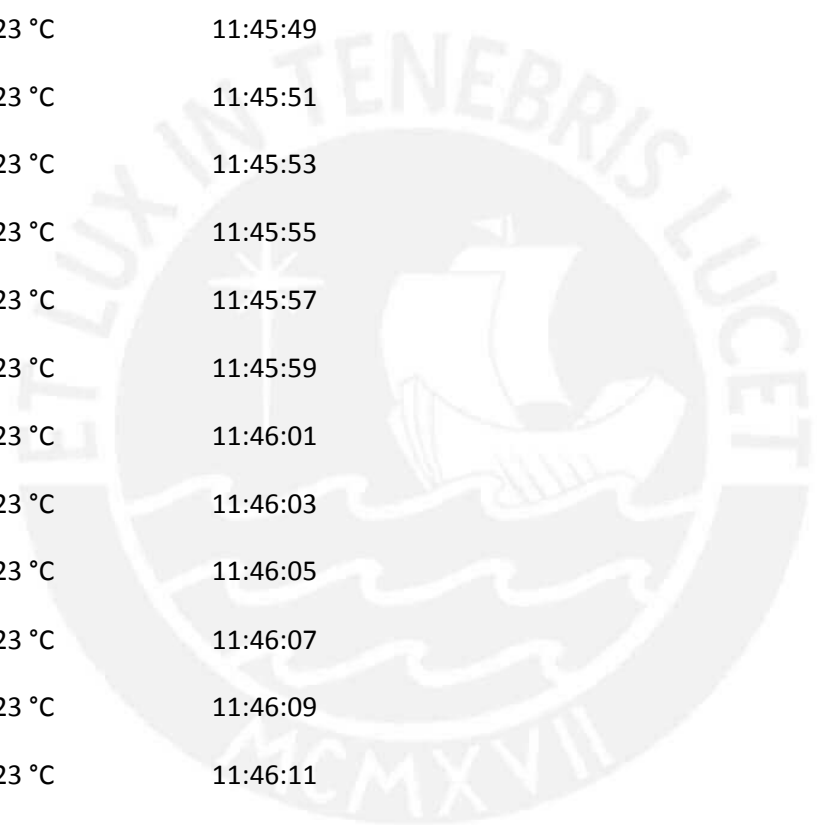
95 %	23 °C	11:43:55
95 %	23 °C	11:43:57
95 %	23 °C	11:43:59
95 %	23 °C	11:44:01
95 %	23 °C	11:44:03
95 %	23 °C	11:44:05
95 %	23 °C	11:44:07
95 %	23 °C	11:44:09
95 %	23 °C	11:44:11
95 %	23 °C	11:44:13
95 %	23 °C	11:44:15
95 %	23 °C	11:44:17
96 %	23 °C	11:44:19
96 %	23 °C	11:44:21
96 %	23 °C	11:44:23
96 %	23 °C	11:44:25
96 %	23 °C	11:44:27
96 %	23 °C	11:44:29
96 %	23 °C	11:44:31
96 %	23 °C	11:44:33
96 %	23 °C	11:44:35
96 %	23 °C	11:44:37
96 %	23 °C	11:44:39
96 %	23 °C	11:44:41
96 %	23 °C	11:44:43



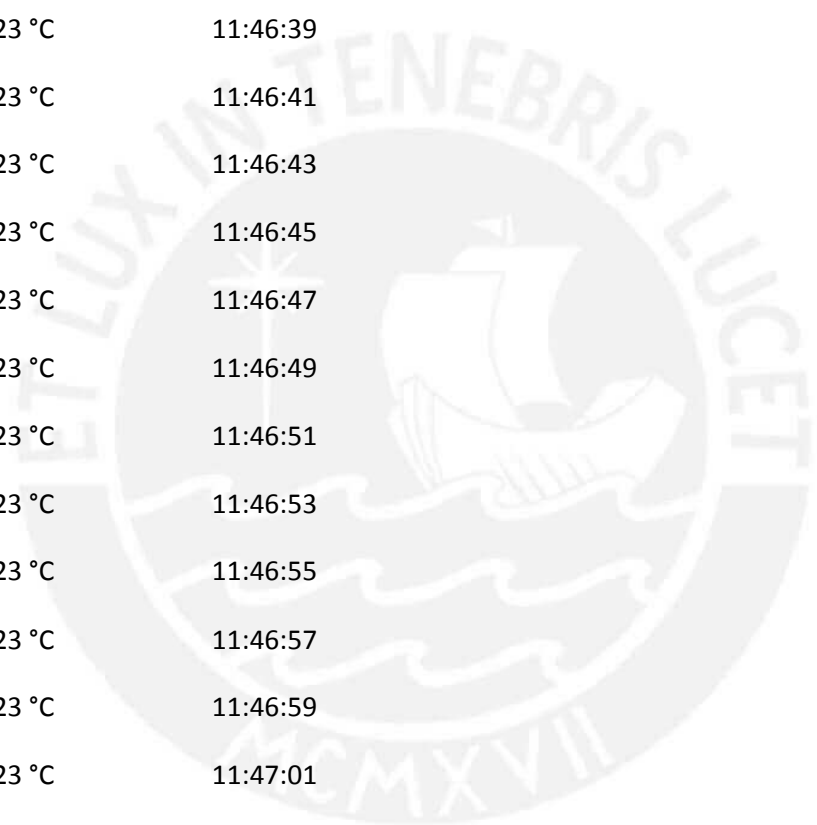
96 %	23 °C	11:44:45
96 %	23 °C	11:44:47
96 %	23 °C	11:44:49
96 %	23 °C	11:44:51
96 %	23 °C	11:44:53
96 %	23 °C	11:44:55
96 %	23 °C	11:44:57
97 %	23 °C	11:44:59
97 %	23 °C	11:45:01
97 %	23 °C	11:45:03
97 %	23 °C	11:45:05
97 %	23 °C	11:45:07
97 %	23 °C	11:45:09
97 %	23 °C	11:45:11
97 %	23 °C	11:45:13
97 %	23 °C	11:45:15
97 %	23 °C	11:45:17
97 %	23 °C	11:45:19
97 %	23 °C	11:45:21
97 %	23 °C	11:45:23
97 %	23 °C	11:45:25
97 %	23 °C	11:45:27
97 %	23 °C	11:45:29
97 %	23 °C	11:45:31
97 %	23 °C	11:45:33



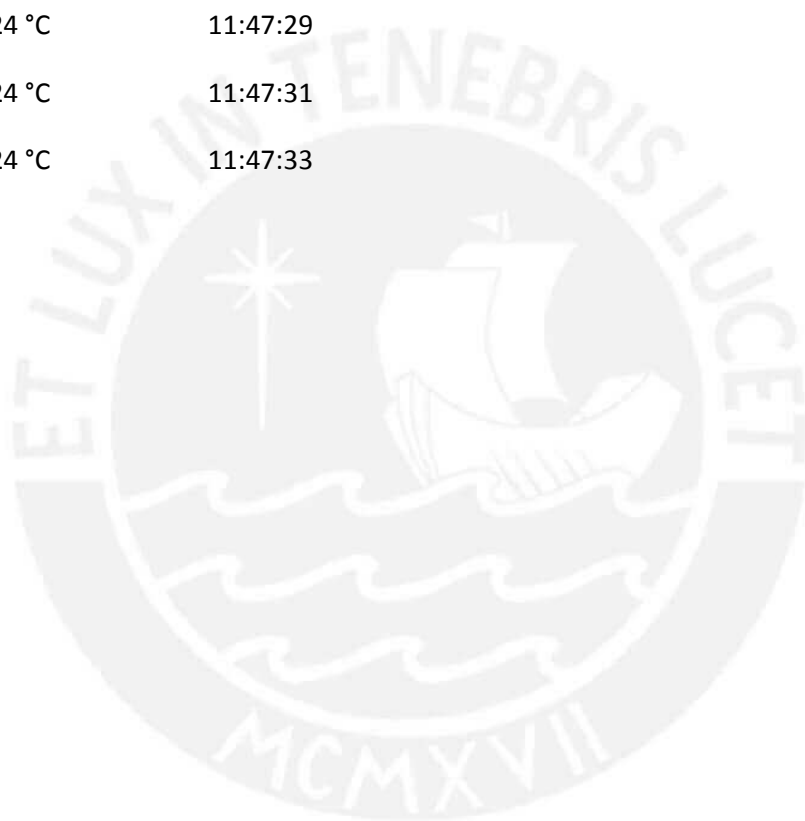
97 %	23 °C	11:45:35
97 %	23 °C	11:45:37
97 %	23 °C	11:45:39
97 %	23 °C	11:45:41
97 %	23 °C	11:45:43
97 %	23 °C	11:45:45
97 %	23 °C	11:45:47
97 %	23 °C	11:45:49
97 %	23 °C	11:45:51
97 %	23 °C	11:45:53
97 %	23 °C	11:45:55
98 %	23 °C	11:45:57
98 %	23 °C	11:45:59
98 %	23 °C	11:46:01
98 %	23 °C	11:46:03
98 %	23 °C	11:46:05
98 %	23 °C	11:46:07
98 %	23 °C	11:46:09
98 %	23 °C	11:46:11
98 %	23 °C	11:46:13
98 %	23 °C	11:46:15
98 %	23 °C	11:46:17
98 %	23 °C	11:46:19
98 %	23 °C	11:46:21
98 %	23 °C	11:46:23



98 %	23 °C	11:46:25
98 %	23 °C	11:46:27
98 %	23 °C	11:46:29
98 %	23 °C	11:46:31
98 %	23 °C	11:46:33
98 %	23 °C	11:46:35
98 %	23 °C	11:46:37
98 %	23 °C	11:46:39
98 %	23 °C	11:46:41
98 %	23 °C	11:46:43
98 %	23 °C	11:46:45
98 %	23 °C	11:46:47
98 %	23 °C	11:46:49
98 %	23 °C	11:46:51
99 %	23 °C	11:46:53
99 %	23 °C	11:46:55
99 %	23 °C	11:46:57
99 %	23 °C	11:46:59
99 %	23 °C	11:47:01
99 %	23 °C	11:47:03
99 %	23 °C	11:47:05
99 %	24 °C	11:47:07
99 %	24 °C	11:47:09
99 %	24 °C	11:47:11
99 %	23 °C	11:47:13



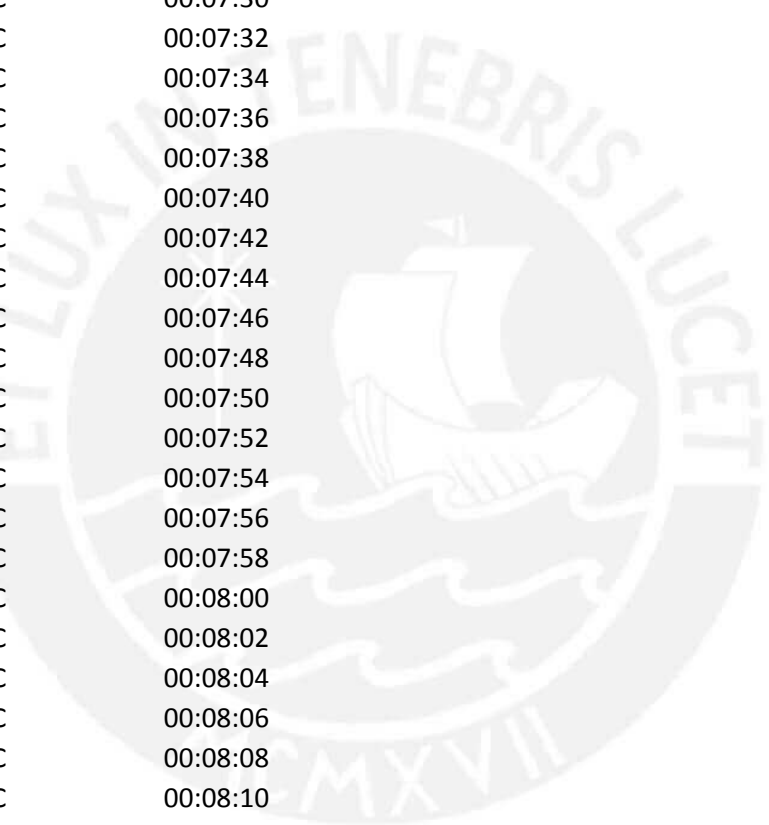
99 %	23 °C	11:47:15
99 %	24 °C	11:47:17
99 %	23 °C	11:47:19
99 %	24 °C	11:47:21
99 %	24 °C	11:47:23
99 %	24 °C	11:47:25
99 %	24 °C	11:47:27
99 %	24 °C	11:47:29
99 %	24 °C	11:47:31
99 %	24 °C	11:47:33



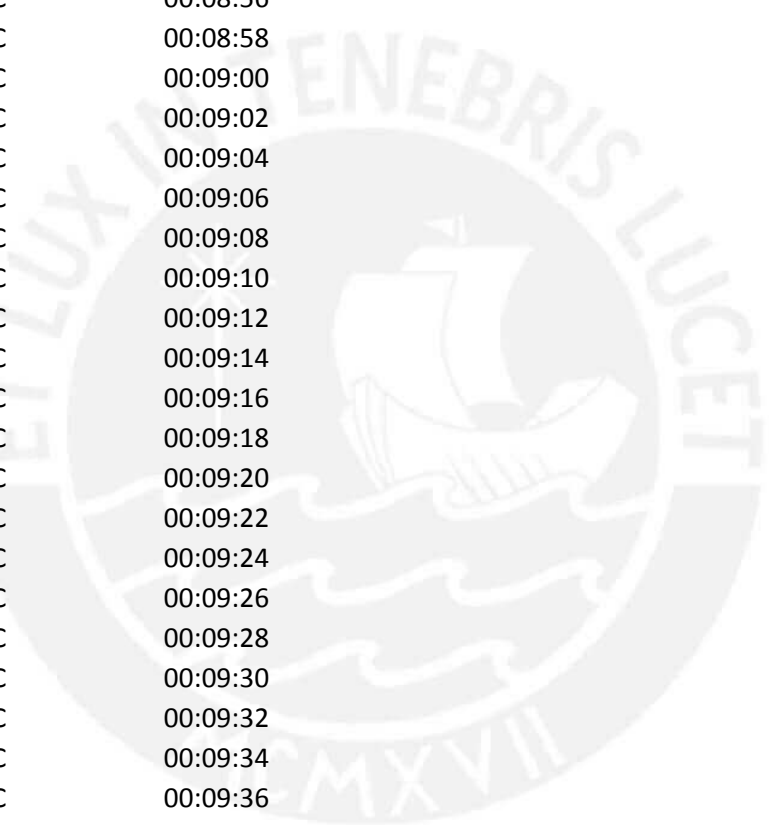
Anexo 13: Datos del archivo: "Manual_mode_calef1"

Humedad	Temperatura	Tiempo
0 %	0 °C	00:05:52
73 %	21 °C	00:05:54
73 %	21 °C	00:05:56
73 %	21 °C	00:05:58
73 %	21 °C	00:06:00
73 %	21 °C	00:06:02
73 %	21 °C	00:06:04
73 %	21 °C	00:06:06
73 %	21 °C	00:06:08
73 %	21 °C	00:06:10
73 %	21 °C	00:06:12
73 %	21 °C	00:06:14
73 %	21 °C	00:06:16
73 %	21 °C	00:06:18
73 %	21 °C	00:06:20
73 %	21 °C	00:06:22
73 %	21 °C	00:06:24
74 %	21 °C	00:06:26
74 %	21 °C	00:06:28
74 %	21 °C	00:06:30
74 %	21 °C	00:06:32
74 %	21 °C	00:06:34
74 %	21 °C	00:06:36
74 %	21 °C	00:06:38
74 %	21 °C	00:06:40
74 %	21 °C	00:06:42
75 %	21 °C	00:06:44
75 %	21 °C	00:06:46
75 %	21 °C	00:06:48
75 %	21 °C	00:06:50
75 %	21 °C	00:06:52
75 %	21 °C	00:06:54
75 %	21 °C	00:06:56
75 %	21 °C	00:06:58
75 %	21 °C	00:07:00
75 %	21 °C	00:07:02
76 %	21 °C	00:07:04
76 %	21 °C	00:07:06

76 %	21 °C	00:07:08
76 %	21 °C	00:07:10
76 %	21 °C	00:07:12
76 %	21 °C	00:07:14
76 %	21 °C	00:07:16
76 %	21 °C	00:07:18
76 %	21 °C	00:07:20
76 %	21 °C	00:07:22
76 %	21 °C	00:07:24
76 %	21 °C	00:07:26
76 %	21 °C	00:07:28
76 %	21 °C	00:07:30
76 %	22 °C	00:07:32
76 %	22 °C	00:07:34
76 %	22 °C	00:07:36
76 %	22 °C	00:07:38
76 %	22 °C	00:07:40
76 %	22 °C	00:07:42
76 %	22 °C	00:07:44
76 %	22 °C	00:07:46
76 %	22 °C	00:07:48
76 %	22 °C	00:07:50
76 %	22 °C	00:07:52
76 %	22 °C	00:07:54
76 %	22 °C	00:07:56
76 %	22 °C	00:07:58
76 %	22 °C	00:08:00
76 %	22 °C	00:08:02
76 %	22 °C	00:08:04
76 %	22 °C	00:08:06
76 %	22 °C	00:08:08
76 %	22 °C	00:08:10
76 %	22 °C	00:08:12
76 %	22 °C	00:08:14
76 %	22 °C	00:08:16
76 %	22 °C	00:08:18
76 %	22 °C	00:08:20
76 %	22 °C	00:08:22
76 %	22 °C	00:08:24
76 %	22 °C	00:08:26
76 %	22 °C	00:08:28
76 %	22 °C	00:08:30
76 %	22 °C	00:08:32

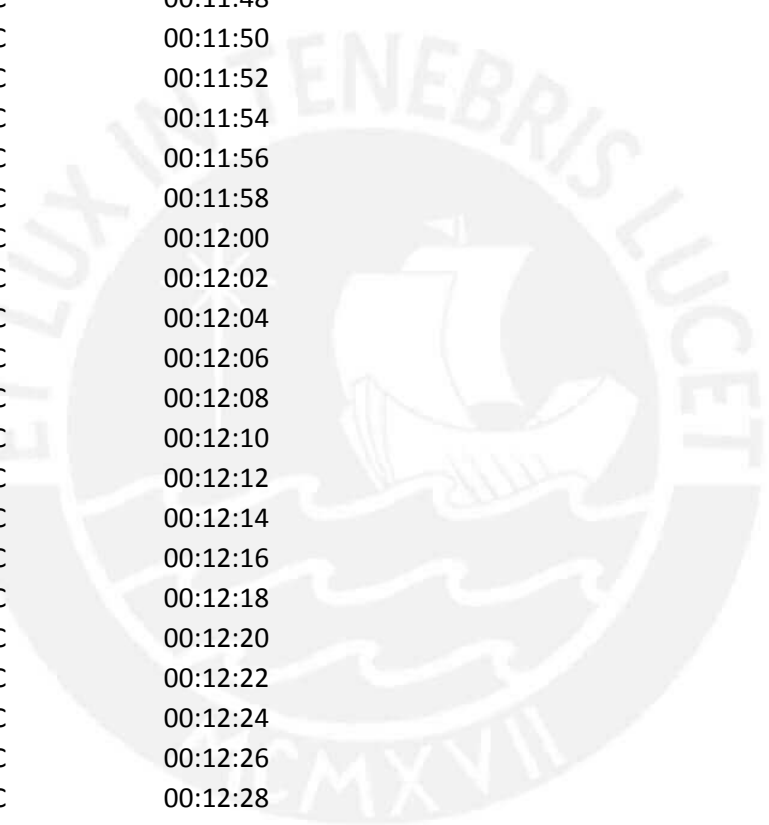


76 %	22 °C	00:08:34
76 %	22 °C	00:08:36
76 %	22 °C	00:08:38
76 %	22 °C	00:08:40
76 %	22 °C	00:08:42
76 %	22 °C	00:08:44
76 %	22 °C	00:08:46
76 %	22 °C	00:08:48
76 %	22 °C	00:08:50
76 %	23 °C	00:08:52
76 %	23 °C	00:08:54
76 %	23 °C	00:08:56
76 %	23 °C	00:08:58
76 %	23 °C	00:09:00
76 %	23 °C	00:09:02
76 %	23 °C	00:09:04
76 %	23 °C	00:09:06
76 %	23 °C	00:09:08
75 %	23 °C	00:09:10
75 %	23 °C	00:09:12
75 %	23 °C	00:09:14
75 %	23 °C	00:09:16
75 %	23 °C	00:09:18
75 %	23 °C	00:09:20
75 %	23 °C	00:09:22
75 %	23 °C	00:09:24
75 %	23 °C	00:09:26
75 %	23 °C	00:09:28
75 %	23 °C	00:09:30
75 %	23 °C	00:09:32
75 %	23 °C	00:09:34
75 %	23 °C	00:09:36
75 %	23 °C	00:09:38
75 %	23 °C	00:09:40
75 %	23 °C	00:09:42
75 %	23 °C	00:09:44
75 %	23 °C	00:09:46
75 %	23 °C	00:09:48
75 %	23 °C	00:09:50
75 %	23 °C	00:09:52
75 %	23 °C	00:09:54
75 %	23 °C	00:09:56
75 %	23 °C	00:09:58



75 %	23 °C	00:10:00
75 %	23 °C	00:10:02
75 %	23 °C	00:10:04
75 %	23 °C	00:10:06
75 %	23 °C	00:10:08
75 %	23 °C	00:10:10
75 %	23 °C	00:10:12
75 %	23 °C	00:10:14
75 %	23 °C	00:10:16
75 %	23 °C	00:10:18
75 %	24 °C	00:10:20
75 %	23 °C	00:10:22
75 %	24 °C	00:10:24
75 %	24 °C	00:10:26
75 %	24 °C	00:10:28
75 %	24 °C	00:10:30
75 %	24 °C	00:10:32
75 %	24 °C	00:10:34
75 %	24 °C	00:10:36
75 %	24 °C	00:10:38
75 %	24 °C	00:10:40
75 %	24 °C	00:10:42
74 %	24 °C	00:10:44
74 %	24 °C	00:10:46
74 %	24 °C	00:10:48
74 %	24 °C	00:10:50
74 %	24 °C	00:10:52
74 %	24 °C	00:10:54
74 %	24 °C	00:10:56
74 %	24 °C	00:10:58
74 %	24 °C	00:11:00
74 %	24 °C	00:11:02
74 %	24 °C	00:11:04
74 %	24 °C	00:11:06
74 %	24 °C	00:11:08
74 %	24 °C	00:11:10
74 %	24 °C	00:11:12
74 %	24 °C	00:11:14
74 %	24 °C	00:11:16
74 %	24 °C	00:11:18
74 %	24 °C	00:11:20
74 %	24 °C	00:11:22
74 %	24 °C	00:11:24

74 %	24 °C	00:11:26
74 %	24 °C	00:11:28
74 %	24 °C	00:11:30
74 %	24 °C	00:11:32
74 %	24 °C	00:11:34
74 %	24 °C	00:11:36
74 %	24 °C	00:11:38
74 %	24 °C	00:11:40
74 %	24 °C	00:11:42
74 %	24 °C	00:11:44
74 %	24 °C	00:11:46
74 %	24 °C	00:11:48
74 %	24 °C	00:11:50
74 %	24 °C	00:11:52
74 %	24 °C	00:11:54
74 %	24 °C	00:11:56
74 %	24 °C	00:11:58
74 %	24 °C	00:12:00
74 %	24 °C	00:12:02
74 %	24 °C	00:12:04
74 %	24 °C	00:12:06
74 %	24 °C	00:12:08
74 %	24 °C	00:12:10
74 %	24 °C	00:12:12
74 %	24 °C	00:12:14
74 %	24 °C	00:12:16
74 %	24 °C	00:12:18
74 %	24 °C	00:12:20
74 %	24 °C	00:12:22
74 %	24 °C	00:12:24
74 %	24 °C	00:12:26
74 %	24 °C	00:12:28
74 %	24 °C	00:12:30
74 %	24 °C	00:12:32
74 %	24 °C	00:12:34
74 %	24 °C	00:12:36
74 %	24 °C	00:12:38
74 %	25 °C	00:12:40
74 %	24 °C	00:12:42
74 %	25 °C	00:12:44
74 %	25 °C	00:12:46
74 %	25 °C	00:12:48
74 %	25 °C	00:12:50



74 %	25 °C	00:12:52
74 %	25 °C	00:12:54
74 %	25 °C	00:12:56
74 %	25 °C	00:12:58
74 %	25 °C	00:13:00
74 %	25 °C	00:13:02
74 %	25 °C	00:13:04
74 %	25 °C	00:13:06
74 %	25 °C	00:13:08
74 %	25 °C	00:13:10
74 %	25 °C	00:13:12
74 %	25 °C	00:13:14
74 %	25 °C	00:13:16
74 %	25 °C	00:13:18
74 %	25 °C	00:13:20
74 %	25 °C	00:13:22
74 %	25 °C	00:13:24
74 %	25 °C	00:13:26
74 %	25 °C	00:13:28
74 %	25 °C	00:13:30
74 %	25 °C	00:13:32
74 %	25 °C	00:13:34
74 %	25 °C	00:13:36
74 %	25 °C	00:13:38
74 %	25 °C	00:13:40
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74 %	25 °C	00:13:44
74 %	25 °C	00:13:46
74 %	25 °C	00:13:48
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74 %	25 °C	00:13:52
74 %	25 °C	00:13:54
74 %	25 °C	00:13:56
74 %	25 °C	00:13:58
74 %	25 °C	00:14:00
74 %	25 °C	00:14:02
74 %	25 °C	00:14:04
74 %	25 °C	00:14:06
74 %	25 °C	00:14:08
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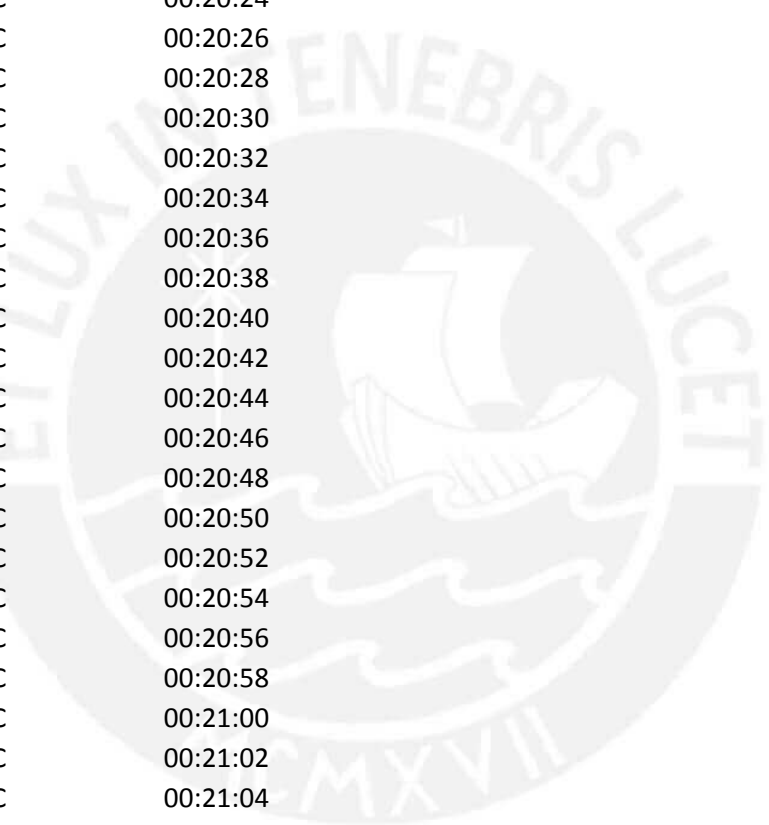
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74 %	25 °C	00:14:56
74 %	25 °C	00:14:58
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73 %	25 °C	00:15:08
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73 %	25 °C	00:16:58
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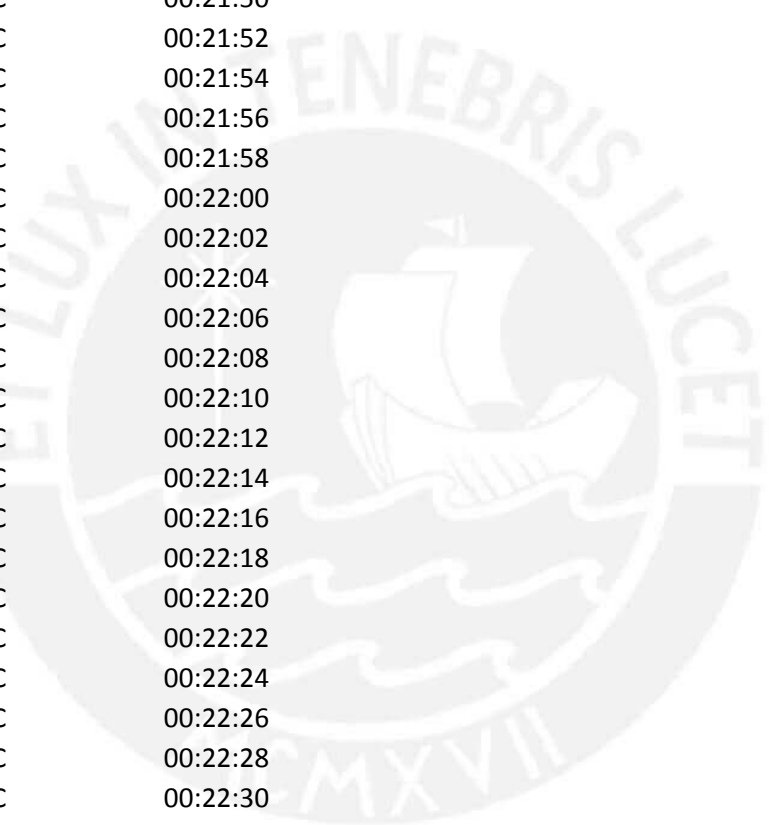
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73 %	25 °C	00:17:24
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73 %	25 °C	00:17:28
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73 %	25 °C	00:17:56
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73 %	26 °C	00:19:56
72 %	25 °C	00:19:58
72 %	25 °C	00:20:00

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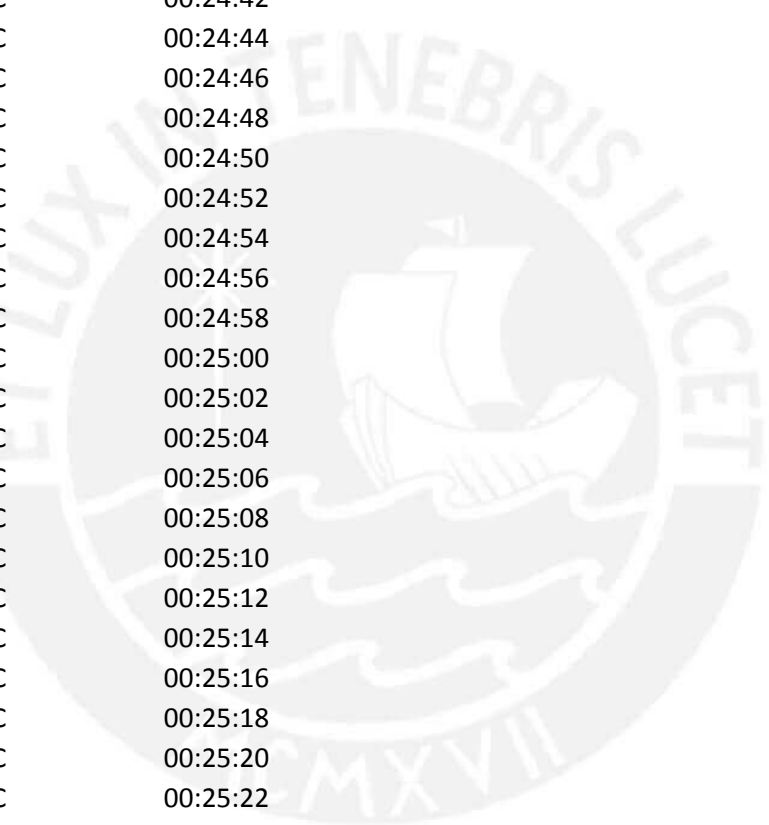


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71 %	26 °C	00:21:42
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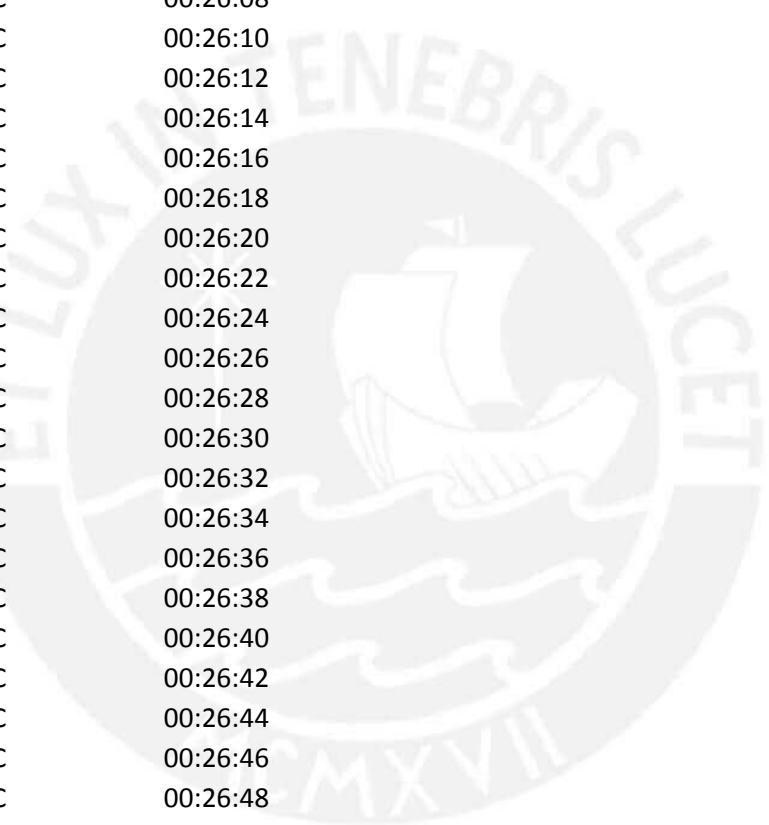


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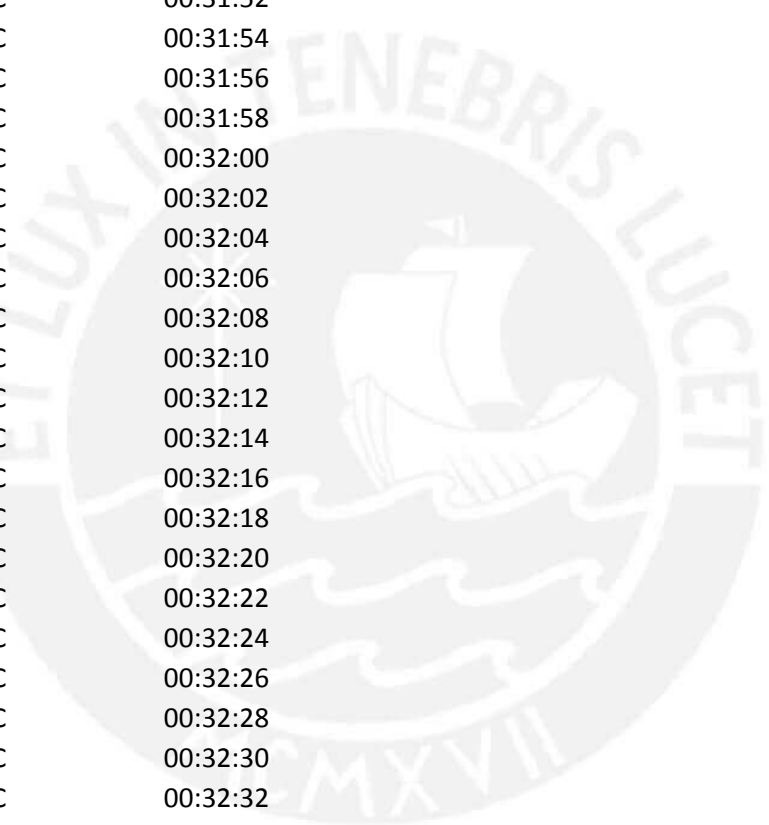


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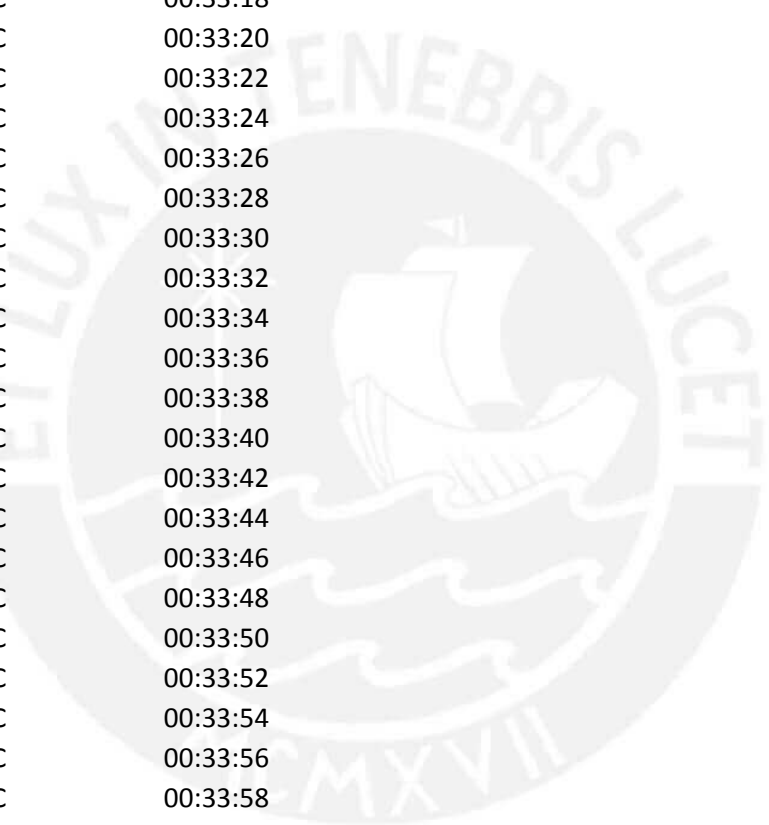
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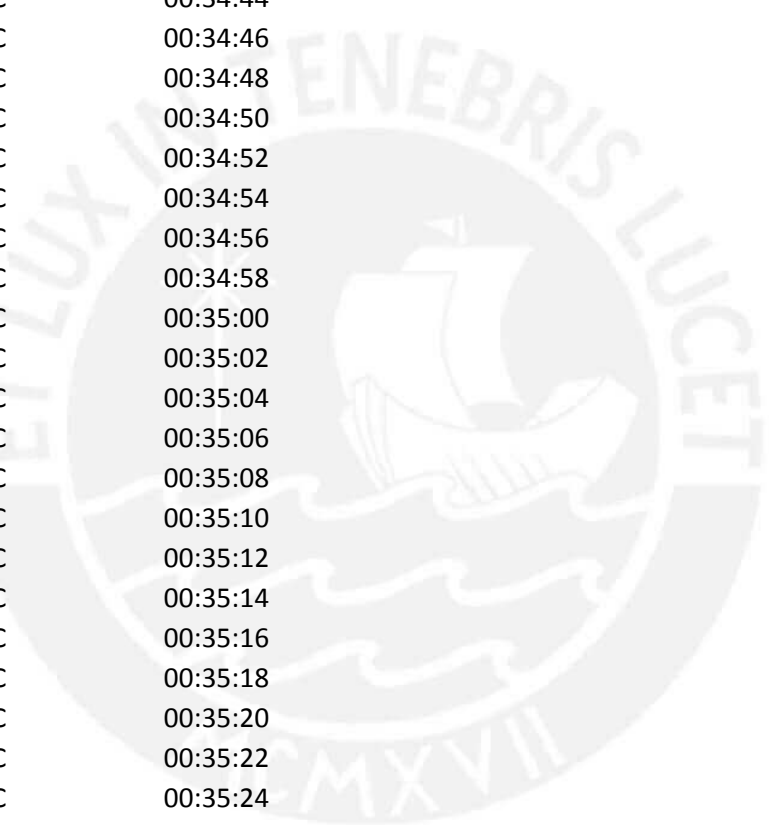
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64 %	27 °C	00:31:40
64 %	27 °C	00:31:42
64 %	27 °C	00:31:44
64 %	27 °C	00:31:46
64 %	27 °C	00:31:48
64 %	27 °C	00:31:50
64 %	27 °C	00:31:52
64 %	27 °C	00:31:54
64 %	27 °C	00:31:56
64 %	27 °C	00:31:58
64 %	27 °C	00:32:00
64 %	27 °C	00:32:02
64 %	27 °C	00:32:04
64 %	27 °C	00:32:06
64 %	27 °C	00:32:08
64 %	27 °C	00:32:10
64 %	27 °C	00:32:12
64 %	27 °C	00:32:14
64 %	27 °C	00:32:16
64 %	27 °C	00:32:18
64 %	27 °C	00:32:20
64 %	27 °C	00:32:22
64 %	27 °C	00:32:24
64 %	27 °C	00:32:26
64 %	27 °C	00:32:28
64 %	27 °C	00:32:30
64 %	27 °C	00:32:32
63 %	27 °C	00:32:34
63 %	27 °C	00:32:36
63 %	27 °C	00:32:38
63 %	27 °C	00:32:40
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63 %	27 °C	00:32:44
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63 %	27 °C	00:32:52
63 %	27 °C	00:32:54



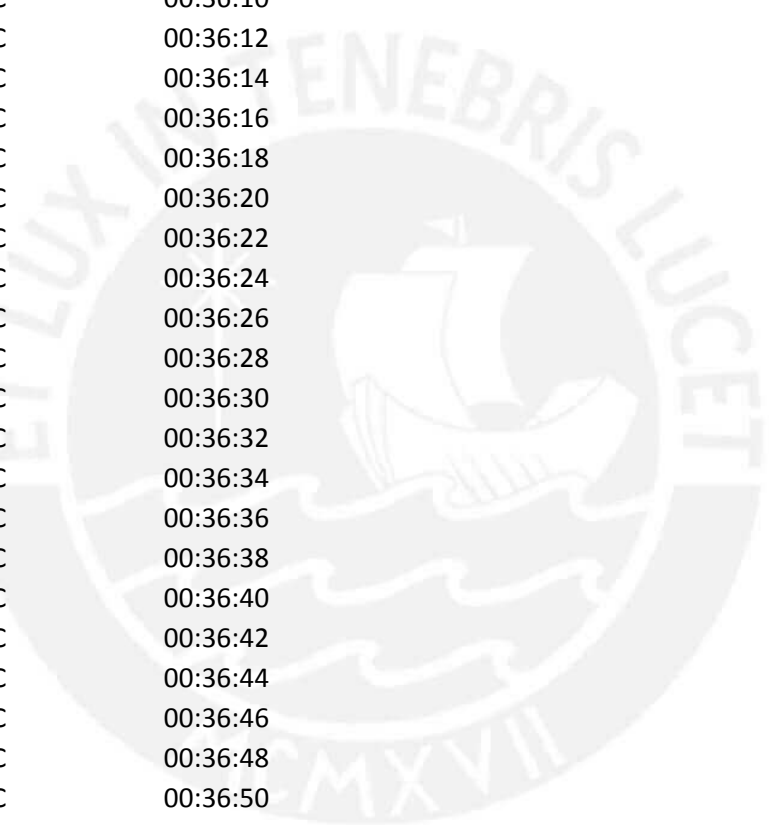
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63 %	27 °C	00:33:10
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63 %	27 °C	00:33:42
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63 %	27 °C	00:33:50
63 %	27 °C	00:33:52
63 %	27 °C	00:33:54
63 %	27 °C	00:33:56
63 %	27 °C	00:33:58
63 %	27 °C	00:34:00
63 %	27 °C	00:34:02
63 %	27 °C	00:34:04
63 %	27 °C	00:34:06
63 %	27 °C	00:34:08
63 %	27 °C	00:34:10
63 %	27 °C	00:34:12
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63 %	27 °C	00:34:18
63 %	27 °C	00:34:20



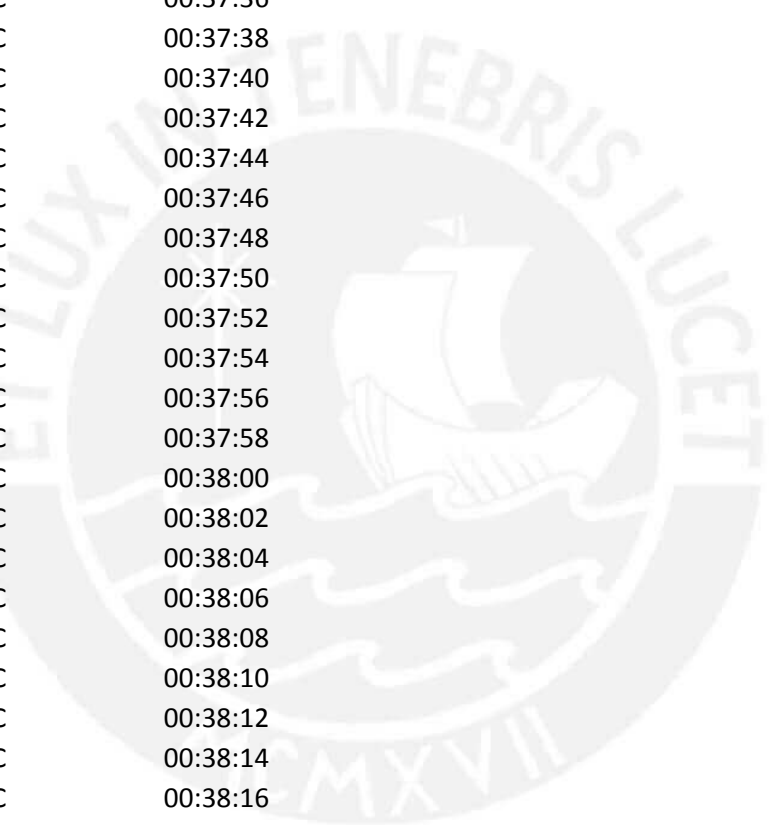
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63 %	27 °C	00:34:34
63 %	27 °C	00:34:36
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63 %	27 °C	00:34:42
63 %	27 °C	00:34:44
63 %	27 °C	00:34:46
63 %	27 °C	00:34:48
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63 %	27 °C	00:34:52
63 %	27 °C	00:34:54
63 %	27 °C	00:34:56
63 %	27 °C	00:34:58
62 %	27 °C	00:35:00
62 %	27 °C	00:35:02
62 %	27 °C	00:35:04
62 %	27 °C	00:35:06
62 %	27 °C	00:35:08
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62 %	27 °C	00:35:28
62 %	27 °C	00:35:30
62 %	27 °C	00:35:32
62 %	27 °C	00:35:34
62 %	27 °C	00:35:36
62 %	27 °C	00:35:38
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62 %	27 °C	00:35:44
62 %	27 °C	00:35:46



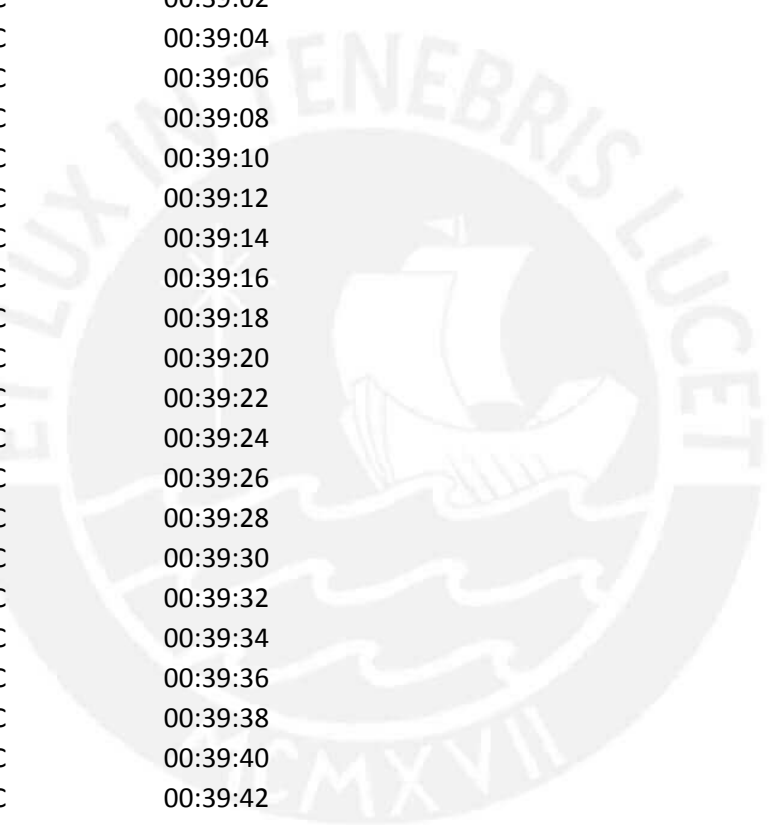
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63 %	27 °C	00:35:58
63 %	27 °C	00:36:00
63 %	27 °C	00:36:02
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64 %	28 °C	00:36:08
64 %	28 °C	00:36:10
64 %	28 °C	00:36:12
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64 %	28 °C	00:36:42
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64 %	28 °C	00:36:54
64 %	28 °C	00:36:56
64 %	28 °C	00:36:58
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64 %	28 °C	00:37:04
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65 %	28 °C	00:37:10
65 %	28 °C	00:37:12



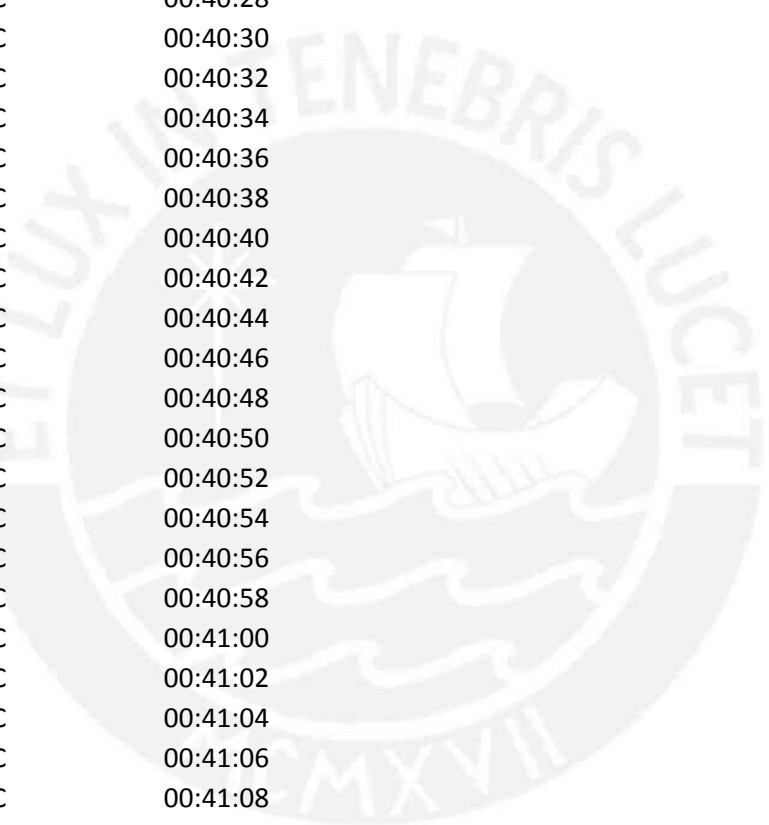
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65 %	28 °C	00:37:18
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65 %	28 °C	00:37:54
65 %	28 °C	00:37:56
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67 %	28 °C	00:38:52
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66 %	27 °C	00:39:00
66 %	27 °C	00:39:02
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68 %	27 °C	00:39:54
68 %	27 °C	00:39:56
68 %	27 °C	00:39:58
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68 %	27 °C	00:40:04

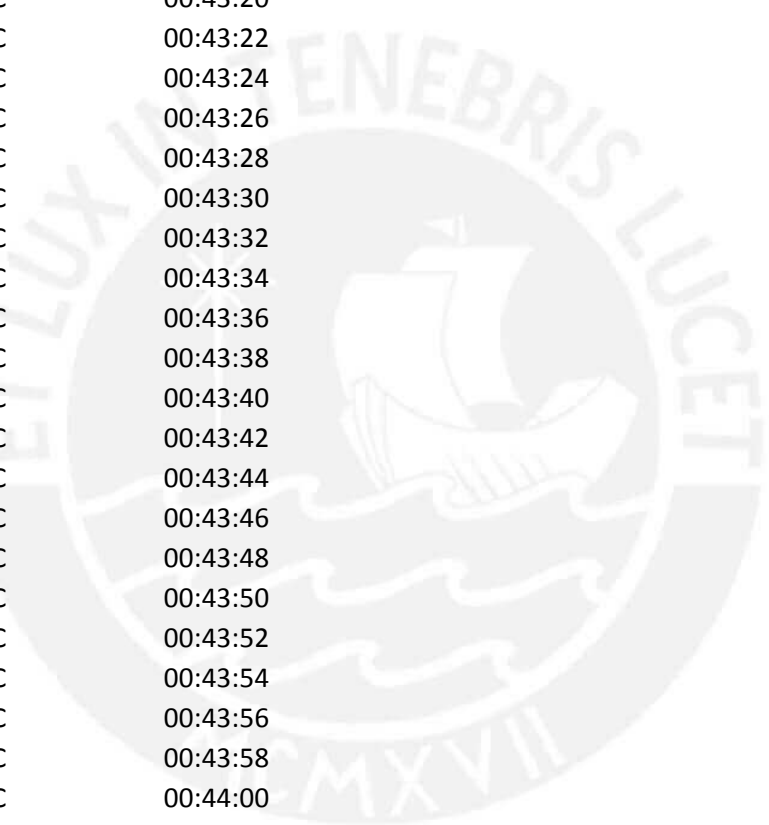


68 %	27 °C	00:40:06
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69 %	27 °C	00:40:56
69 %	27 °C	00:40:58
69 %	27 °C	00:41:00
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69 %	27 °C	00:41:30

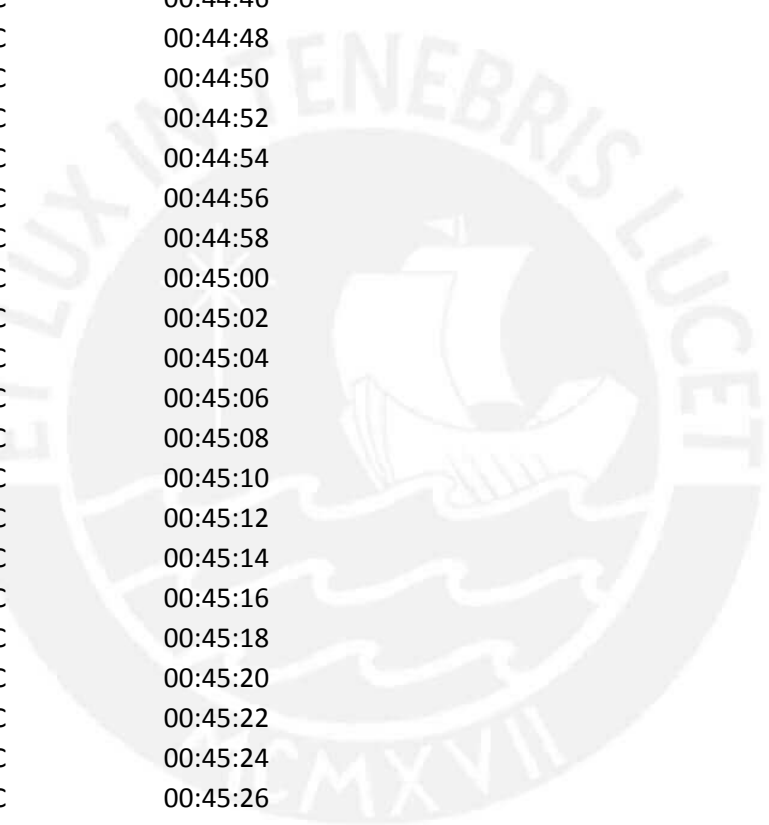


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69 %	27 °C	00:41:42
69 %	27 °C	00:41:44
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70 %	27 °C	00:42:56

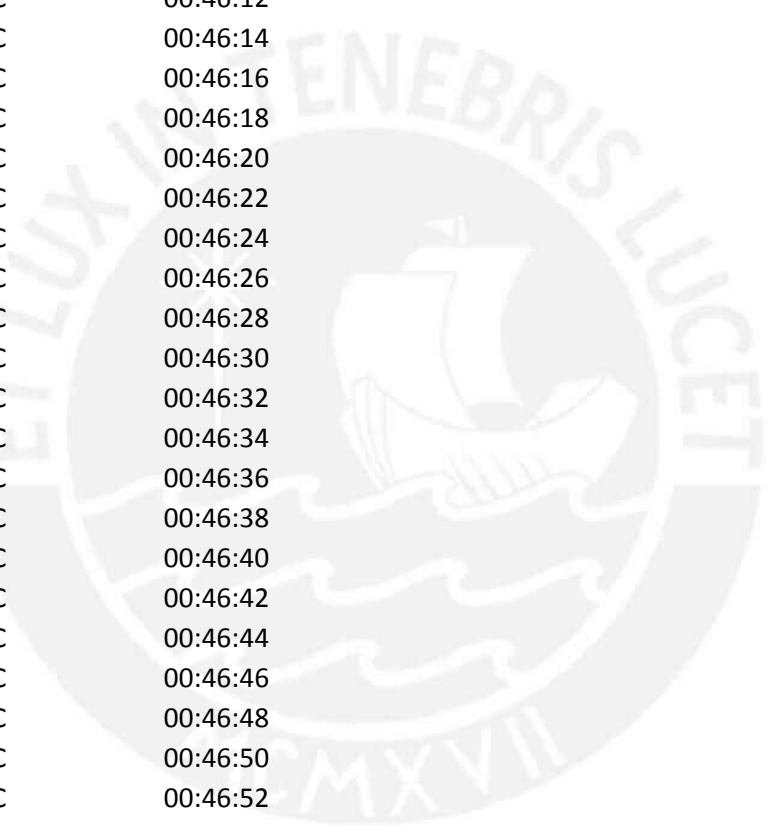
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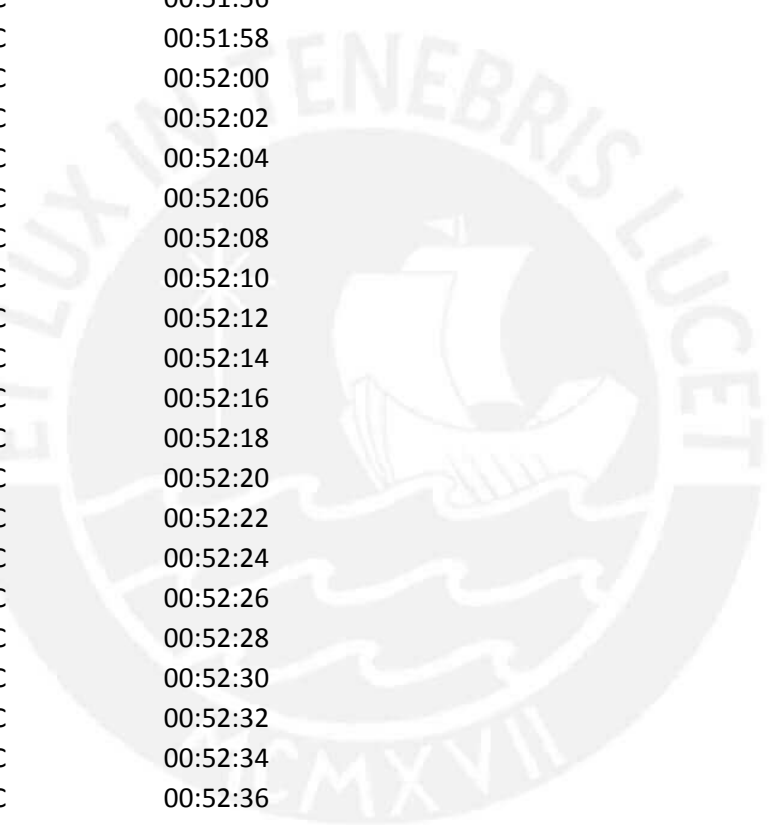


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65 %	27 °C	00:49:32
65 %	27 °C	00:49:34
65 %	27 °C	00:49:36
65 %	27 °C	00:49:38
65 %	27 °C	00:49:40
65 %	27 °C	00:49:42
65 %	27 °C	00:49:44
65 %	27 °C	00:49:46
65 %	27 °C	00:49:48
65 %	27 °C	00:49:50
65 %	27 °C	00:49:52
65 %	27 °C	00:49:54
65 %	27 °C	00:49:56
65 %	27 °C	00:49:58
65 %	27 °C	00:50:00
65 %	27 °C	00:50:02
65 %	27 °C	00:50:04
65 %	27 °C	00:50:06

65 %	27 °C	00:50:08
65 %	27 °C	00:50:10
65 %	27 °C	00:50:12
65 %	27 °C	00:50:14
65 %	27 °C	00:50:16
65 %	27 °C	00:50:18
65 %	27 °C	00:50:20
65 %	27 °C	00:50:22
65 %	27 °C	00:50:24
65 %	27 °C	00:50:26
64 %	27 °C	00:50:28
64 %	27 °C	00:50:30
64 %	27 °C	00:50:32
64 %	27 °C	00:50:34
64 %	27 °C	00:50:36
64 %	27 °C	00:50:38
64 %	27 °C	00:50:40
64 %	27 °C	00:50:42
64 %	27 °C	00:50:44
64 %	27 °C	00:50:46
64 %	27 °C	00:50:48
64 %	27 °C	00:50:50
64 %	27 °C	00:50:52
64 %	27 °C	00:50:54
64 %	27 °C	00:50:56
64 %	27 °C	00:50:58
64 %	27 °C	00:51:00
64 %	27 °C	00:51:02
64 %	27 °C	00:51:04
64 %	27 °C	00:51:06
64 %	27 °C	00:51:08
62 %	27 °C	00:51:10
61 %	27 °C	00:51:12
60 %	27 °C	00:51:14
58 %	27 °C	00:51:16
57 %	27 °C	00:51:18
56 %	27 °C	00:51:20
55 %	27 °C	00:51:22
54 %	27 °C	00:51:24
54 %	27 °C	00:51:26
54 %	27 °C	00:51:28
55 %	27 °C	00:51:30
55 %	27 °C	00:51:32

56 %	27 °C	00:51:34
57 %	27 °C	00:51:36
57 %	27 °C	00:51:38
58 %	27 °C	00:51:40
58 %	27 °C	00:51:42
58 %	27 °C	00:51:44
58 %	27 °C	00:51:46
59 %	27 °C	00:51:48
59 %	27 °C	00:51:50
59 %	27 °C	00:51:52
59 %	27 °C	00:51:54
60 %	27 °C	00:51:56
60 %	27 °C	00:51:58
60 %	27 °C	00:52:00
60 %	27 °C	00:52:02
60 %	27 °C	00:52:04
60 %	27 °C	00:52:06
60 %	27 °C	00:52:08
60 %	27 °C	00:52:10
60 %	27 °C	00:52:12
60 %	27 °C	00:52:14
60 %	27 °C	00:52:16
60 %	27 °C	00:52:18
60 %	27 °C	00:52:20
60 %	27 °C	00:52:22
61 %	27 °C	00:52:24
61 %	27 °C	00:52:26
61 %	27 °C	00:52:28
61 %	27 °C	00:52:30
61 %	27 °C	00:52:32
61 %	27 °C	00:52:34
61 %	27 °C	00:52:36
61 %	27 °C	00:52:38
61 %	27 °C	00:52:40
61 %	27 °C	00:52:42
61 %	27 °C	00:52:44
61 %	27 °C	00:52:46
61 %	27 °C	00:52:48
61 %	27 °C	00:52:50
61 %	27 °C	00:52:52
61 %	27 °C	00:52:54
61 %	27 °C	00:52:56
61 %	27 °C	00:52:58



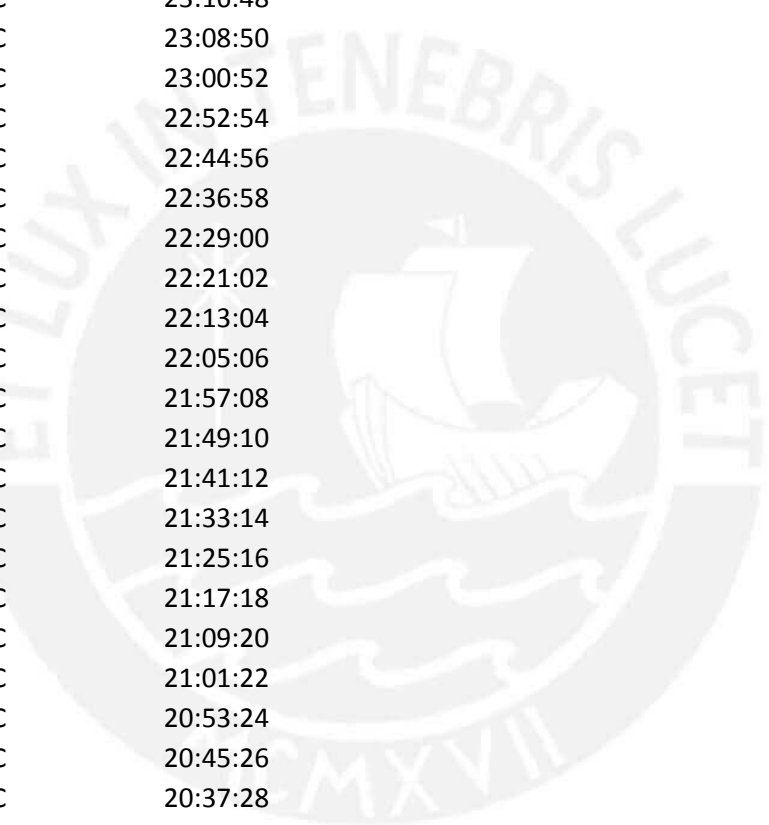
61 %	27 °C	00:53:00
61 %	27 °C	00:53:02
61 %	27 °C	00:53:04
61 %	27 °C	00:53:06
61 %	27 °C	00:53:08
61 %	27 °C	00:53:10
61 %	27 °C	00:53:12
61 %	27 °C	00:53:14
61 %	27 °C	00:53:16
61 %	27 °C	00:53:18
61 %	27 °C	00:53:20
61 %	27 °C	00:53:22
61 %	27 °C	00:53:24
61 %	27 °C	00:53:26
61 %	27 °C	00:53:28
61 %	27 °C	00:53:30
62 %	27 °C	00:53:32
62 %	27 °C	00:53:34
62 %	27 °C	00:53:36
62 %	27 °C	00:53:38
62 %	27 °C	00:53:40
62 %	27 °C	00:53:42
62 %	27 °C	00:53:44
63 %	27 °C	00:53:46
63 %	27 °C	00:53:48
63 %	27 °C	00:53:50
63 %	27 °C	00:53:52
63 %	27 °C	00:53:54
63 %	27 °C	00:53:56
63 %	27 °C	00:53:58
63 %	27 °C	00:54:00
63 %	27 °C	00:54:02
64 %	27 °C	00:54:04
64 %	27 °C	00:54:06
64 %	27 °C	00:54:08
64 %	27 °C	00:54:10
64 %	27 °C	00:54:12
64 %	27 °C	00:54:14
64 %	27 °C	00:54:16
64 %	27 °C	00:54:18
64 %	27 °C	00:54:20

Anexo 14: Datos del archivo: "Manual_mode_enf1"

Humedad	Temperatura	Tiempo
0 %	0 °C	11:45:40
67 %	25 °C	11:37:42
68 %	25 °C	11:29:44
68 %	25 °C	11:21:46
68 %	25 °C	11:13:48
68 %	25 °C	11:05:50
68 %	25 °C	10:57:52
68 %	25 °C	10:49:54
68 %	25 °C	10:41:56
68 %	25 °C	10:33:58
69 %	25 °C	10:26:00
68 %	25 °C	10:18:02
68 %	25 °C	10:10:04
68 %	25 °C	10:02:06
68 %	25 °C	09:54:08
68 %	25 °C	09:46:10
68 %	25 °C	09:38:12
68 %	25 °C	09:30:14
68 %	25 °C	09:22:16
68 %	25 °C	09:14:18
68 %	25 °C	09:06:20
68 %	25 °C	08:58:22
69 %	25 °C	08:50:24
69 %	25 °C	08:42:26
70 %	25 °C	08:34:28
70 %	25 °C	08:26:30
70 %	25 °C	08:18:32
71 %	25 °C	08:10:34
71 %	25 °C	08:02:36
72 %	25 °C	07:54:38
72 %	25 °C	07:46:40
72 %	25 °C	07:38:42
73 %	25 °C	07:30:44
73 %	25 °C	07:22:46
74 %	25 °C	07:14:48
74 %	24 °C	07:06:50
74 %	24 °C	06:58:52
75 %	24 °C	06:50:54
75 %	24 °C	06:42:56
75 %	24 °C	06:34:58

76 %	24 °C	06:27:00
76 %	24 °C	06:19:02
76 %	24 °C	06:11:04
77 %	24 °C	06:03:06
77 %	24 °C	05:55:08
77 %	24 °C	05:47:10
78 %	24 °C	05:39:12
78 %	24 °C	05:31:14
78 %	24 °C	05:23:16
78 %	24 °C	05:15:18
77 %	24 °C	05:07:20
77 %	24 °C	04:59:22
77 %	24 °C	04:51:24
77 %	24 °C	04:43:26
77 %	24 °C	04:35:28
77 %	24 °C	04:27:30
77 %	24 °C	04:19:32
76 %	24 °C	04:11:34
76 %	24 °C	04:03:36
76 %	24 °C	03:55:38
76 %	24 °C	03:47:40
76 %	24 °C	03:39:42
76 %	24 °C	03:31:44
76 %	24 °C	03:23:46
76 %	24 °C	03:15:48
76 %	24 °C	03:07:50
77 %	24 °C	02:59:52
77 %	24 °C	02:51:54
77 %	24 °C	02:43:56
77 %	24 °C	02:35:58
77 %	24 °C	02:28:00
77 %	24 °C	02:20:02
77 %	24 °C	02:12:04
77 %	24 °C	02:04:06
77 %	24 °C	01:56:08
77 %	24 °C	01:48:10
77 %	24 °C	01:40:12
77 %	24 °C	01:32:14
76 %	24 °C	01:24:16
76 %	24 °C	01:16:18
76 %	24 °C	01:08:20
76 %	24 °C	01:00:22
76 %	24 °C	00:52:24

76 %	24 °C	00:44:26
76 %	24 °C	00:36:28
77 %	24 °C	00:28:30
77 %	24 °C	00:20:32
77 %	24 °C	00:12:34
77 %	24 °C	00:04:36
77 %	24 °C	23:56:38
78 %	24 °C	23:48:40
77 %	24 °C	23:40:42
77 %	24 °C	23:32:44
77 %	24 °C	23:24:46
77 %	24 °C	23:16:48
77 %	24 °C	23:08:50
77 %	24 °C	23:00:52
77 %	24 °C	22:52:54
77 %	24 °C	22:44:56
77 %	24 °C	22:36:58
77 %	24 °C	22:29:00
76 %	24 °C	22:21:02
76 %	24 °C	22:13:04
76 %	24 °C	22:05:06
76 %	24 °C	21:57:08
76 %	24 °C	21:49:10
76 %	24 °C	21:41:12
77 %	24 °C	21:33:14
77 %	24 °C	21:25:16
77 %	24 °C	21:17:18
77 %	24 °C	21:09:20
77 %	24 °C	21:01:22
77 %	24 °C	20:53:24
77 %	23 °C	20:45:26
77 %	23 °C	20:37:28
77 %	24 °C	20:29:30
77 %	24 °C	20:21:32
77 %	23 °C	20:13:34
77 %	23 °C	20:05:36
77 %	23 °C	19:57:38
77 %	23 °C	19:49:40
77 %	23 °C	19:41:42
77 %	23 °C	19:33:44
77 %	23 °C	19:25:46
77 %	23 °C	19:17:48
77 %	23 °C	19:09:50

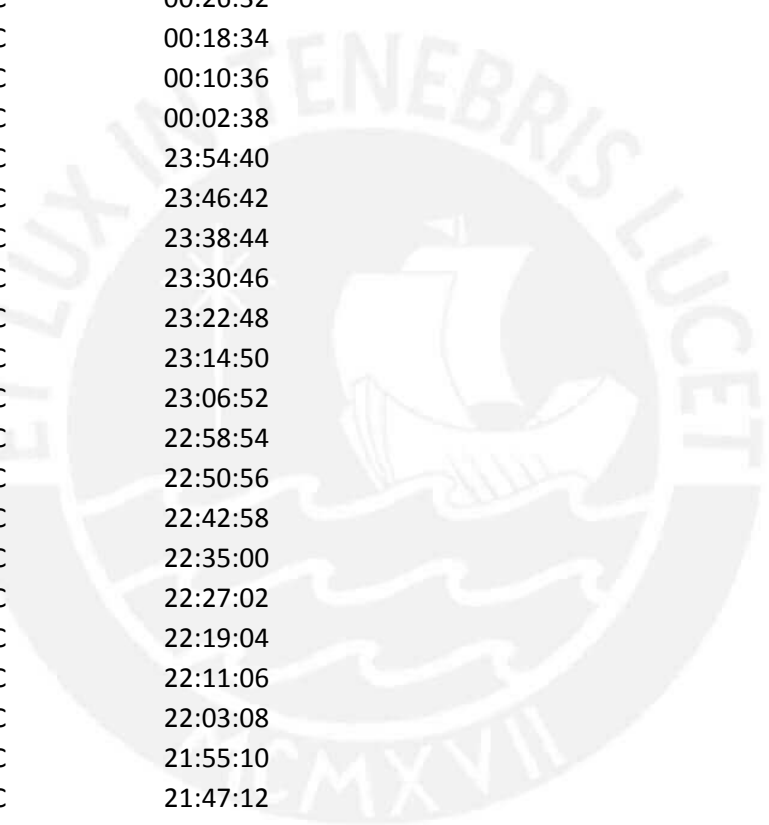


77 %	23 °C	19:01:52
77 %	23 °C	18:53:54
77 %	23 °C	18:45:56
77 %	23 °C	18:37:58
77 %	23 °C	18:30:00
77 %	24 °C	18:22:02
77 %	24 °C	18:14:04
77 %	24 °C	18:06:06
77 %	24 °C	17:58:08
77 %	24 °C	17:50:10
77 %	24 °C	17:42:12
77 %	24 °C	17:34:14
77 %	24 °C	17:26:16
77 %	24 °C	17:18:18
77 %	24 °C	17:10:20
77 %	23 °C	17:02:22
77 %	23 °C	16:54:24
77 %	23 °C	16:46:26
76 %	23 °C	16:38:28
76 %	23 °C	16:30:30
76 %	23 °C	16:22:32
76 %	23 °C	16:14:34
77 %	23 °C	16:06:36
77 %	23 °C	15:58:38
77 %	23 °C	15:50:40
77 %	23 °C	15:42:42
77 %	23 °C	15:34:44
77 %	23 °C	15:26:46
77 %	23 °C	15:18:48
77 %	23 °C	15:10:50
78 %	23 °C	15:02:52
78 %	23 °C	14:54:54
78 %	23 °C	14:46:56
78 %	23 °C	14:38:58
78 %	23 °C	14:31:00
78 %	23 °C	14:23:02
78 %	23 °C	14:15:04
78 %	23 °C	14:07:06
78 %	23 °C	13:59:08
78 %	23 °C	13:51:10
78 %	24 °C	13:43:12
78 %	23 °C	13:35:14
78 %	23 °C	13:27:16

78 %	24 °C	13:19:18
78 %	23 °C	13:11:20
78 %	24 °C	13:03:22
77 %	24 °C	12:55:24
77 %	24 °C	12:47:26
77 %	23 °C	12:39:28
77 %	24 °C	12:31:30
77 %	24 °C	12:23:32
77 %	23 °C	12:15:34
77 %	23 °C	12:07:36
77 %	23 °C	11:59:38
77 %	23 °C	11:51:40
77 %	23 °C	11:43:42
77 %	23 °C	11:35:44
77 %	24 °C	11:27:46
77 %	23 °C	11:19:48
77 %	23 °C	11:11:50
77 %	24 °C	11:03:52
77 %	23 °C	10:55:54
77 %	23 °C	10:47:56
77 %	23 °C	10:39:58
77 %	24 °C	10:32:00
77 %	23 °C	10:24:02
77 %	23 °C	10:16:04
77 %	23 °C	10:08:06
77 %	23 °C	10:00:08
77 %	23 °C	09:52:10
77 %	23 °C	09:44:12
77 %	24 °C	09:36:14
77 %	23 °C	09:28:16
77 %	24 °C	09:20:18
77 %	23 °C	09:12:20
77 %	23 °C	09:04:22
77 %	23 °C	08:56:24
77 %	24 °C	08:48:26
77 %	23 °C	08:40:28
77 %	23 °C	08:32:30
77 %	24 °C	08:24:32
77 %	23 °C	08:16:34
77 %	23 °C	08:08:36
77 %	23 °C	08:00:38
77 %	23 °C	07:52:40
77 %	24 °C	07:44:42

77 %	23 °C	07:36:44
77 %	23 °C	07:28:46
77 %	23 °C	07:20:48
77 %	23 °C	07:12:50
77 %	23 °C	07:04:52
77 %	23 °C	06:56:54
77 %	23 °C	06:48:56
77 %	23 °C	06:40:58
77 %	24 °C	06:33:00
77 %	24 °C	06:25:02
77 %	24 °C	06:17:04
77 %	23 °C	06:09:06
77 %	23 °C	06:01:08
77 %	23 °C	05:53:10
77 %	23 °C	05:45:12
77 %	23 °C	05:37:14
77 %	23 °C	05:29:16
77 %	23 °C	05:21:18
77 %	23 °C	05:13:20
77 %	23 °C	05:05:22
77 %	23 °C	04:57:24
77 %	23 °C	04:49:26
77 %	23 °C	04:41:28
77 %	24 °C	04:33:30
77 %	24 °C	04:25:32
77 %	24 °C	04:17:34
77 %	24 °C	04:09:36
77 %	24 °C	04:01:38
77 %	24 °C	03:53:40
77 %	24 °C	03:45:42
77 %	24 °C	03:37:44
77 %	24 °C	03:29:46
77 %	23 °C	03:21:48
77 %	23 °C	03:13:50
77 %	23 °C	03:05:52
77 %	23 °C	02:57:54
77 %	23 °C	02:49:56
77 %	23 °C	02:41:58
77 %	23 °C	02:34:00
77 %	23 °C	02:26:02
77 %	24 °C	02:18:04
77 %	23 °C	02:10:06
77 %	23 °C	02:02:08

77 %	23 °C	01:54:10
77 %	23 °C	01:46:12
77 %	24 °C	01:38:14
77 %	24 °C	01:30:16
76 %	24 °C	01:22:18
76 %	24 °C	01:14:20
76 %	24 °C	01:06:22
76 %	24 °C	00:58:24
76 %	24 °C	00:50:26
76 %	24 °C	00:42:28
76 %	24 °C	00:34:30
76 %	24 °C	00:26:32
77 %	24 °C	00:18:34
77 %	23 °C	00:10:36
77 %	23 °C	00:02:38
77 %	23 °C	23:54:40
78 %	23 °C	23:46:42
78 %	23 °C	23:38:44
78 %	23 °C	23:30:46
78 %	23 °C	23:22:48
78 %	23 °C	23:14:50
78 %	23 °C	23:06:52
78 %	23 °C	22:58:54
78 %	23 °C	22:50:56
78 %	23 °C	22:42:58
78 %	23 °C	22:35:00
78 %	23 °C	22:27:02
78 %	23 °C	22:19:04
78 %	23 °C	22:11:06
78 %	23 °C	22:03:08
78 %	24 °C	21:55:10
78 %	23 °C	21:47:12
78 %	23 °C	21:39:14
78 %	24 °C	21:31:16
78 %	23 °C	21:23:18
78 %	23 °C	21:15:20
78 %	24 °C	21:07:22
78 %	23 °C	20:59:24
78 %	23 °C	20:51:26
78 %	24 °C	20:43:28
78 %	23 °C	20:35:30
78 %	23 °C	20:27:32
78 %	23 °C	20:19:34



78 %	23 °C	20:11:36
78 %	24 °C	20:03:38
77 %	24 °C	19:55:40
77 %	24 °C	19:47:42
77 %	23 °C	19:39:44
78 %	23 °C	19:31:46
77 %	24 °C	19:23:48
77 %	23 °C	19:15:50
77 %	23 °C	19:07:52
77 %	23 °C	18:59:54
77 %	23 °C	18:51:56
77 %	23 °C	18:43:58
77 %	23 °C	18:36:00
77 %	23 °C	18:28:02
77 %	23 °C	18:20:04
77 %	24 °C	18:12:06
77 %	23 °C	18:04:08
77 %	23 °C	17:56:10
77 %	24 °C	17:48:12
77 %	23 °C	17:40:14
77 %	23 °C	17:32:16
77 %	24 °C	17:24:18
77 %	23 °C	17:16:20
77 %	24 °C	17:08:22
77 %	24 °C	17:00:24
77 %	24 °C	16:52:26
77 %	24 °C	16:44:28
77 %	24 °C	16:36:30
77 %	23 °C	16:28:32
77 %	23 °C	16:20:34
76 %	23 °C	16:12:36
76 %	24 °C	16:04:38
76 %	23 °C	15:56:40
76 %	23 °C	15:48:42
76 %	24 °C	15:40:44
77 %	23 °C	15:32:46
77 %	23 °C	15:24:48
77 %	23 °C	15:16:50
77 %	23 °C	15:08:52
77 %	23 °C	15:00:54
77 %	23 °C	14:52:56
77 %	23 °C	14:44:58
77 %	23 °C	14:37:00

77 %	23 °C	14:29:02
77 %	23 °C	14:21:04
78 %	23 °C	14:13:06
78 %	23 °C	14:05:08
78 %	24 °C	13:57:10
78 %	23 °C	13:49:12
78 %	23 °C	13:41:14
78 %	23 °C	13:33:16
78 %	24 °C	13:25:18
78 %	23 °C	13:17:20
78 %	23 °C	13:09:22
77 %	24 °C	13:01:24
77 %	24 °C	12:53:26
77 %	24 °C	12:45:28
77 %	24 °C	12:37:30
77 %	24 °C	12:29:32
77 %	23 °C	12:21:34
77 %	23 °C	12:13:36
77 %	23 °C	12:05:38
77 %	23 °C	11:57:40
77 %	23 °C	11:49:42
77 %	23 °C	11:41:44
77 %	23 °C	11:33:46
77 %	23 °C	11:25:48
77 %	23 °C	11:17:50
77 %	24 °C	11:09:52
77 %	24 °C	11:01:54
77 %	24 °C	10:53:56
77 %	24 °C	10:45:58
77 %	24 °C	10:38:00
77 %	24 °C	10:30:02
77 %	24 °C	10:22:04
77 %	24 °C	10:14:06
77 %	24 °C	10:06:08
77 %	24 °C	09:58:10
77 %	23 °C	09:50:12
76 %	24 °C	09:42:14
76 %	23 °C	09:34:16
76 %	23 °C	09:26:18
76 %	23 °C	09:18:20
76 %	23 °C	09:10:22
76 %	23 °C	09:02:24
77 %	23 °C	08:54:26

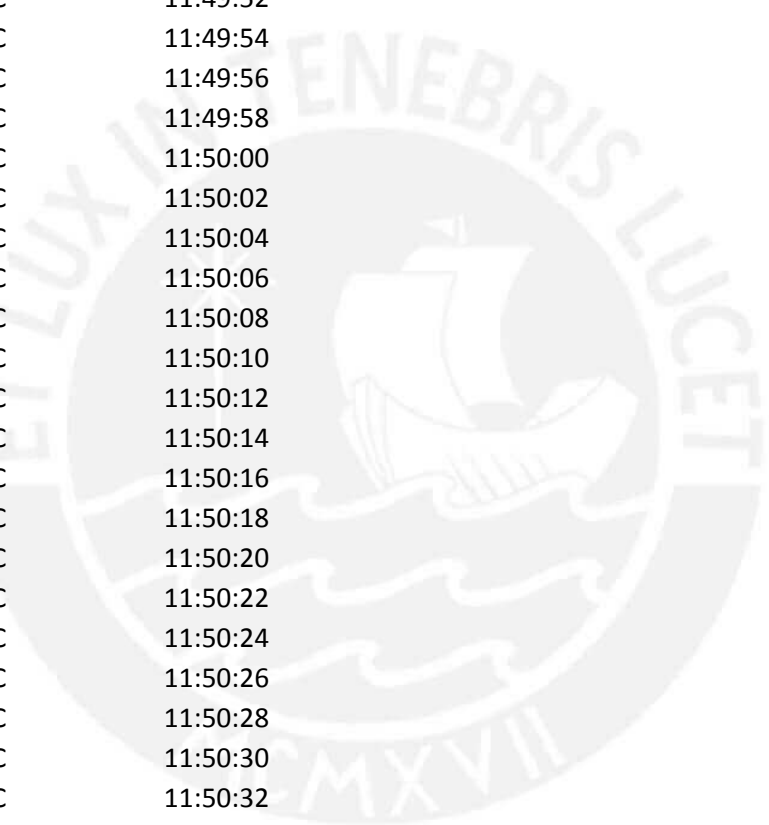
77 %	23 °C	08:46:28
77 %	23 °C	08:38:30
77 %	23 °C	08:30:32
77 %	23 °C	08:22:34
77 %	23 °C	08:14:36



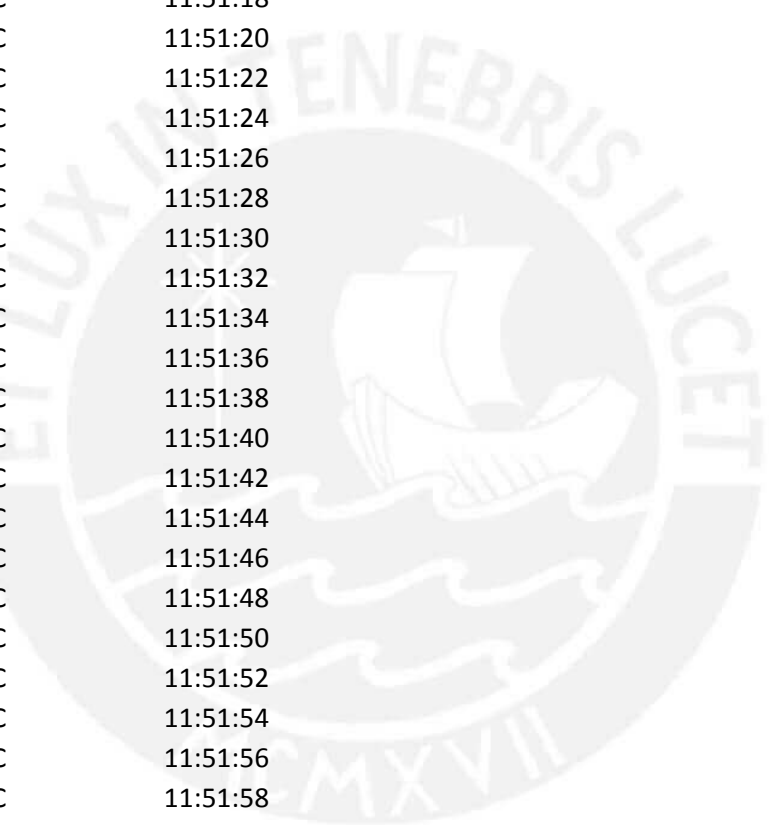
Anexo 15: Datos del archivo: "mode_auto_BH_PM4"

Humedad	Temperatura	Tiempo
0 %	0 °C	11:48:10
99 %	24 °C	11:48:12
99 %	24 °C	11:48:14
99 %	24 °C	11:48:16
99 %	24 °C	11:48:18
99 %	24 °C	11:48:20
99 %	24 °C	11:48:22
99 %	24 °C	11:48:24
99 %	24 °C	11:48:26
99 %	23 °C	11:48:28
99 %	23 °C	11:48:30
99 %	23 °C	11:48:32
98 %	23 °C	11:48:34
98 %	23 °C	11:48:36
98 %	23 °C	11:48:38
98 %	23 °C	11:48:40
97 %	22 °C	11:48:42
97 %	22 °C	11:48:44
96 %	22 °C	11:48:46
96 %	22 °C	11:48:48
95 %	22 °C	11:48:50
95 %	22 °C	11:48:52
95 %	22 °C	11:48:54
94 %	22 °C	11:48:56
93 %	22 °C	11:48:58
93 %	22 °C	11:49:00
92 %	22 °C	11:49:02
92 %	22 °C	11:49:04
91 %	22 °C	11:49:06
90 %	22 °C	11:49:08
89 %	22 °C	11:49:10
89 %	22 °C	11:49:12
89 %	22 °C	11:49:14
87 %	22 °C	11:49:16
86 %	22 °C	11:49:18
86 %	22 °C	11:49:20
85 %	22 °C	11:49:22
84 %	22 °C	11:49:24
84 %	22 °C	11:49:26
83 %	22 °C	11:49:28

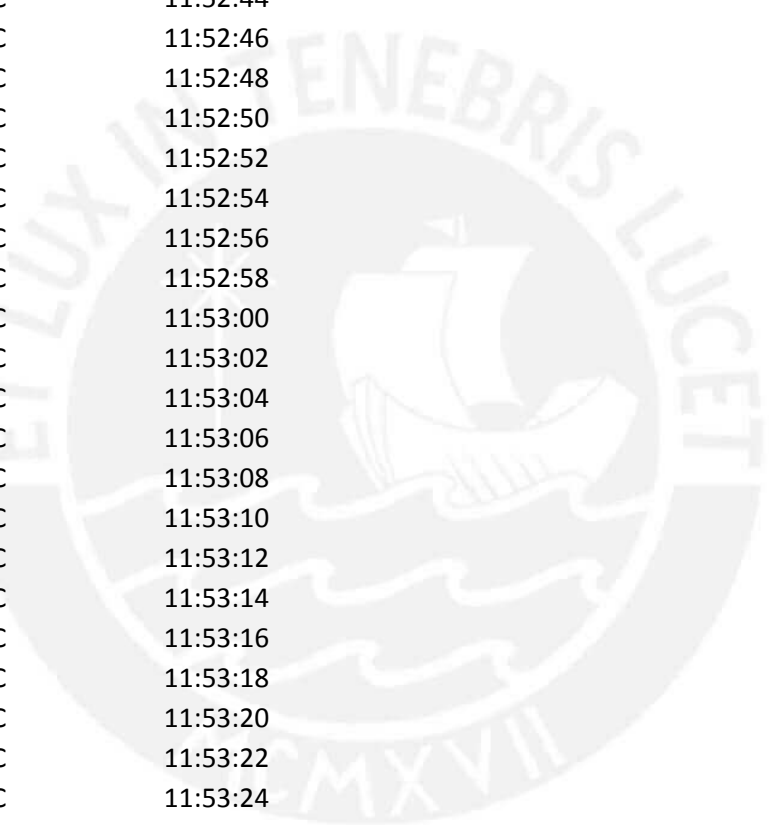
83 %	22 °C	11:49:30
82 %	22 °C	11:49:32
82 %	22 °C	11:49:34
81 %	22 °C	11:49:36
81 %	22 °C	11:49:38
80 %	22 °C	11:49:40
80 %	22 °C	11:49:42
80 %	22 °C	11:49:44
79 %	22 °C	11:49:46
79 %	22 °C	11:49:48
79 %	22 °C	11:49:50
78 %	22 °C	11:49:52
78 %	22 °C	11:49:54
78 %	22 °C	11:49:56
78 %	22 °C	11:49:58
77 %	22 °C	11:50:00
77 %	23 °C	11:50:02
77 %	23 °C	11:50:04
76 %	23 °C	11:50:06
76 %	23 °C	11:50:08
76 %	23 °C	11:50:10
76 %	23 °C	11:50:12
75 %	23 °C	11:50:14
76 %	23 °C	11:50:16
75 %	23 °C	11:50:18
75 %	23 °C	11:50:20
75 %	23 °C	11:50:22
75 %	23 °C	11:50:24
75 %	23 °C	11:50:26
75 %	23 °C	11:50:28
74 %	23 °C	11:50:30
74 %	23 °C	11:50:32
74 %	23 °C	11:50:34
74 %	23 °C	11:50:36
74 %	23 °C	11:50:38
74 %	23 °C	11:50:40
73 %	23 °C	11:50:42
73 %	23 °C	11:50:44
73 %	23 °C	11:50:46
73 %	23 °C	11:50:48
73 %	23 °C	11:50:50
73 %	23 °C	11:50:52
73 %	23 °C	11:50:54



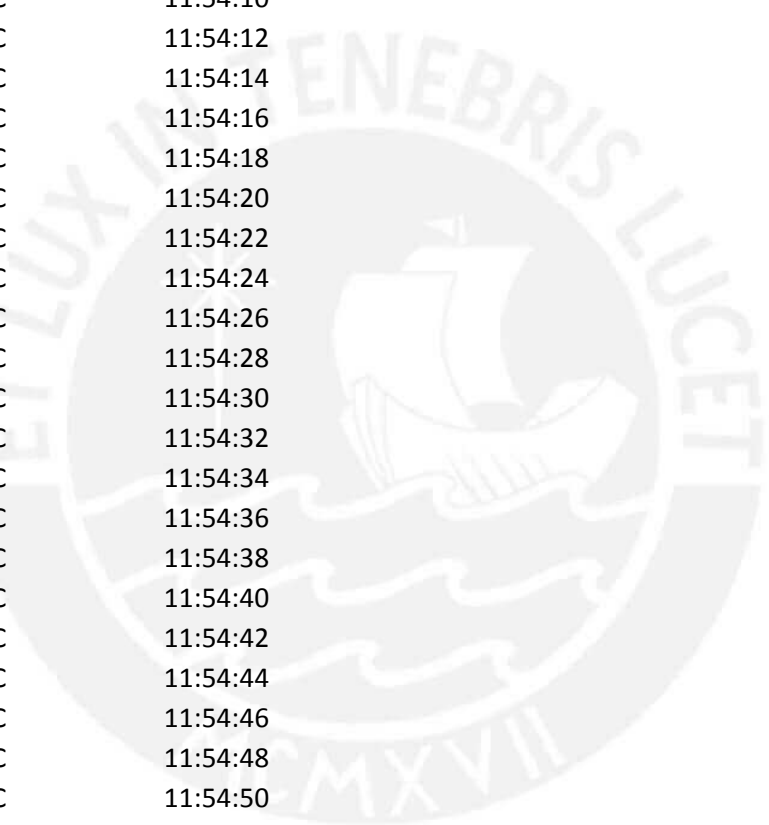
73 %	23 °C	11:50:56
73 %	23 °C	11:50:58
72 %	23 °C	11:51:00
72 %	23 °C	11:51:02
72 %	23 °C	11:51:04
72 %	23 °C	11:51:06
72 %	23 °C	11:51:08
72 %	23 °C	11:51:10
72 %	23 °C	11:51:12
72 %	23 °C	11:51:14
71 %	23 °C	11:51:16
71 %	23 °C	11:51:18
71 %	23 °C	11:51:20
71 %	23 °C	11:51:22
71 %	23 °C	11:51:24
71 %	23 °C	11:51:26
71 %	23 °C	11:51:28
70 %	23 °C	11:51:30
70 %	23 °C	11:51:32
70 %	23 °C	11:51:34
70 %	23 °C	11:51:36
70 %	23 °C	11:51:38
70 %	23 °C	11:51:40
70 %	23 °C	11:51:42
70 %	23 °C	11:51:44
70 %	23 °C	11:51:46
70 %	23 °C	11:51:48
70 %	23 °C	11:51:50
70 %	23 °C	11:51:52
70 %	23 °C	11:51:54
70 %	23 °C	11:51:56
70 %	23 °C	11:51:58
70 %	23 °C	11:52:00
70 %	23 °C	11:52:02
70 %	23 °C	11:52:04
70 %	23 °C	11:52:06
70 %	23 °C	11:52:08
70 %	23 °C	11:52:10
70 %	23 °C	11:52:12
70 %	23 °C	11:52:14
70 %	23 °C	11:52:16
70 %	23 °C	11:52:18
70 %	23 °C	11:52:20



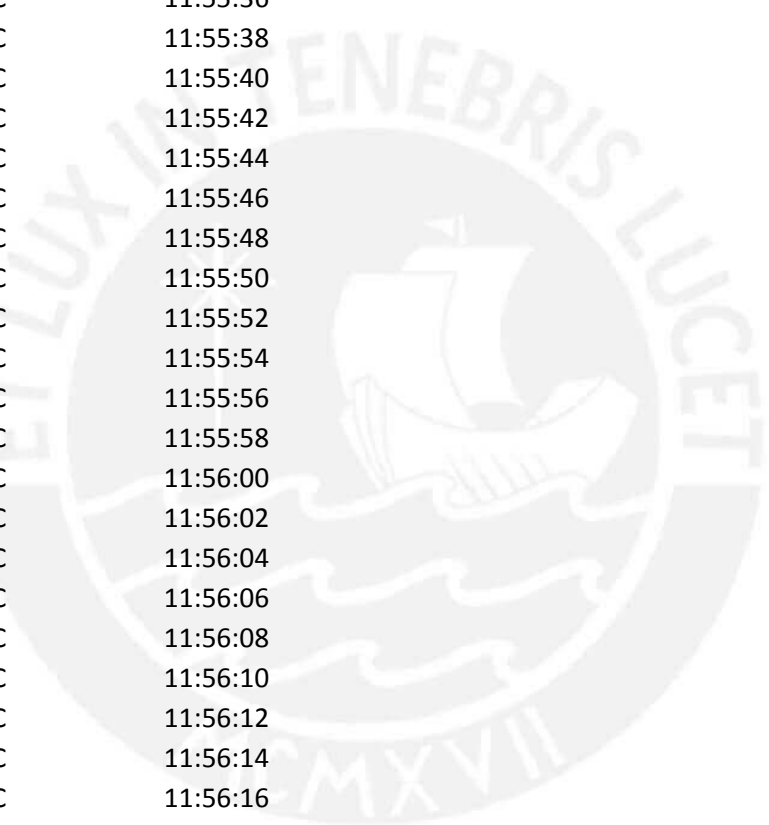
70 %	23 °C	11:52:22
70 %	23 °C	11:52:24
70 %	23 °C	11:52:26
70 %	23 °C	11:52:28
70 %	23 °C	11:52:30
70 %	23 °C	11:52:32
70 %	23 °C	11:52:34
70 %	23 °C	11:52:36
70 %	23 °C	11:52:38
70 %	23 °C	11:52:40
69 %	23 °C	11:52:42
69 %	23 °C	11:52:44
69 %	23 °C	11:52:46
69 %	23 °C	11:52:48
69 %	23 °C	11:52:50
69 %	23 °C	11:52:52
69 %	23 °C	11:52:54
69 %	23 °C	11:52:56
69 %	23 °C	11:52:58
69 %	23 °C	11:53:00
69 %	23 °C	11:53:02
69 %	23 °C	11:53:04
69 %	23 °C	11:53:06
69 %	23 °C	11:53:08
69 %	23 °C	11:53:10
69 %	23 °C	11:53:12
69 %	23 °C	11:53:14
69 %	23 °C	11:53:16
69 %	23 °C	11:53:18
69 %	23 °C	11:53:20
69 %	23 °C	11:53:22
69 %	23 °C	11:53:24
69 %	23 °C	11:53:26
69 %	23 °C	11:53:28
68 %	23 °C	11:53:30
69 %	23 °C	11:53:32
69 %	23 °C	11:53:34
69 %	23 °C	11:53:36
68 %	23 °C	11:53:38
68 %	23 °C	11:53:40
68 %	23 °C	11:53:42
68 %	23 °C	11:53:44
68 %	23 °C	11:53:46



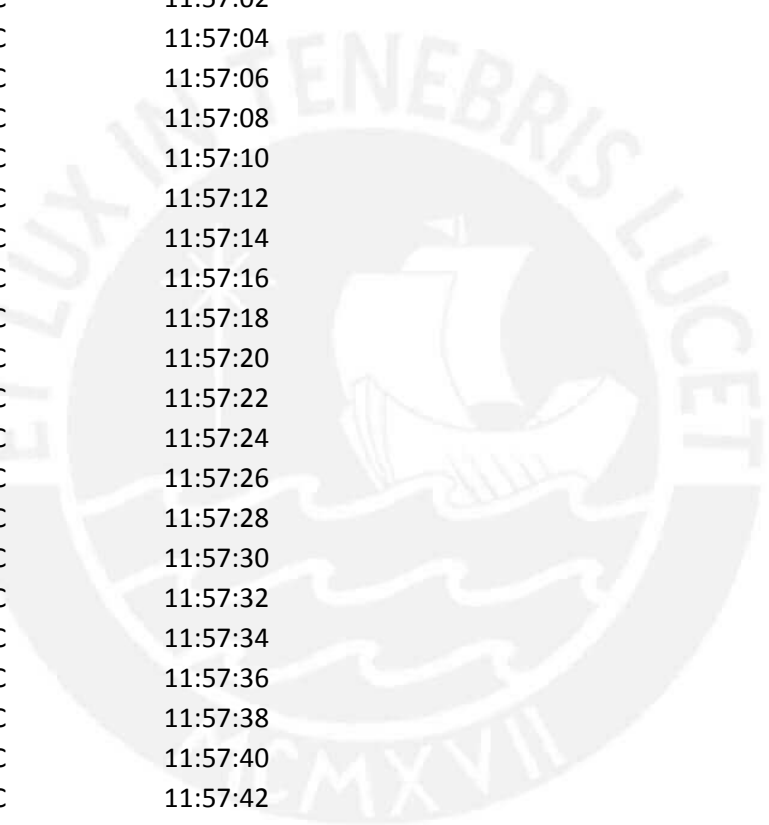
68 %	23 °C	11:53:48
68 %	23 °C	11:53:50
68 %	23 °C	11:53:52
68 %	23 °C	11:53:54
68 %	23 °C	11:53:56
68 %	23 °C	11:53:58
68 %	23 °C	11:54:00
68 %	23 °C	11:54:02
68 %	23 °C	11:54:04
68 %	23 °C	11:54:06
68 %	23 °C	11:54:08
68 %	23 °C	11:54:10
68 %	23 °C	11:54:12
68 %	23 °C	11:54:14
68 %	23 °C	11:54:16
68 %	23 °C	11:54:18
68 %	23 °C	11:54:20
68 %	23 °C	11:54:22
68 %	23 °C	11:54:24
68 %	23 °C	11:54:26
68 %	23 °C	11:54:28
67 %	23 °C	11:54:30
67 %	23 °C	11:54:32
68 %	23 °C	11:54:34
68 %	23 °C	11:54:36
68 %	23 °C	11:54:38
68 %	23 °C	11:54:40
68 %	23 °C	11:54:42
68 %	23 °C	11:54:44
68 %	23 °C	11:54:46
68 %	23 °C	11:54:48
68 %	23 °C	11:54:50
67 %	23 °C	11:54:52
67 %	23 °C	11:54:54
68 %	23 °C	11:54:56
68 %	23 °C	11:54:58
68 %	23 °C	11:55:00
68 %	23 °C	11:55:02
68 %	23 °C	11:55:04
67 %	23 °C	11:55:06
67 %	23 °C	11:55:08
67 %	23 °C	11:55:10
68 %	23 °C	11:55:12



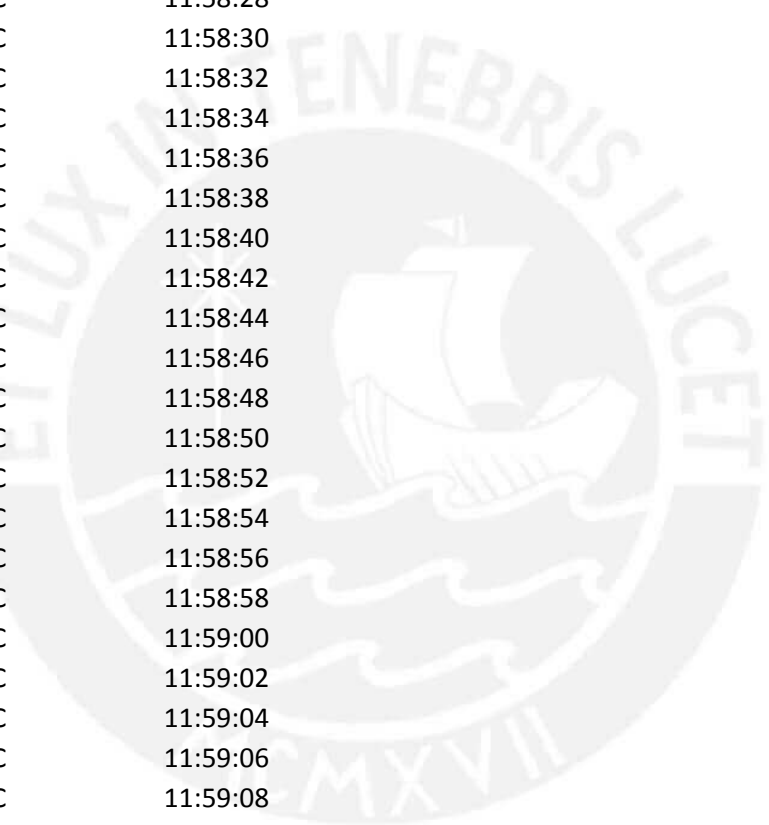
68 %	23 °C	11:55:14
68 %	23 °C	11:55:16
68 %	23 °C	11:55:18
68 %	23 °C	11:55:20
68 %	23 °C	11:55:22
68 %	23 °C	11:55:24
68 %	23 °C	11:55:26
68 %	23 °C	11:55:28
68 %	23 °C	11:55:30
68 %	23 °C	11:55:32
67 %	23 °C	11:55:34
67 %	23 °C	11:55:36
67 %	23 °C	11:55:38
68 %	23 °C	11:55:40
68 %	23 °C	11:55:42
68 %	23 °C	11:55:44
68 %	23 °C	11:55:46
68 %	23 °C	11:55:48
68 %	23 °C	11:55:50
68 %	23 °C	11:55:52
67 %	23 °C	11:55:54
67 %	23 °C	11:55:56
68 %	23 °C	11:55:58
68 %	23 °C	11:56:00
68 %	23 °C	11:56:02
68 %	23 °C	11:56:04
68 %	23 °C	11:56:06
67 %	23 °C	11:56:08
67 %	23 °C	11:56:10
67 %	23 °C	11:56:12
68 %	23 °C	11:56:14
68 %	23 °C	11:56:16
68 %	23 °C	11:56:18
68 %	23 °C	11:56:20
68 %	23 °C	11:56:22
67 %	23 °C	11:56:24
67 %	23 °C	11:56:26
67 %	23 °C	11:56:28
68 %	23 °C	11:56:30
68 %	23 °C	11:56:32
68 %	23 °C	11:56:34
68 %	23 °C	11:56:36
67 %	23 °C	11:56:38



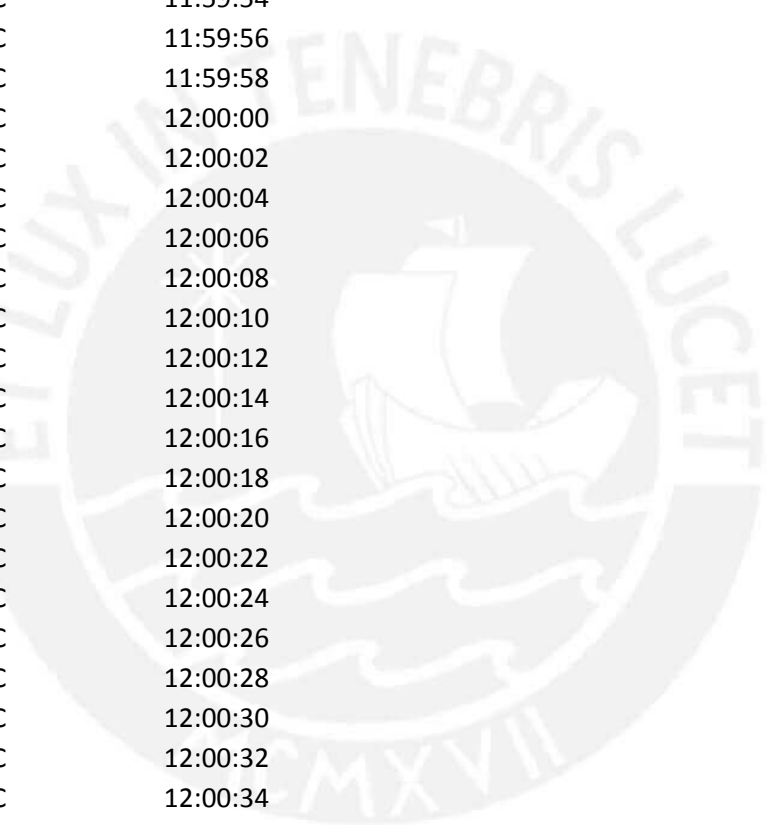
67 %	23 °C	11:56:40
67 %	23 °C	11:56:42
68 %	23 °C	11:56:44
68 %	23 °C	11:56:46
68 %	23 °C	11:56:48
68 %	23 °C	11:56:50
68 %	23 °C	11:56:52
68 %	23 °C	11:56:54
67 %	23 °C	11:56:56
67 %	23 °C	11:56:58
67 %	23 °C	11:57:00
68 %	23 °C	11:57:02
68 %	23 °C	11:57:04
68 %	23 °C	11:57:06
68 %	23 °C	11:57:08
68 %	23 °C	11:57:10
68 %	23 °C	11:57:12
68 %	23 °C	11:57:14
67 %	23 °C	11:57:16
67 %	23 °C	11:57:18
67 %	23 °C	11:57:20
67 %	23 °C	11:57:22
68 %	23 °C	11:57:24
68 %	23 °C	11:57:26
68 %	23 °C	11:57:28
68 %	23 °C	11:57:30
68 %	23 °C	11:57:32
68 %	23 °C	11:57:34
68 %	23 °C	11:57:36
67 %	23 °C	11:57:38
67 %	23 °C	11:57:40
67 %	23 °C	11:57:42
68 %	23 °C	11:57:44
68 %	23 °C	11:57:46
68 %	23 °C	11:57:48
68 %	23 °C	11:57:50
68 %	23 °C	11:57:52
67 %	23 °C	11:57:54
67 %	23 °C	11:57:56
67 %	23 °C	11:57:58
68 %	23 °C	11:58:00
68 %	23 °C	11:58:02
68 %	23 °C	11:58:04



68 %	23 °C	11:58:06
68 %	23 °C	11:58:08
67 %	23 °C	11:58:10
67 %	23 °C	11:58:12
67 %	23 °C	11:58:14
67 %	23 °C	11:58:16
68 %	23 °C	11:58:18
68 %	23 °C	11:58:20
68 %	23 °C	11:58:22
68 %	23 °C	11:58:24
67 %	23 °C	11:58:26
67 %	23 °C	11:58:28
67 %	23 °C	11:58:30
67 %	23 °C	11:58:32
68 %	23 °C	11:58:34
68 %	23 °C	11:58:36
68 %	23 °C	11:58:38
68 %	23 °C	11:58:40
68 %	23 °C	11:58:42
68 %	23 °C	11:58:44
67 %	23 °C	11:58:46
67 %	23 °C	11:58:48
67 %	23 °C	11:58:50
67 %	23 °C	11:58:52
68 %	23 °C	11:58:54
68 %	23 °C	11:58:56
68 %	23 °C	11:58:58
68 %	23 °C	11:59:00
67 %	23 °C	11:59:02
67 %	23 °C	11:59:04
67 %	23 °C	11:59:06
67 %	23 °C	11:59:08
68 %	23 °C	11:59:10
68 %	23 °C	11:59:12
68 %	23 °C	11:59:14
68 %	23 °C	11:59:16
68 %	23 °C	11:59:18
67 %	23 °C	11:59:20
67 %	23 °C	11:59:22
67 %	23 °C	11:59:24
67 %	23 °C	11:59:26
68 %	23 °C	11:59:28
68 %	23 °C	11:59:30

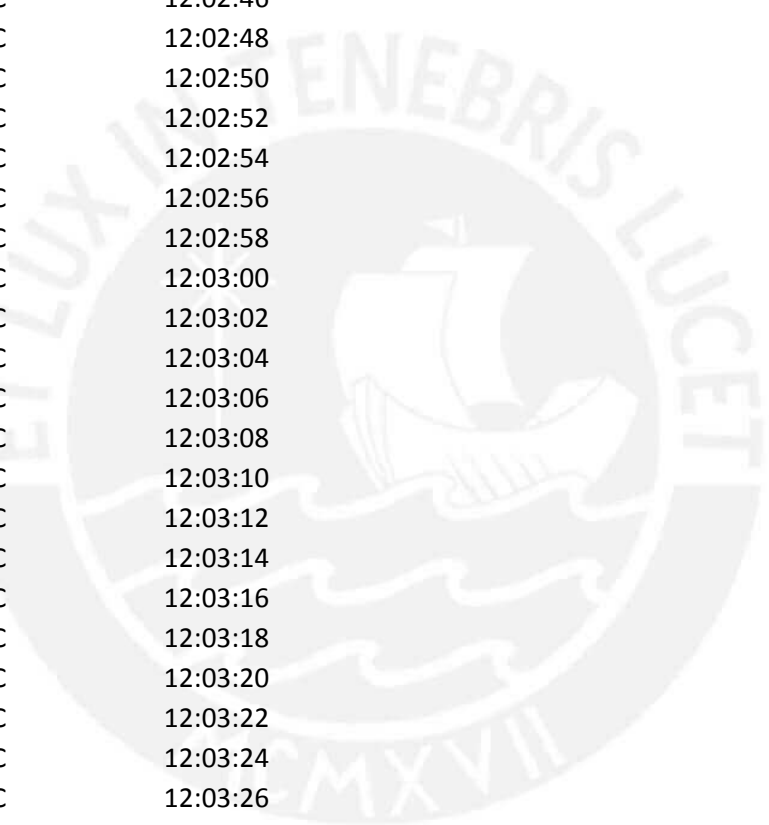


68 %	23 °C	11:59:32
68 %	23 °C	11:59:34
68 %	23 °C	11:59:36
67 %	23 °C	11:59:38
67 %	23 °C	11:59:40
67 %	23 °C	11:59:42
67 %	23 °C	11:59:44
67 %	23 °C	11:59:46
68 %	23 °C	11:59:48
68 %	23 °C	11:59:50
68 %	23 °C	11:59:52
68 %	23 °C	11:59:54
68 %	23 °C	11:59:56
67 %	23 °C	11:59:58
67 %	23 °C	12:00:00
67 %	23 °C	12:00:02
67 %	23 °C	12:00:04
68 %	23 °C	12:00:06
68 %	23 °C	12:00:08
68 %	23 °C	12:00:10
68 %	23 °C	12:00:12
68 %	23 °C	12:00:14
67 %	23 °C	12:00:16
67 %	23 °C	12:00:18
67 %	23 °C	12:00:20
67 %	23 °C	12:00:22
67 %	23 °C	12:00:24
68 %	23 °C	12:00:26
68 %	23 °C	12:00:28
68 %	23 °C	12:00:30
68 %	23 °C	12:00:32
68 %	23 °C	12:00:34
67 %	23 °C	12:00:36
67 %	23 °C	12:00:38
67 %	23 °C	12:00:40
67 %	23 °C	12:00:42
67 %	23 °C	12:00:44
68 %	23 °C	12:00:46
68 %	23 °C	12:00:48
68 %	23 °C	12:00:50
68 %	23 °C	12:00:52
68 %	23 °C	12:00:54
67 %	23 °C	12:00:56

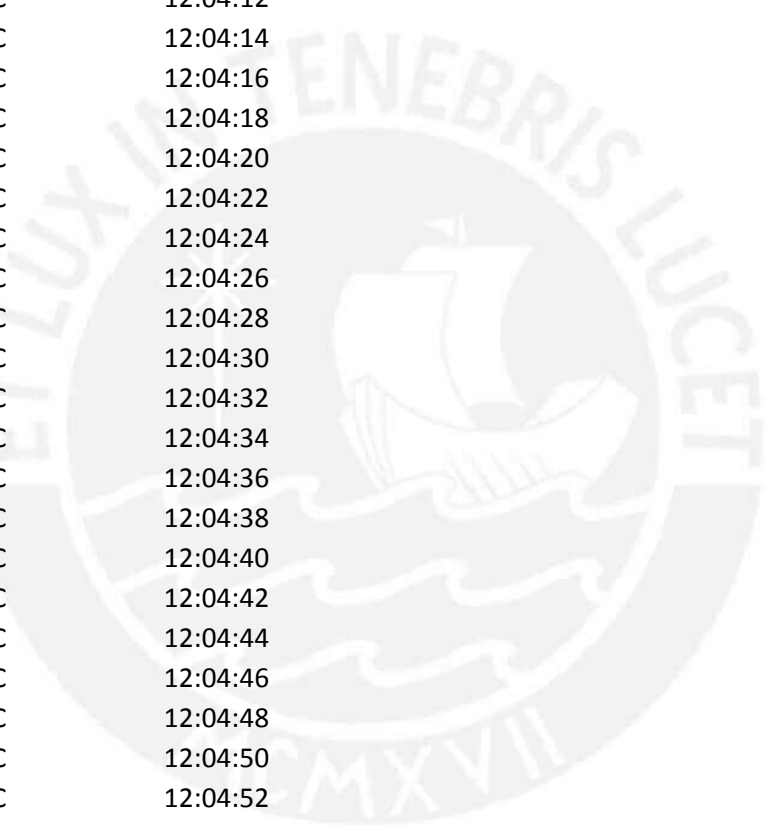


67 %	23 °C	12:00:58
67 %	23 °C	12:01:00
67 %	23 °C	12:01:02
67 %	23 °C	12:01:04
68 %	23 °C	12:01:06
68 %	23 °C	12:01:08
68 %	23 °C	12:01:10
68 %	23 °C	12:01:12
67 %	23 °C	12:01:14
67 %	23 °C	12:01:16
67 %	23 °C	12:01:18
67 %	23 °C	12:01:20
67 %	23 °C	12:01:22
68 %	23 °C	12:01:24
68 %	23 °C	12:01:26
68 %	23 °C	12:01:28
68 %	23 °C	12:01:30
67 %	23 °C	12:01:32
67 %	23 °C	12:01:34
67 %	23 °C	12:01:36
67 %	23 °C	12:01:38
68 %	23 °C	12:01:40
68 %	23 °C	12:01:42
68 %	23 °C	12:01:44
68 %	23 °C	12:01:46
67 %	23 °C	12:01:48
67 %	23 °C	12:01:50
67 %	23 °C	12:01:52
67 %	23 °C	12:01:54
67 %	23 °C	12:01:56
68 %	23 °C	12:01:58
68 %	23 °C	12:02:00
68 %	23 °C	12:02:02
68 %	23 °C	12:02:04
68 %	23 °C	12:02:06
67 %	23 °C	12:02:08
67 %	23 °C	12:02:10
67 %	23 °C	12:02:12
67 %	23 °C	12:02:14
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68 %	23 °C	12:02:18
68 %	23 °C	12:02:20
68 %	23 °C	12:02:22

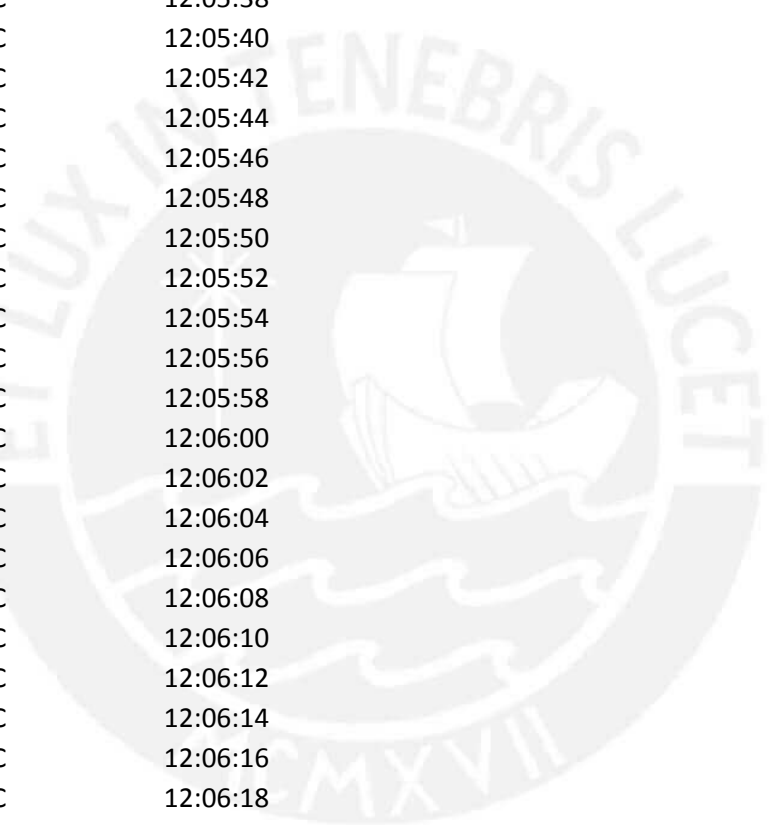
68 %	23 °C	12:02:24
67 %	23 °C	12:02:26
67 %	23 °C	12:02:28
67 %	23 °C	12:02:30
67 %	23 °C	12:02:32
67 %	23 °C	12:02:34
68 %	23 °C	12:02:36
68 %	23 °C	12:02:38
68 %	23 °C	12:02:40
68 %	23 °C	12:02:42
67 %	23 °C	12:02:44
67 %	23 °C	12:02:46
67 %	23 °C	12:02:48
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68 %	23 °C	12:02:56
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67 %	23 °C	12:03:02
67 %	23 °C	12:03:04
68 %	23 °C	12:03:06
68 %	23 °C	12:03:08
68 %	23 °C	12:03:10
68 %	23 °C	12:03:12
67 %	23 °C	12:03:14
67 %	23 °C	12:03:16
67 %	23 °C	12:03:18
67 %	23 °C	12:03:20
67 %	23 °C	12:03:22
68 %	23 °C	12:03:24
68 %	23 °C	12:03:26
68 %	23 °C	12:03:28
68 %	23 °C	12:03:30
67 %	23 °C	12:03:32
67 %	23 °C	12:03:34
67 %	23 °C	12:03:36
67 %	23 °C	12:03:38
67 %	23 °C	12:03:40
68 %	23 °C	12:03:42
68 %	23 °C	12:03:44
68 %	23 °C	12:03:46
68 %	23 °C	12:03:48



68 %	23 °C	12:03:50
67 %	23 °C	12:03:52
67 %	23 °C	12:03:54
67 %	23 °C	12:03:56
67 %	23 °C	12:03:58
67 %	23 °C	12:04:00
67 %	23 °C	12:04:02
68 %	23 °C	12:04:04
68 %	23 °C	12:04:06
68 %	23 °C	12:04:08
68 %	23 °C	12:04:10
67 %	23 °C	12:04:12
67 %	23 °C	12:04:14
67 %	23 °C	12:04:16
67 %	23 °C	12:04:18
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68 %	23 °C	12:04:24
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67 %	23 °C	12:04:32
67 %	23 °C	12:04:34
67 %	23 °C	12:04:36
67 %	23 °C	12:04:38
67 %	23 °C	12:04:40
68 %	23 °C	12:04:42
68 %	23 °C	12:04:44
68 %	23 °C	12:04:46
68 %	23 °C	12:04:48
67 %	23 °C	12:04:50
67 %	24 °C	12:04:52
67 %	23 °C	12:04:54
67 %	23 °C	12:04:56
67 %	23 °C	12:04:58
67 %	23 °C	12:05:00
67 %	23 °C	12:05:02
67 %	23 °C	12:05:04
68 %	23 °C	12:05:06
68 %	23 °C	12:05:08
68 %	23 °C	12:05:10
68 %	23 °C	12:05:12
68 %	23 °C	12:05:14



67 %	23 °C	12:05:16
67 %	23 °C	12:05:18
67 %	23 °C	12:05:20
67 %	23 °C	12:05:22
67 %	23 °C	12:05:24
67 %	23 °C	12:05:26
68 %	23 °C	12:05:28
68 %	23 °C	12:05:30
68 %	23 °C	12:05:32
68 %	23 °C	12:05:34
67 %	23 °C	12:05:36
67 %	23 °C	12:05:38
67 %	23 °C	12:05:40
67 %	23 °C	12:05:42
67 %	23 °C	12:05:44
68 %	23 °C	12:05:46
68 %	23 °C	12:05:48
68 %	23 °C	12:05:50
68 %	23 °C	12:05:52
67 %	23 °C	12:05:54
67 %	23 °C	12:05:56
67 %	23 °C	12:05:58
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67 %	23 °C	12:06:02
67 %	23 °C	12:06:04
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67 %	23 °C	12:06:12
67 %	23 °C	12:06:14
67 %	23 °C	12:06:16
67 %	23 °C	12:06:18
67 %	23 °C	12:06:20
68 %	23 °C	12:06:22
68 %	23 °C	12:06:24
68 %	23 °C	12:06:26
68 %	23 °C	12:06:28
67 %	23 °C	12:06:30
67 %	23 °C	12:06:32
67 %	23 °C	12:06:34
67 %	23 °C	12:06:36
67 %	23 °C	12:06:38
67 %	23 °C	12:06:40



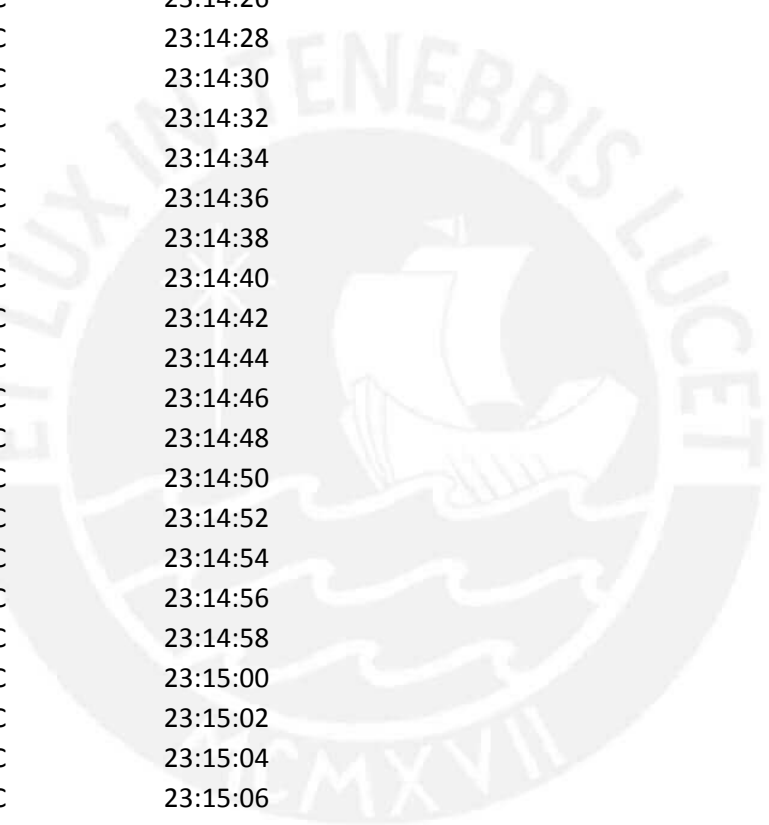
67 %	23 °C	12:06:42
68 %	23 °C	12:06:44
68 %	23 °C	12:06:46
68 %	23 °C	12:06:48
68 %	23 °C	12:06:50
68 %	24 °C	12:06:52
68 %	23 °C	12:06:54
68 %	23 °C	12:06:56
68 %	23 °C	12:06:58
68 %	23 °C	12:07:00



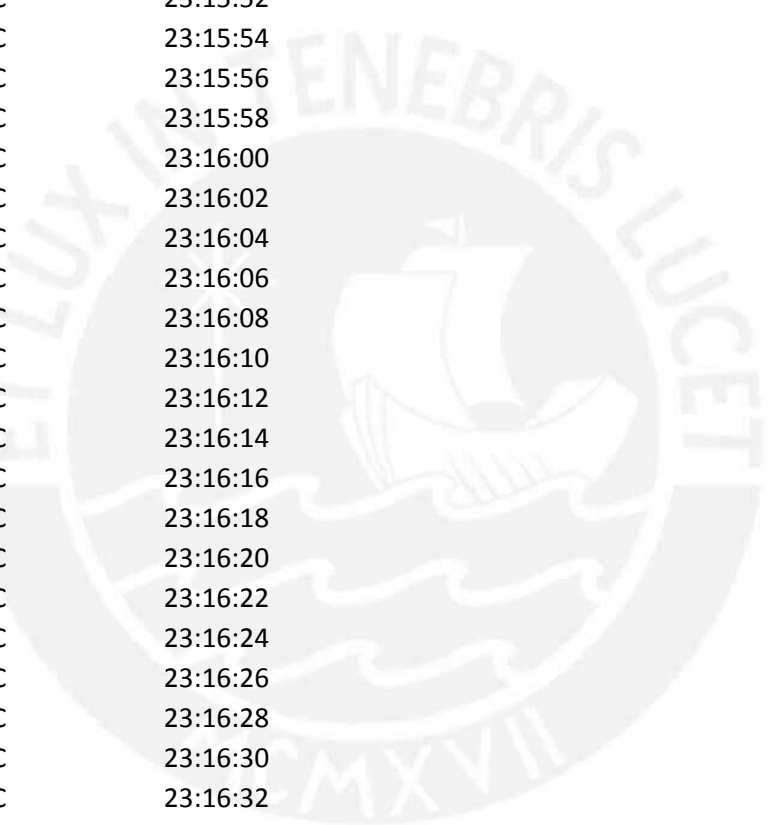
Anexo 16: Datos del archivo: "mode_auto_BMH_PM4"

Humedad	Temperatura	Tiempo
0 %	0 °C	23:12:44
64 %	23 °C	23:12:46
66 %	23 °C	23:12:48
66 %	23 °C	23:12:50
66 %	23 °C	23:12:52
66 %	23 °C	23:12:54
66 %	23 °C	23:12:56
66 %	23 °C	23:12:58
66 %	23 °C	23:13:00
66 %	23 °C	23:13:02
66 %	23 °C	23:13:04
66 %	23 °C	23:13:06
66 %	23 °C	23:13:08
66 %	23 °C	23:13:10
66 %	23 °C	23:13:12
66 %	23 °C	23:13:14
66 %	23 °C	23:13:16
66 %	23 °C	23:13:18
66 %	23 °C	23:13:20
66 %	23 °C	23:13:22
66 %	23 °C	23:13:24
66 %	23 °C	23:13:26
66 %	23 °C	23:13:28
66 %	23 °C	23:13:30
66 %	23 °C	23:13:32
66 %	23 °C	23:13:34
66 %	23 °C	23:13:36
66 %	23 °C	23:13:38
66 %	23 °C	23:13:40
66 %	23 °C	23:13:42
66 %	23 °C	23:13:44
66 %	23 °C	23:13:46
66 %	23 °C	23:13:48
66 %	23 °C	23:13:50
66 %	23 °C	23:13:52
66 %	23 °C	23:13:54
66 %	23 °C	23:13:56
67 %	23 °C	23:13:58
67 %	23 °C	23:14:00
68 %	23 °C	23:14:02

68 %	22 °C	23:14:04
70 %	22 °C	23:14:06
71 %	22 °C	23:14:08
72 %	22 °C	23:14:10
73 %	22 °C	23:14:12
74 %	22 °C	23:14:14
75 %	22 °C	23:14:16
76 %	22 °C	23:14:18
77 %	22 °C	23:14:20
78 %	22 °C	23:14:22
79 %	22 °C	23:14:24
80 %	22 °C	23:14:26
81 %	22 °C	23:14:28
81 %	22 °C	23:14:30
82 %	22 °C	23:14:32
82 %	22 °C	23:14:34
82 %	22 °C	23:14:36
83 %	22 °C	23:14:38
83 %	22 °C	23:14:40
83 %	22 °C	23:14:42
83 %	22 °C	23:14:44
83 %	22 °C	23:14:46
83 %	22 °C	23:14:48
83 %	22 °C	23:14:50
83 %	22 °C	23:14:52
82 %	22 °C	23:14:54
82 %	22 °C	23:14:56
82 %	22 °C	23:14:58
81 %	22 °C	23:15:00
81 %	22 °C	23:15:02
81 %	22 °C	23:15:04
81 %	22 °C	23:15:06
81 %	22 °C	23:15:08
81 %	22 °C	23:15:10
81 %	22 °C	23:15:12
81 %	22 °C	23:15:14
81 %	22 °C	23:15:16
81 %	22 °C	23:15:18
81 %	22 °C	23:15:20
81 %	22 °C	23:15:22
81 %	22 °C	23:15:24
81 %	22 °C	23:15:26
81 %	22 °C	23:15:28



82 %	22 °C	23:15:30
82 %	22 °C	23:15:32
82 %	22 °C	23:15:34
82 %	22 °C	23:15:36
82 %	22 °C	23:15:38
81 %	21 °C	23:15:40
81 %	21 °C	23:15:42
81 %	21 °C	23:15:44
80 %	21 °C	23:15:46
80 %	21 °C	23:15:48
79 %	21 °C	23:15:50
79 %	21 °C	23:15:52
78 %	21 °C	23:15:54
78 %	21 °C	23:15:56
77 %	21 °C	23:15:58
77 %	21 °C	23:16:00
77 %	21 °C	23:16:02
76 %	21 °C	23:16:04
76 %	21 °C	23:16:06
75 %	21 °C	23:16:08
75 %	21 °C	23:16:10
75 %	21 °C	23:16:12
76 %	21 °C	23:16:14
76 %	21 °C	23:16:16
77 %	21 °C	23:16:18
77 %	21 °C	23:16:20
78 %	21 °C	23:16:22
79 %	21 °C	23:16:24
79 %	21 °C	23:16:26
79 %	21 °C	23:16:28
79 %	21 °C	23:16:30
79 %	21 °C	23:16:32
79 %	21 °C	23:16:34
78 %	21 °C	23:16:36
78 %	21 °C	23:16:38
78 %	21 °C	23:16:40
78 %	21 °C	23:16:42
77 %	21 °C	23:16:44
77 %	21 °C	23:16:46
77 %	21 °C	23:16:48
76 %	21 °C	23:16:50
76 %	21 °C	23:16:52
76 %	21 °C	23:16:54



76 %	21 °C	23:16:56
76 %	21 °C	23:16:58
76 %	21 °C	23:17:00
77 %	21 °C	23:17:02
77 %	21 °C	23:17:04
78 %	21 °C	23:17:06
79 %	21 °C	23:17:08
79 %	21 °C	23:17:10
79 %	21 °C	23:17:12
79 %	21 °C	23:17:14
79 %	21 °C	23:17:16
79 %	21 °C	23:17:18
79 %	21 °C	23:17:20
78 %	21 °C	23:17:22
78 %	21 °C	23:17:24
78 %	21 °C	23:17:26
77 %	21 °C	23:17:28
77 %	21 °C	23:17:30
77 %	21 °C	23:17:32
76 %	21 °C	23:17:34
76 %	21 °C	23:17:36
76 %	21 °C	23:17:38
76 %	21 °C	23:17:40
76 %	21 °C	23:17:42
76 %	21 °C	23:17:44
76 %	21 °C	23:17:46
77 %	21 °C	23:17:48
78 %	21 °C	23:17:50
79 %	21 °C	23:17:52
80 %	21 °C	23:17:54
80 %	21 °C	23:17:56
80 %	21 °C	23:17:58
80 %	21 °C	23:18:00
80 %	21 °C	23:18:02
80 %	21 °C	23:18:04
80 %	21 °C	23:18:06
79 %	21 °C	23:18:08
79 %	21 °C	23:18:10
79 %	21 °C	23:18:12
78 %	21 °C	23:18:14
78 %	21 °C	23:18:16
78 %	21 °C	23:18:18
77 %	21 °C	23:18:20

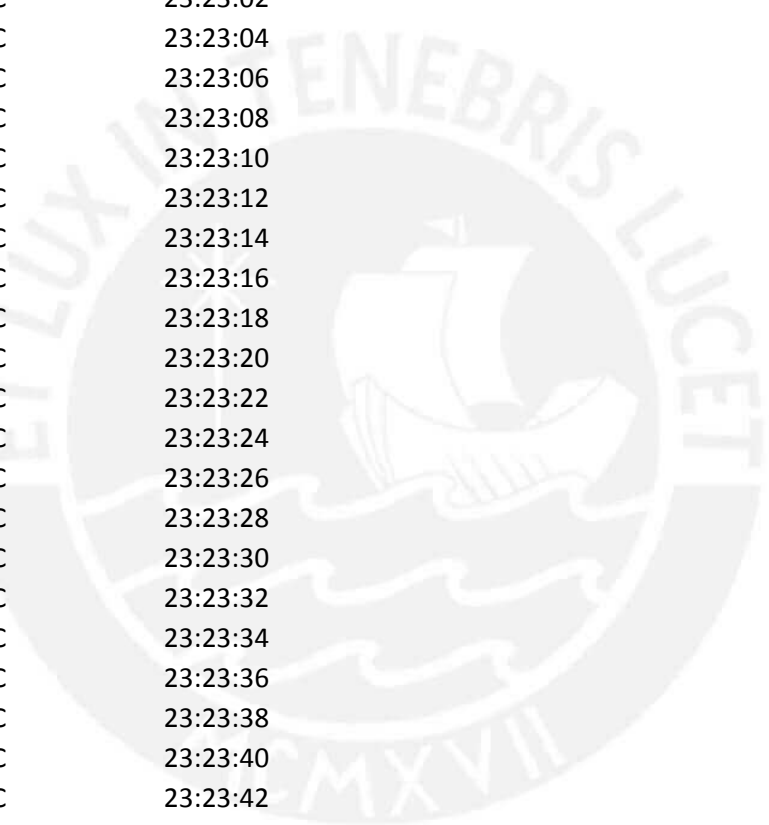
77 %	21 °C	23:18:22
77 %	21 °C	23:18:24
76 %	21 °C	23:18:26
76 %	21 °C	23:18:28
76 %	21 °C	23:18:30
76 %	21 °C	23:18:32
76 %	21 °C	23:18:34
76 %	21 °C	23:18:36
77 %	21 °C	23:18:38
78 %	21 °C	23:18:40
78 %	21 °C	23:18:42
79 %	21 °C	23:18:44
79 %	21 °C	23:18:46
80 %	21 °C	23:18:48
80 %	21 °C	23:18:50
79 %	21 °C	23:18:52
79 %	21 °C	23:18:54
79 %	21 °C	23:18:56
79 %	21 °C	23:18:58
79 %	21 °C	23:19:00
78 %	21 °C	23:19:02
78 %	21 °C	23:19:04
78 %	21 °C	23:19:06
78 %	21 °C	23:19:08
77 %	21 °C	23:19:10
77 %	21 °C	23:19:12
77 %	21 °C	23:19:14
76 %	21 °C	23:19:16
76 %	21 °C	23:19:18
76 %	21 °C	23:19:20
76 %	21 °C	23:19:22
76 %	21 °C	23:19:24
76 %	21 °C	23:19:26
77 %	21 °C	23:19:28
77 %	21 °C	23:19:30
78 %	21 °C	23:19:32
79 %	21 °C	23:19:34
79 %	21 °C	23:19:36
79 %	21 °C	23:19:38
79 %	21 °C	23:19:40
79 %	21 °C	23:19:42
79 %	21 °C	23:19:44
79 %	21 °C	23:19:46

79 %	21 °C	23:19:48
78 %	21 °C	23:19:50
78 %	21 °C	23:19:52
78 %	21 °C	23:19:54
78 %	21 °C	23:19:56
77 %	21 °C	23:19:58
77 %	21 °C	23:20:00
77 %	21 °C	23:20:02
77 %	21 °C	23:20:04
76 %	21 °C	23:20:06
76 %	21 °C	23:20:08
76 %	21 °C	23:20:10
76 %	21 °C	23:20:12
76 %	21 °C	23:20:14
76 %	21 °C	23:20:16
77 %	21 °C	23:20:18
78 %	21 °C	23:20:20
78 %	21 °C	23:20:22
79 %	21 °C	23:20:24
80 %	20 °C	23:20:26
80 %	20 °C	23:20:28
80 %	20 °C	23:20:30
80 %	20 °C	23:20:32
80 %	20 °C	23:20:34
80 %	20 °C	23:20:36
80 %	21 °C	23:20:38
79 %	20 °C	23:20:40
78 %	20 °C	23:20:42
78 %	20 °C	23:20:44
78 %	20 °C	23:20:46
78 %	21 °C	23:20:48
78 %	21 °C	23:20:50
77 %	21 °C	23:20:52
77 %	21 °C	23:20:54
77 %	21 °C	23:20:56
76 %	21 °C	23:20:58
76 %	21 °C	23:21:00
76 %	21 °C	23:21:02
76 %	21 °C	23:21:04
76 %	21 °C	23:21:06
76 %	21 °C	23:21:08
77 %	21 °C	23:21:10
78 %	21 °C	23:21:12

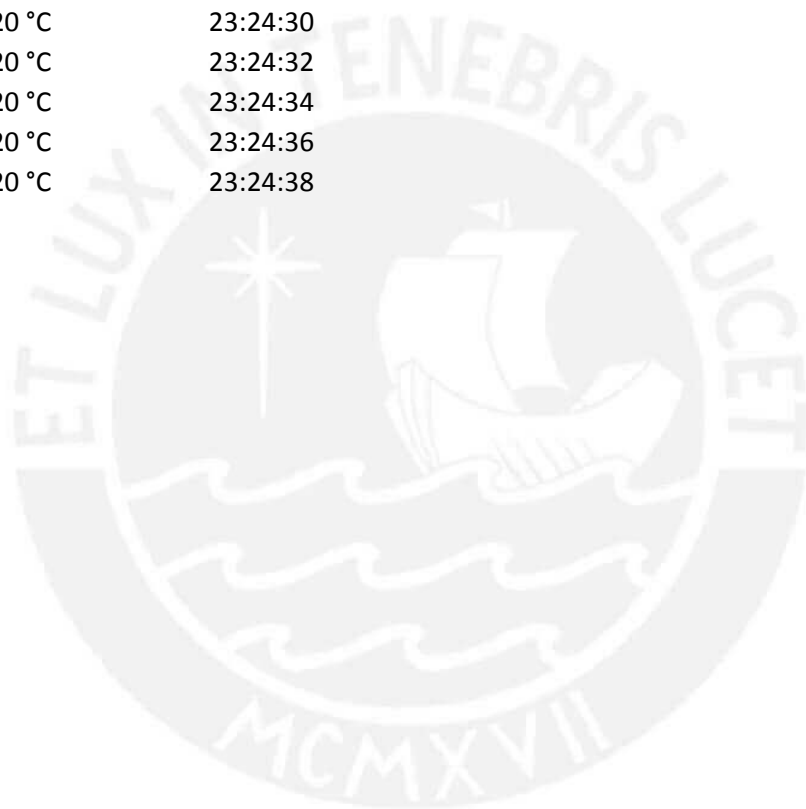
78 %	20 °C	23:21:14
79 %	20 °C	23:21:16
79 %	20 °C	23:21:18
80 %	20 °C	23:21:20
80 %	20 °C	23:21:22
80 %	20 °C	23:21:24
79 %	20 °C	23:21:26
79 %	20 °C	23:21:28
78 %	20 °C	23:21:30
78 %	21 °C	23:21:32
78 %	21 °C	23:21:34
77 %	21 °C	23:21:36
77 %	21 °C	23:21:38
77 %	21 °C	23:21:40
77 %	21 °C	23:21:42
77 %	21 °C	23:21:44
77 %	21 °C	23:21:46
76 %	21 °C	23:21:48
76 %	21 °C	23:21:50
76 %	21 °C	23:21:52
76 %	21 °C	23:21:54
76 %	21 °C	23:21:56
77 %	21 °C	23:21:58
77 %	21 °C	23:22:00
78 %	21 °C	23:22:02
79 %	20 °C	23:22:04
79 %	20 °C	23:22:06
79 %	20 °C	23:22:08
80 %	20 °C	23:22:10
80 %	20 °C	23:22:12
80 %	20 °C	23:22:14
79 %	20 °C	23:22:16
78 %	20 °C	23:22:18
78 %	20 °C	23:22:20
77 %	20 °C	23:22:22
77 %	20 °C	23:22:24
77 %	21 °C	23:22:26
77 %	20 °C	23:22:28
76 %	21 °C	23:22:30
76 %	21 °C	23:22:32
76 %	21 °C	23:22:34
76 %	21 °C	23:22:36
76 %	21 °C	23:22:38



77 %	21 °C	23:22:40
77 %	21 °C	23:22:42
78 %	21 °C	23:22:44
78 %	20 °C	23:22:46
79 %	20 °C	23:22:48
79 %	20 °C	23:22:50
79 %	20 °C	23:22:52
79 %	20 °C	23:22:54
79 %	20 °C	23:22:56
78 %	20 °C	23:22:58
78 %	20 °C	23:23:00
77 %	20 °C	23:23:02
77 %	20 °C	23:23:04
77 %	20 °C	23:23:06
77 %	20 °C	23:23:08
76 %	20 °C	23:23:10
76 %	20 °C	23:23:12
75 %	21 °C	23:23:14
75 %	20 °C	23:23:16
75 %	20 °C	23:23:18
76 %	21 °C	23:23:20
76 %	21 °C	23:23:22
76 %	21 °C	23:23:24
77 %	21 °C	23:23:26
78 %	20 °C	23:23:28
79 %	20 °C	23:23:30
79 %	20 °C	23:23:32
80 %	20 °C	23:23:34
80 %	20 °C	23:23:36
80 %	20 °C	23:23:38
80 %	20 °C	23:23:40
80 %	20 °C	23:23:42
79 %	20 °C	23:23:44
79 %	20 °C	23:23:46
79 %	20 °C	23:23:48
78 %	20 °C	23:23:50
78 %	20 °C	23:23:52
78 %	20 °C	23:23:54
77 %	20 °C	23:23:56
77 %	20 °C	23:23:58
77 %	20 °C	23:24:00
76 %	20 °C	23:24:02
76 %	20 °C	23:24:04



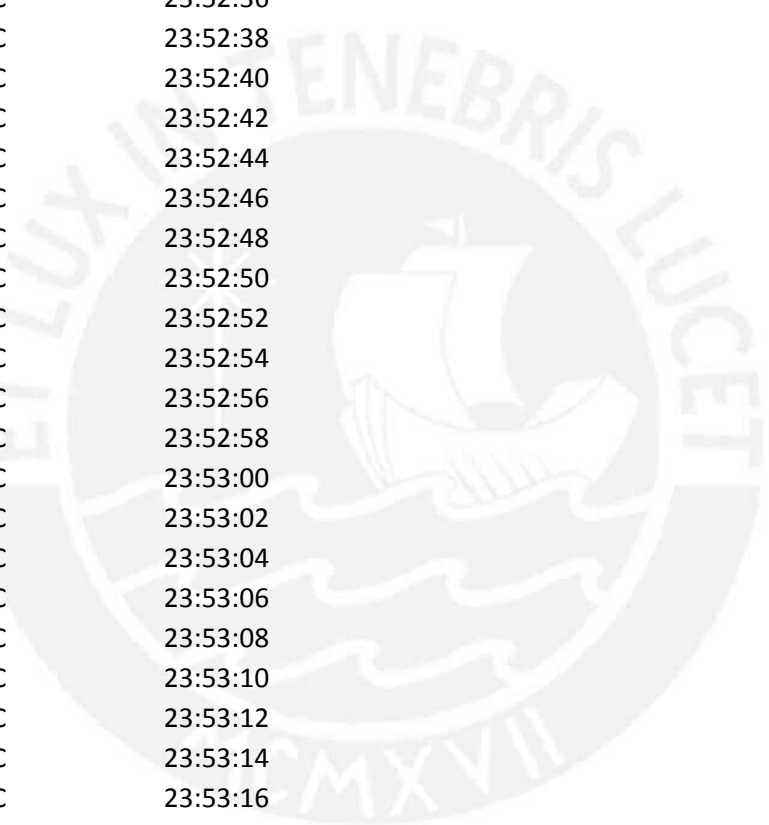
76 %	20 °C	23:24:06
76 %	20 °C	23:24:08
75 %	20 °C	23:24:10
75 %	20 °C	23:24:12
76 %	20 °C	23:24:14
76 %	21 °C	23:24:16
76 %	21 °C	23:24:18
76 %	21 °C	23:24:20
77 %	20 °C	23:24:22
78 %	20 °C	23:24:24
78 %	20 °C	23:24:26
79 %	20 °C	23:24:28
79 %	20 °C	23:24:30
80 %	20 °C	23:24:32
80 %	20 °C	23:24:34
80 %	20 °C	23:24:36
79 %	20 °C	23:24:38



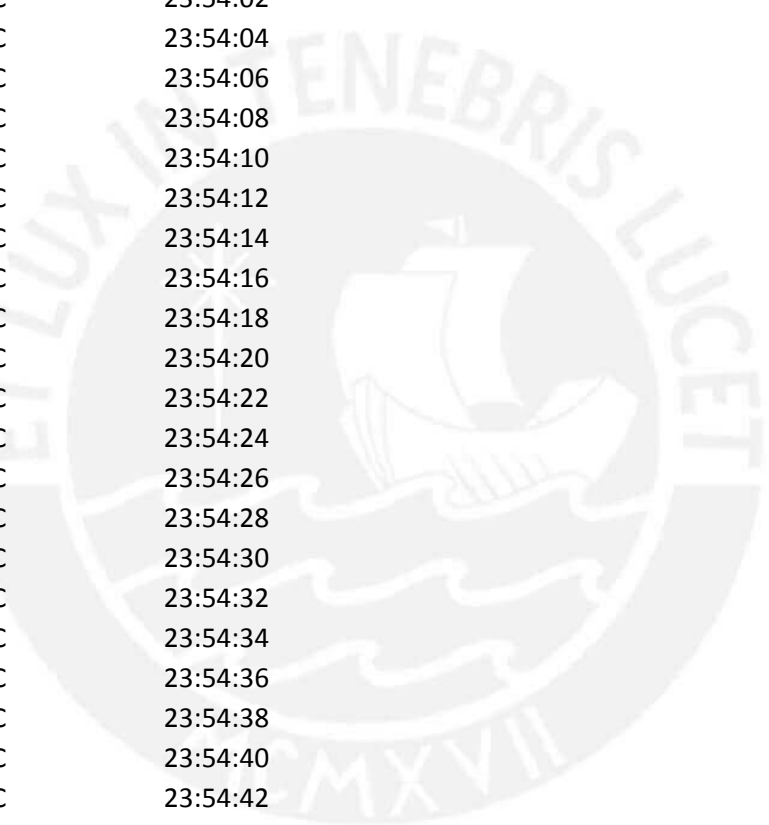
Anexo 17: Datos de archivo: "mode_auto_BH_TB4"

Humedad	Temperatura	Tiempo
0 %	0 °C	23:50:54
75 %	20 °C	23:50:56
75 %	20 °C	23:50:58
75 %	20 °C	23:51:00
75 %	20 °C	23:51:02
75 %	20 °C	23:51:04
75 %	20 °C	23:51:06
75 %	20 °C	23:51:08
75 %	20 °C	23:51:10
75 %	20 °C	23:51:12
75 %	20 °C	23:51:14
75 %	20 °C	23:51:16
75 %	20 °C	23:51:18
75 %	20 °C	23:51:20
75 %	20 °C	23:51:22
75 %	20 °C	23:51:24
75 %	20 °C	23:51:26
75 %	20 °C	23:51:28
75 %	20 °C	23:51:30
75 %	20 °C	23:51:32
75 %	20 °C	23:51:34
75 %	20 °C	23:51:36
75 %	20 °C	23:51:38
75 %	20 °C	23:51:40
75 %	20 °C	23:51:42
75 %	20 °C	23:51:44
75 %	20 °C	23:51:46
75 %	20 °C	23:51:48
75 %	20 °C	23:51:50
75 %	20 °C	23:51:52
75 %	20 °C	23:51:54
75 %	20 °C	23:51:56
75 %	20 °C	23:51:58
75 %	20 °C	23:52:00
75 %	20 °C	23:52:02
75 %	20 °C	23:52:04
75 %	20 °C	23:52:06
75 %	20 °C	23:52:08
75 %	20 °C	23:52:10
75 %	20 °C	23:52:12

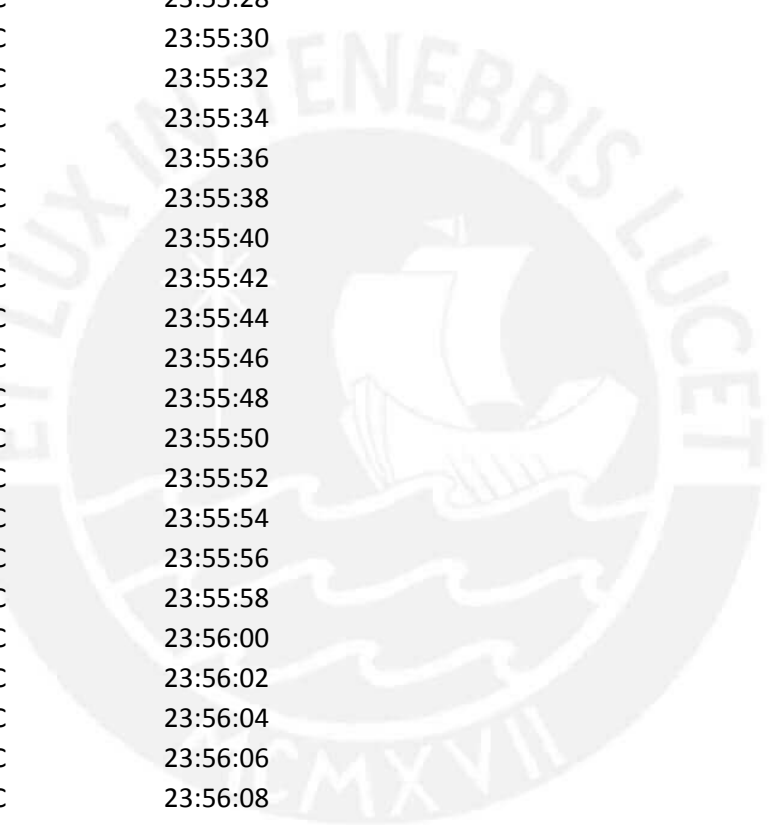
75 %	20 °C	23:52:14
75 %	20 °C	23:52:16
75 %	20 °C	23:52:18
75 %	20 °C	23:52:20
75 %	20 °C	23:52:22
75 %	20 °C	23:52:24
75 %	20 °C	23:52:26
74 %	20 °C	23:52:28
74 %	21 °C	23:52:30
74 %	21 °C	23:52:32
74 %	21 °C	23:52:34
74 %	21 °C	23:52:36
74 %	21 °C	23:52:38
74 %	21 °C	23:52:40
74 %	21 °C	23:52:42
74 %	21 °C	23:52:44
74 %	21 °C	23:52:46
74 %	21 °C	23:52:48
74 %	21 °C	23:52:50
74 %	21 °C	23:52:52
74 %	21 °C	23:52:54
74 %	21 °C	23:52:56
74 %	21 °C	23:52:58
74 %	21 °C	23:53:00
74 %	21 °C	23:53:02
74 %	21 °C	23:53:04
74 %	21 °C	23:53:06
74 %	21 °C	23:53:08
74 %	21 °C	23:53:10
73 %	21 °C	23:53:12
73 %	21 °C	23:53:14
73 %	21 °C	23:53:16
73 %	21 °C	23:53:18
73 %	21 °C	23:53:20
73 %	21 °C	23:53:22
73 %	21 °C	23:53:24
73 %	21 °C	23:53:26
73 %	21 °C	23:53:28
73 %	21 °C	23:53:30
73 %	21 °C	23:53:32
73 %	21 °C	23:53:34
73 %	21 °C	23:53:36
73 %	21 °C	23:53:38



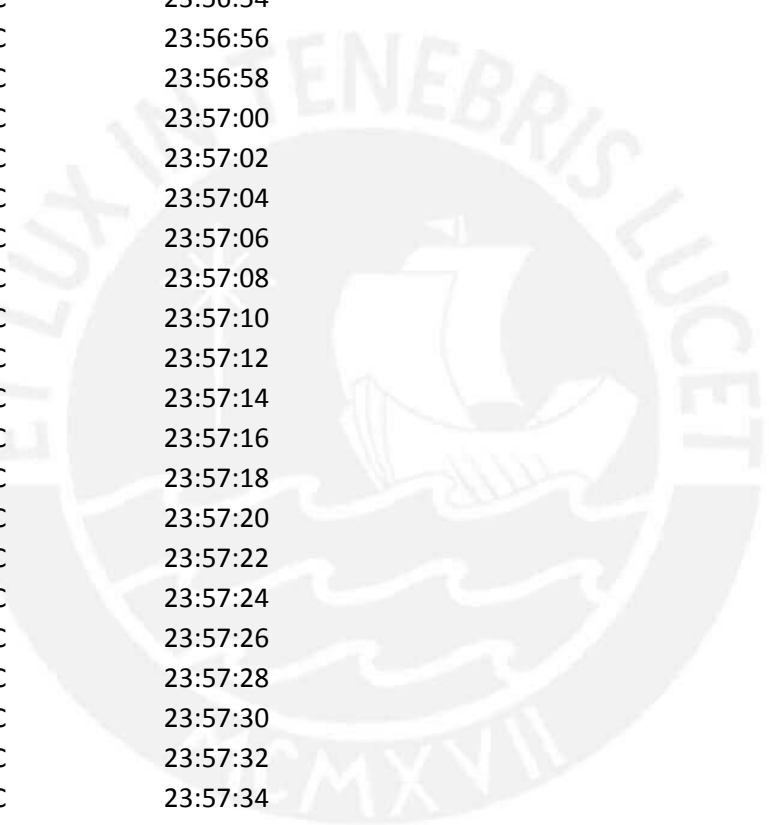
73 %	21 °C	23:53:40
73 %	21 °C	23:53:42
73 %	21 °C	23:53:44
73 %	21 °C	23:53:46
73 %	21 °C	23:53:48
73 %	21 °C	23:53:50
73 %	21 °C	23:53:52
73 %	21 °C	23:53:54
73 %	21 °C	23:53:56
72 %	21 °C	23:53:58
72 %	21 °C	23:54:00
72 %	21 °C	23:54:02
72 %	21 °C	23:54:04
72 %	21 °C	23:54:06
72 %	21 °C	23:54:08
72 %	21 °C	23:54:10
72 %	21 °C	23:54:12
72 %	21 °C	23:54:14
72 %	21 °C	23:54:16
72 %	21 °C	23:54:18
72 %	21 °C	23:54:20
72 %	21 °C	23:54:22
72 %	21 °C	23:54:24
72 %	21 °C	23:54:26
72 %	21 °C	23:54:28
72 %	21 °C	23:54:30
72 %	21 °C	23:54:32
72 %	21 °C	23:54:34
72 %	21 °C	23:54:36
72 %	21 °C	23:54:38
71 %	21 °C	23:54:40
71 %	21 °C	23:54:42
71 %	21 °C	23:54:44
71 %	21 °C	23:54:46
71 %	21 °C	23:54:48
71 %	21 °C	23:54:50
71 %	21 °C	23:54:52
71 %	21 °C	23:54:54
71 %	21 °C	23:54:56
71 %	21 °C	23:54:58
71 %	21 °C	23:55:00
71 %	21 °C	23:55:02
71 %	21 °C	23:55:04



71 %	21 °C	23:55:06
71 %	21 °C	23:55:08
71 %	21 °C	23:55:10
71 %	21 °C	23:55:12
71 %	21 °C	23:55:14
71 %	21 °C	23:55:16
71 %	21 °C	23:55:18
71 %	21 °C	23:55:20
71 %	21 °C	23:55:22
71 %	21 °C	23:55:24
71 %	21 °C	23:55:26
70 %	21 °C	23:55:28
70 %	22 °C	23:55:30
70 %	22 °C	23:55:32
70 %	22 °C	23:55:34
70 %	22 °C	23:55:36
70 %	22 °C	23:55:38
70 %	22 °C	23:55:40
70 %	22 °C	23:55:42
70 %	22 °C	23:55:44
70 %	22 °C	23:55:46
70 %	22 °C	23:55:48
70 %	22 °C	23:55:50
70 %	22 °C	23:55:52
70 %	22 °C	23:55:54
70 %	22 °C	23:55:56
70 %	22 °C	23:55:58
70 %	22 °C	23:56:00
70 %	22 °C	23:56:02
70 %	22 °C	23:56:04
70 %	22 °C	23:56:06
70 %	22 °C	23:56:08
70 %	22 °C	23:56:10
70 %	22 °C	23:56:12
70 %	22 °C	23:56:14
70 %	22 °C	23:56:16
70 %	22 °C	23:56:18
70 %	22 °C	23:56:20
70 %	22 °C	23:56:22
70 %	22 °C	23:56:24
70 %	22 °C	23:56:26
70 %	22 °C	23:56:28
70 %	22 °C	23:56:30

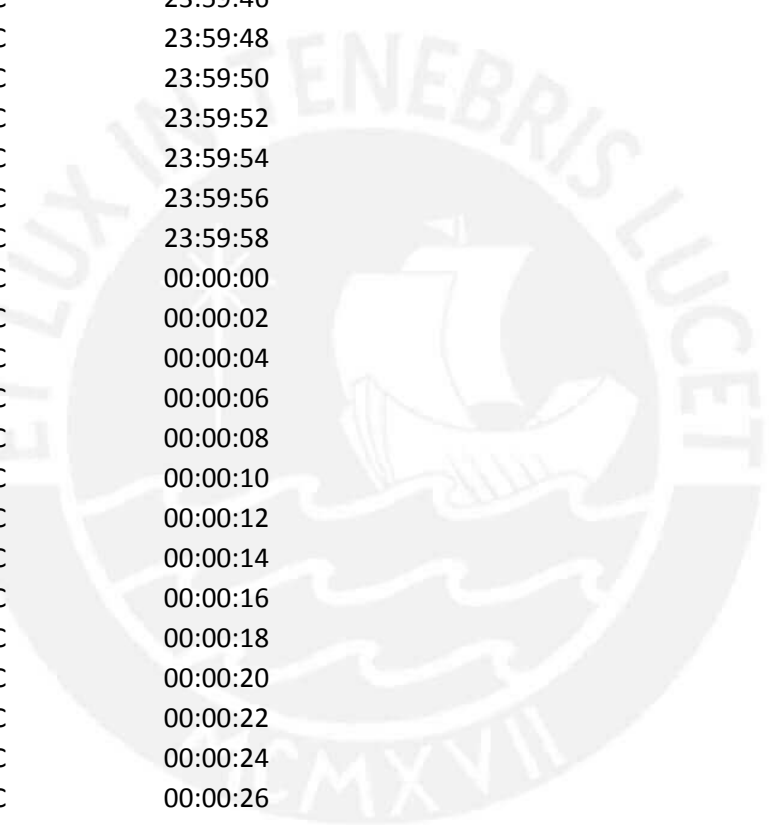


70 %	22 °C	23:56:32
70 %	22 °C	23:56:34
69 %	22 °C	23:56:36
69 %	22 °C	23:56:38
69 %	22 °C	23:56:40
69 %	22 °C	23:56:42
69 %	22 °C	23:56:44
69 %	22 °C	23:56:46
69 %	22 °C	23:56:48
69 %	22 °C	23:56:50
69 %	22 °C	23:56:52
69 %	22 °C	23:56:54
69 %	22 °C	23:56:56
69 %	22 °C	23:56:58
69 %	22 °C	23:57:00
69 %	22 °C	23:57:02
69 %	22 °C	23:57:04
69 %	22 °C	23:57:06
69 %	22 °C	23:57:08
69 %	22 °C	23:57:10
69 %	22 °C	23:57:12
69 %	22 °C	23:57:14
69 %	22 °C	23:57:16
69 %	22 °C	23:57:18
68 %	22 °C	23:57:20
68 %	22 °C	23:57:22
68 %	22 °C	23:57:24
68 %	22 °C	23:57:26
68 %	22 °C	23:57:28
68 %	22 °C	23:57:30
68 %	22 °C	23:57:32
68 %	22 °C	23:57:34
68 %	22 °C	23:57:36
68 %	22 °C	23:57:38
68 %	22 °C	23:57:40
68 %	22 °C	23:57:42
68 %	22 °C	23:57:44
68 %	22 °C	23:57:46
68 %	22 °C	23:57:48
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68 %	22 °C	23:57:52
68 %	22 °C	23:57:54
68 %	22 °C	23:57:56

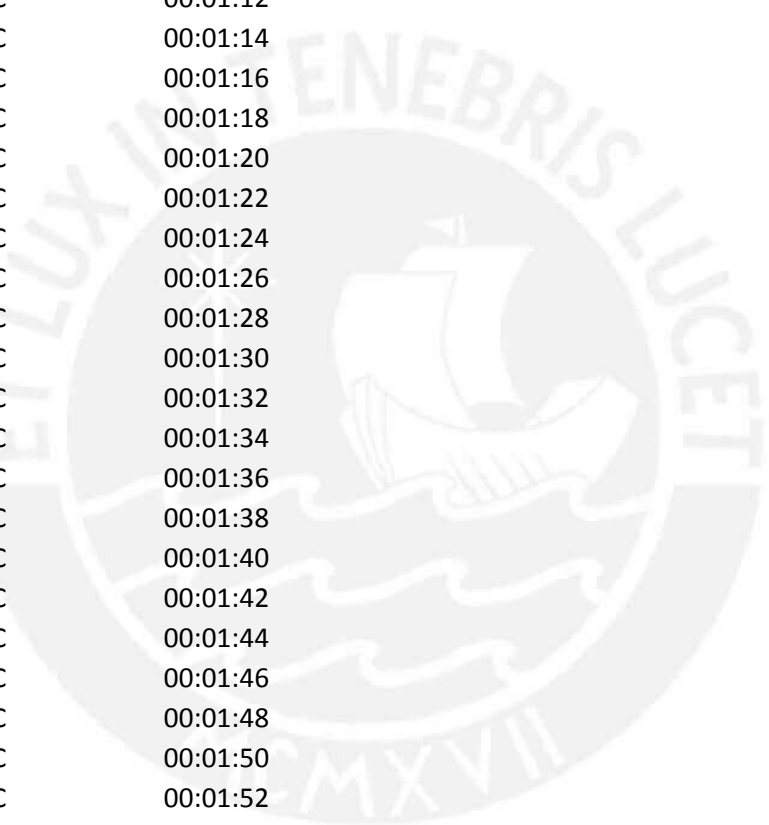


67 %	22 °C	23:57:58
67 %	22 °C	23:58:00
67 %	22 °C	23:58:02
67 %	22 °C	23:58:04
67 %	22 °C	23:58:06
67 %	22 °C	23:58:08
67 %	22 °C	23:58:10
67 %	22 °C	23:58:12
67 %	22 °C	23:58:14
67 %	22 °C	23:58:16
67 %	22 °C	23:58:18
67 %	22 °C	23:58:20
67 %	22 °C	23:58:22
67 %	22 °C	23:58:24
67 %	22 °C	23:58:26
67 %	22 °C	23:58:28
67 %	22 °C	23:58:30
67 %	22 °C	23:58:32
67 %	23 °C	23:58:34
67 %	22 °C	23:58:36
67 %	23 °C	23:58:38
67 %	23 °C	23:58:40
67 %	23 °C	23:58:42
67 %	23 °C	23:58:44
67 %	23 °C	23:58:46
67 %	23 °C	23:58:48
67 %	23 °C	23:58:50
67 %	23 °C	23:58:52
67 %	23 °C	23:58:54
67 %	23 °C	23:58:56
67 %	23 °C	23:58:58
67 %	23 °C	23:59:00
67 %	23 °C	23:59:02
67 %	23 °C	23:59:04
67 %	23 °C	23:59:06
67 %	23 °C	23:59:08
67 %	23 °C	23:59:10
67 %	23 °C	23:59:12
67 %	23 °C	23:59:14
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67 %	23 °C	23:59:20
67 %	23 °C	23:59:22

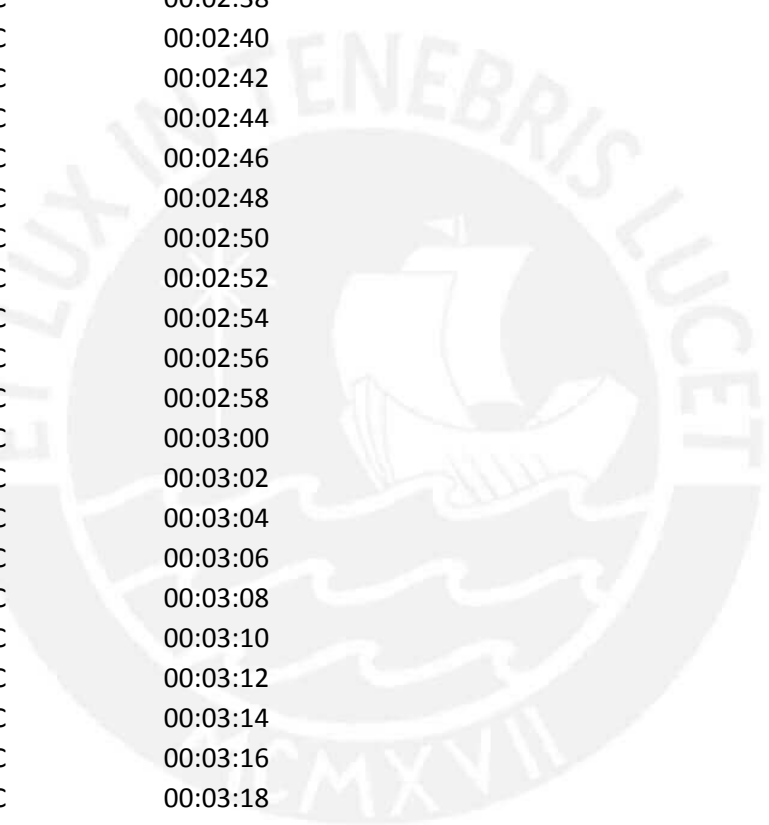
67 %	23 °C	23:59:24
67 %	23 °C	23:59:26
67 %	23 °C	23:59:28
67 %	23 °C	23:59:30
67 %	23 °C	23:59:32
67 %	23 °C	23:59:34
67 %	23 °C	23:59:36
66 %	23 °C	23:59:38
66 %	23 °C	23:59:40
66 %	23 °C	23:59:42
66 %	23 °C	23:59:44
66 %	23 °C	23:59:46
66 %	23 °C	23:59:48
66 %	23 °C	23:59:50
66 %	23 °C	23:59:52
66 %	23 °C	23:59:54
66 %	23 °C	23:59:56
66 %	23 °C	23:59:58
66 %	23 °C	00:00:00
66 %	23 °C	00:00:02
66 %	23 °C	00:00:04
66 %	23 °C	00:00:06
66 %	23 °C	00:00:08
66 %	23 °C	00:00:10
66 %	23 °C	00:00:12
66 %	23 °C	00:00:14
66 %	23 °C	00:00:16
66 %	23 °C	00:00:18
66 %	23 °C	00:00:20
66 %	23 °C	00:00:22
66 %	23 °C	00:00:24
66 %	23 °C	00:00:26
66 %	23 °C	00:00:28
66 %	23 °C	00:00:30
66 %	23 °C	00:00:32
66 %	23 °C	00:00:34
66 %	23 °C	00:00:36
66 %	23 °C	00:00:38
66 %	23 °C	00:00:40
65 %	23 °C	00:00:42
66 %	23 °C	00:00:44
66 %	23 °C	00:00:46
66 %	23 °C	00:00:48



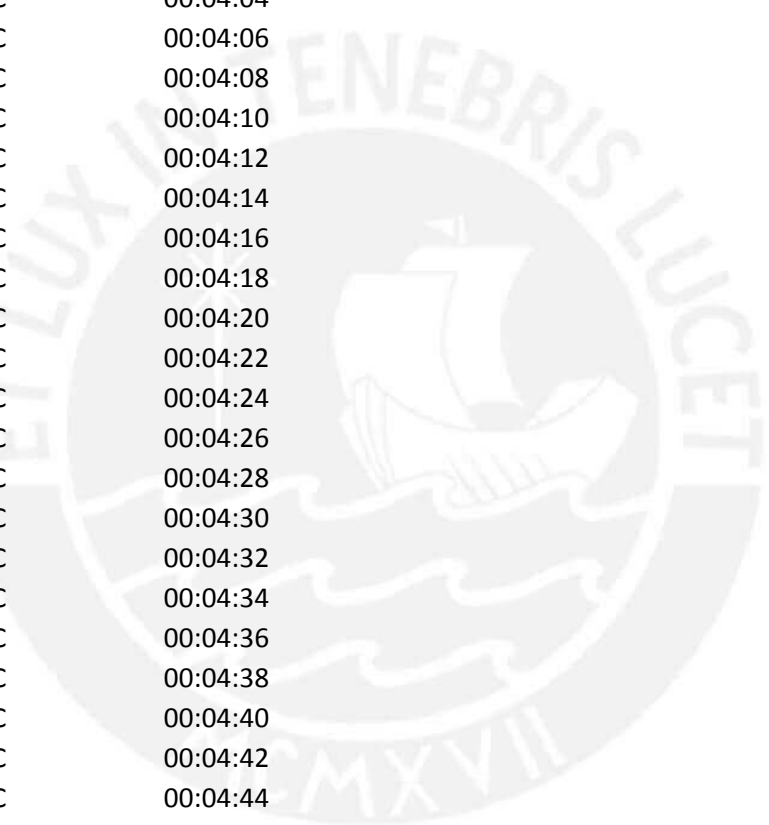
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65 %	24 °C	00:00:52
65 %	24 °C	00:00:54
65 %	24 °C	00:00:56
65 %	24 °C	00:00:58
65 %	24 °C	00:01:00
65 %	24 °C	00:01:02
65 %	24 °C	00:01:04
65 %	24 °C	00:01:06
65 %	24 °C	00:01:08
65 %	24 °C	00:01:10
65 %	24 °C	00:01:12
65 %	24 °C	00:01:14
65 %	24 °C	00:01:16
65 %	24 °C	00:01:18
65 %	24 °C	00:01:20
65 %	24 °C	00:01:22
65 %	24 °C	00:01:24
65 %	24 °C	00:01:26
65 %	24 °C	00:01:28
65 %	24 °C	00:01:30
65 %	24 °C	00:01:32
65 %	24 °C	00:01:34
65 %	24 °C	00:01:36
65 %	24 °C	00:01:38
65 %	24 °C	00:01:40
65 %	24 °C	00:01:42
65 %	24 °C	00:01:44
65 %	24 °C	00:01:46
65 %	24 °C	00:01:48
65 %	24 °C	00:01:50
65 %	24 °C	00:01:52
65 %	24 °C	00:01:54
65 %	24 °C	00:01:56
65 %	24 °C	00:01:58
65 %	24 °C	00:02:00
65 %	24 °C	00:02:02
64 %	24 °C	00:02:04
64 %	24 °C	00:02:06
64 %	24 °C	00:02:08
65 %	24 °C	00:02:10
64 %	24 °C	00:02:12
65 %	24 °C	00:02:14



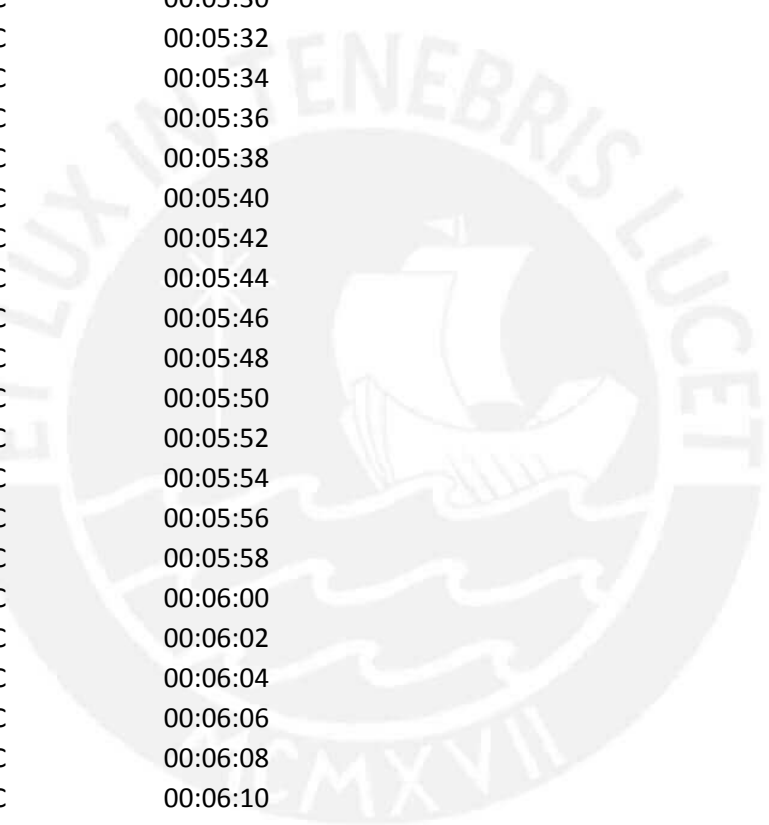
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64 %	24 °C	00:02:20
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64 %	24 °C	00:02:26
64 %	24 °C	00:02:28
64 %	24 °C	00:02:30
64 %	24 °C	00:02:32
64 %	24 °C	00:02:34
64 %	24 °C	00:02:36
64 %	24 °C	00:02:38
64 %	24 °C	00:02:40
64 %	24 °C	00:02:42
64 %	24 °C	00:02:44
64 %	24 °C	00:02:46
64 %	24 °C	00:02:48
64 %	24 °C	00:02:50
64 %	24 °C	00:02:52
64 %	24 °C	00:02:54
64 %	24 °C	00:02:56
64 %	24 °C	00:02:58
64 %	24 °C	00:03:00
64 %	24 °C	00:03:02
64 %	24 °C	00:03:04
64 %	24 °C	00:03:06
64 %	24 °C	00:03:08
64 %	24 °C	00:03:10
64 %	24 °C	00:03:12
64 %	24 °C	00:03:14
64 %	24 °C	00:03:16
64 %	24 °C	00:03:18
64 %	24 °C	00:03:20
64 %	24 °C	00:03:22
64 %	24 °C	00:03:24
64 %	24 °C	00:03:26
64 %	24 °C	00:03:28
64 %	24 °C	00:03:30
64 %	24 °C	00:03:32
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64 %	24 °C	00:03:36
64 %	25 °C	00:03:38
64 %	25 °C	00:03:40



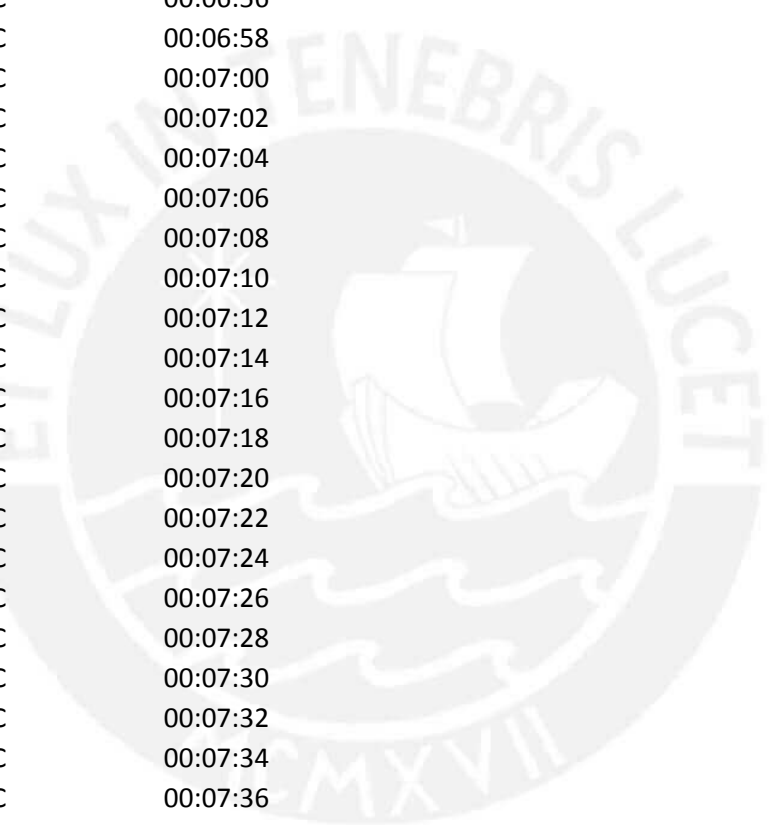
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64 %	25 °C	00:03:44
64 %	25 °C	00:03:46
64 %	25 °C	00:03:48
64 %	25 °C	00:03:50
64 %	25 °C	00:03:52
64 %	25 °C	00:03:54
64 %	25 °C	00:03:56
64 %	25 °C	00:03:58
64 %	25 °C	00:04:00
64 %	25 °C	00:04:02
64 %	25 °C	00:04:04
64 %	25 °C	00:04:06
64 %	25 °C	00:04:08
64 %	25 °C	00:04:10
64 %	25 °C	00:04:12
64 %	25 °C	00:04:14
63 %	25 °C	00:04:16
63 %	25 °C	00:04:18
63 %	25 °C	00:04:20
63 %	25 °C	00:04:22
63 %	25 °C	00:04:24
63 %	25 °C	00:04:26
63 %	25 °C	00:04:28
63 %	25 °C	00:04:30
63 %	25 °C	00:04:32
63 %	25 °C	00:04:34
63 %	25 °C	00:04:36
63 %	25 °C	00:04:38
63 %	25 °C	00:04:40
63 %	25 °C	00:04:42
63 %	25 °C	00:04:44
63 %	25 °C	00:04:46
63 %	25 °C	00:04:48
63 %	25 °C	00:04:50
63 %	25 °C	00:04:52
63 %	25 °C	00:04:54
63 %	25 °C	00:04:56
63 %	25 °C	00:04:58
63 %	25 °C	00:05:00
63 %	25 °C	00:05:02
63 %	25 °C	00:05:04
63 %	25 °C	00:05:06



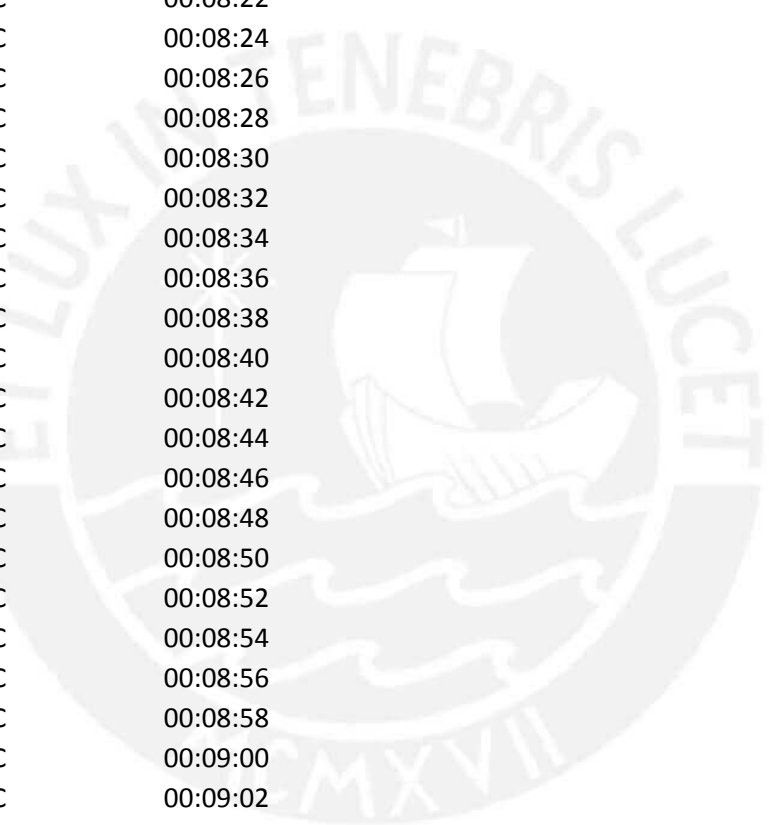
63 %	25 °C	00:05:08
63 %	25 °C	00:05:10
63 %	25 °C	00:05:12
63 %	25 °C	00:05:14
63 %	25 °C	00:05:16
63 %	25 °C	00:05:18
63 %	25 °C	00:05:20
63 %	25 °C	00:05:22
63 %	25 °C	00:05:24
63 %	25 °C	00:05:26
63 %	25 °C	00:05:28
63 %	25 °C	00:05:30
62 %	25 °C	00:05:32
62 %	25 °C	00:05:34
62 %	25 °C	00:05:36
62 %	25 °C	00:05:38
62 %	25 °C	00:05:40
62 %	25 °C	00:05:42
62 %	25 °C	00:05:44
62 %	25 °C	00:05:46
62 %	25 °C	00:05:48
62 %	25 °C	00:05:50
62 %	25 °C	00:05:52
62 %	25 °C	00:05:54
62 %	25 °C	00:05:56
62 %	25 °C	00:05:58
62 %	25 °C	00:06:00
62 %	25 °C	00:06:02
62 %	25 °C	00:06:04
62 %	25 °C	00:06:06
62 %	25 °C	00:06:08
62 %	25 °C	00:06:10
62 %	25 °C	00:06:12
62 %	25 °C	00:06:14
62 %	25 °C	00:06:16
62 %	25 °C	00:06:18
62 %	25 °C	00:06:20
62 %	25 °C	00:06:22
62 %	25 °C	00:06:24
62 %	25 °C	00:06:26
62 %	25 °C	00:06:28
62 %	25 °C	00:06:30
62 %	25 °C	00:06:32



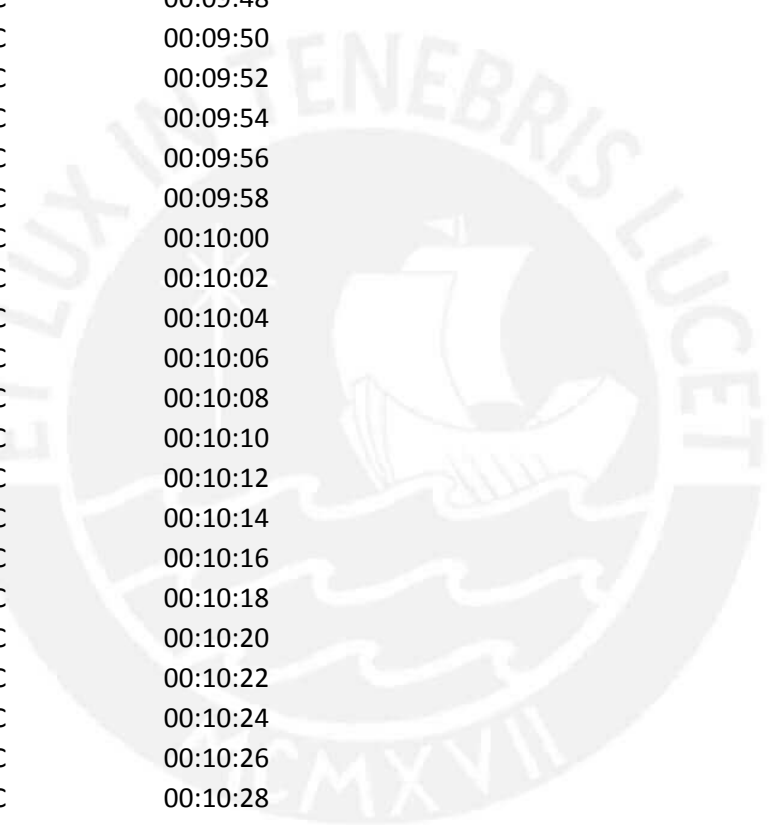
62 %	25 °C	00:06:34
62 %	25 °C	00:06:36
62 %	25 °C	00:06:38
62 %	25 °C	00:06:40
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62 %	25 °C	00:06:44
62 %	25 °C	00:06:46
62 %	25 °C	00:06:48
62 %	25 °C	00:06:50
62 %	25 °C	00:06:52
62 %	25 °C	00:06:54
62 %	25 °C	00:06:56
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62 %	25 °C	00:07:06
62 %	25 °C	00:07:08
62 %	25 °C	00:07:10
62 %	25 °C	00:07:12
62 %	25 °C	00:07:14
62 %	25 °C	00:07:16
62 %	25 °C	00:07:18
62 %	25 °C	00:07:20
62 %	25 °C	00:07:22
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62 %	25 °C	00:07:26
62 %	25 °C	00:07:28
62 %	25 °C	00:07:30
62 %	25 °C	00:07:32
62 %	25 °C	00:07:34
62 %	25 °C	00:07:36
62 %	25 °C	00:07:38
62 %	25 °C	00:07:40
62 %	25 °C	00:07:42
62 %	25 °C	00:07:44
62 %	25 °C	00:07:46
62 %	25 °C	00:07:48
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62 %	25 °C	00:07:52
62 %	25 °C	00:07:54
62 %	25 °C	00:07:56
62 %	25 °C	00:07:58



62 %	25 °C	00:08:00
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62 %	25 °C	00:08:04
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62 %	25 °C	00:08:08
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62 %	25 °C	00:08:14
62 %	25 °C	00:08:16
62 %	25 °C	00:08:18
62 %	25 °C	00:08:20
62 %	25 °C	00:08:22
62 %	25 °C	00:08:24
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62 %	26 °C	00:08:40
62 %	26 °C	00:08:42
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62 %	26 °C	00:08:48
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62 %	26 °C	00:09:22
62 %	26 °C	00:09:24



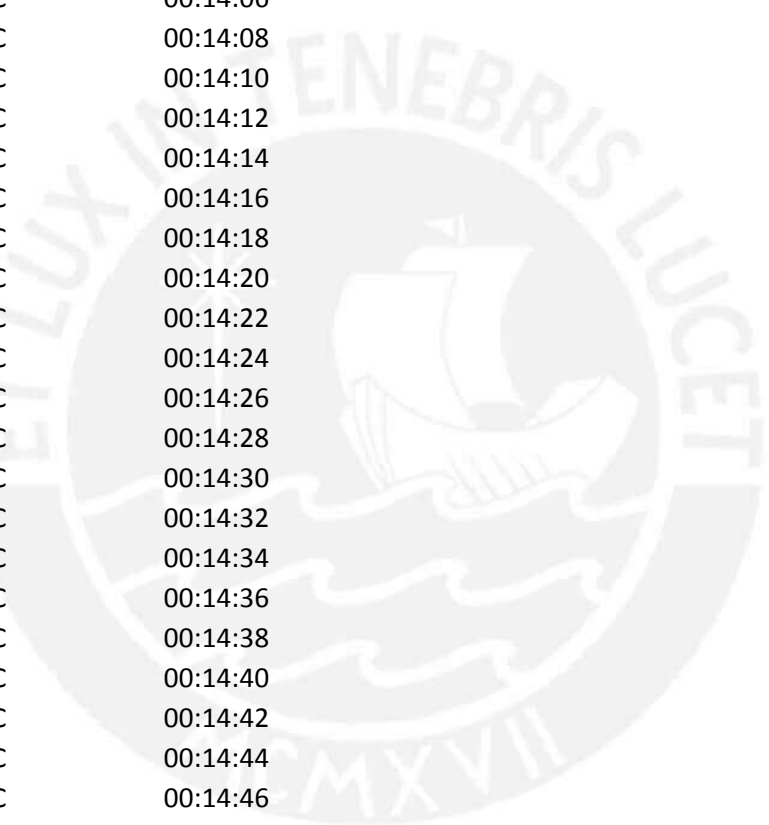
62 %	26 °C	00:09:26
62 %	26 °C	00:09:28
62 %	26 °C	00:09:30
62 %	25 °C	00:09:32
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62 %	26 °C	00:09:36
62 %	25 °C	00:09:38
63 %	26 °C	00:09:40
62 %	25 °C	00:09:42
63 %	26 °C	00:09:44
62 %	25 °C	00:09:46
62 %	25 °C	00:09:48
62 %	25 °C	00:09:50
62 %	25 °C	00:09:52
62 %	25 °C	00:09:54
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62 %	25 °C	00:09:58
62 %	25 °C	00:10:00
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62 %	25 °C	00:10:04
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63 %	25 °C	00:10:24
63 %	25 °C	00:10:26
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63 %	25 °C	00:10:30
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63 %	25 °C	00:10:38
63 %	25 °C	00:10:40
63 %	25 °C	00:10:42
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63 %	25 °C	00:10:46
63 %	25 °C	00:10:48
63 %	25 °C	00:10:50



64 %	25 °C	00:10:52
64 %	25 °C	00:10:54
64 %	25 °C	00:10:56
64 %	25 °C	00:10:58
64 %	25 °C	00:11:00
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65 %	25 °C	00:11:42
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65 %	25 °C	00:11:52
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65 %	25 °C	00:12:16

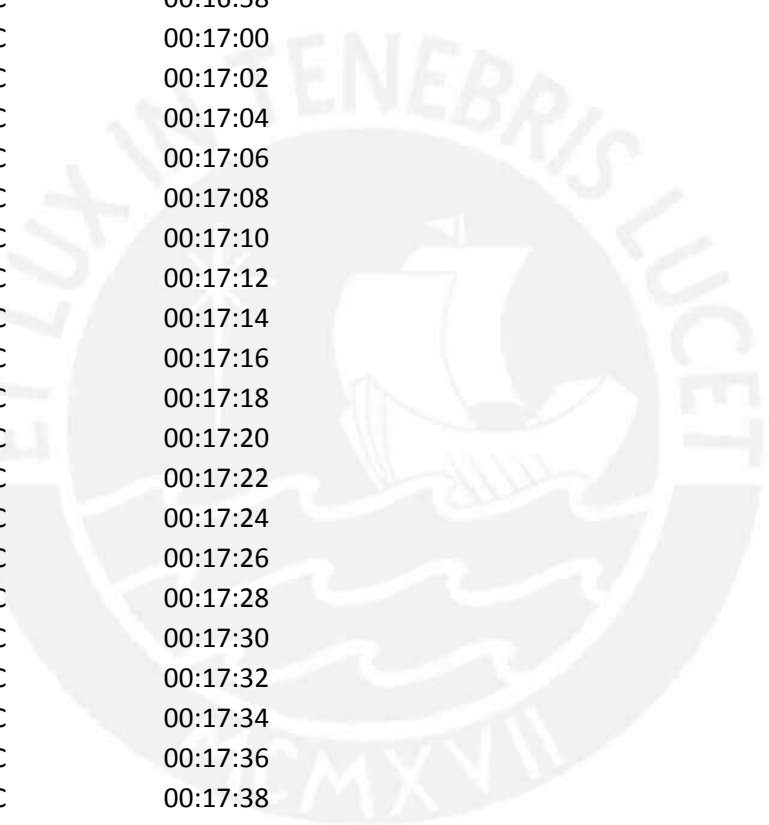
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65 %	25 °C	00:12:32
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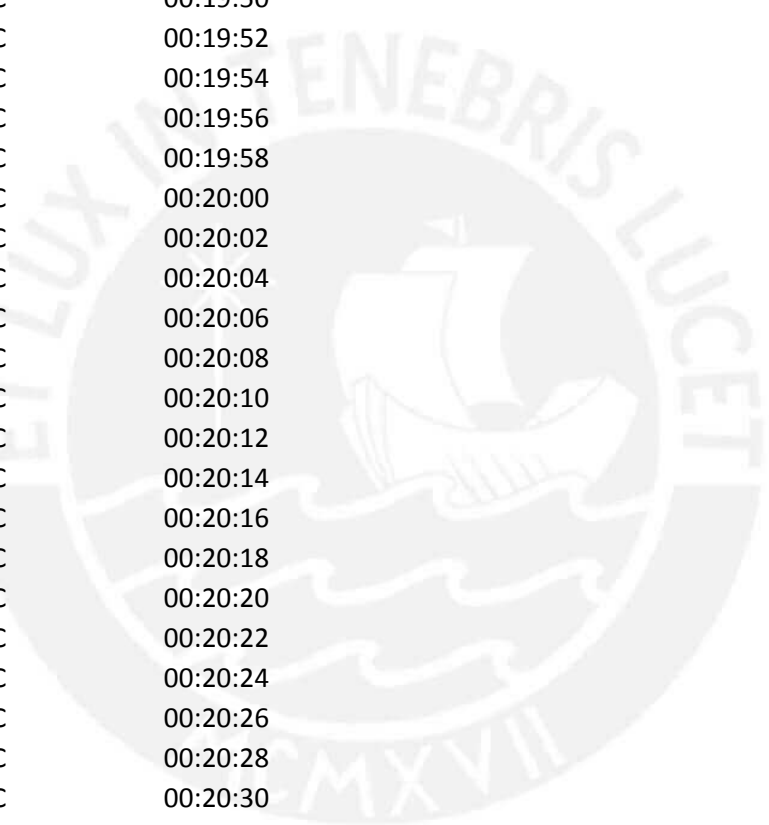
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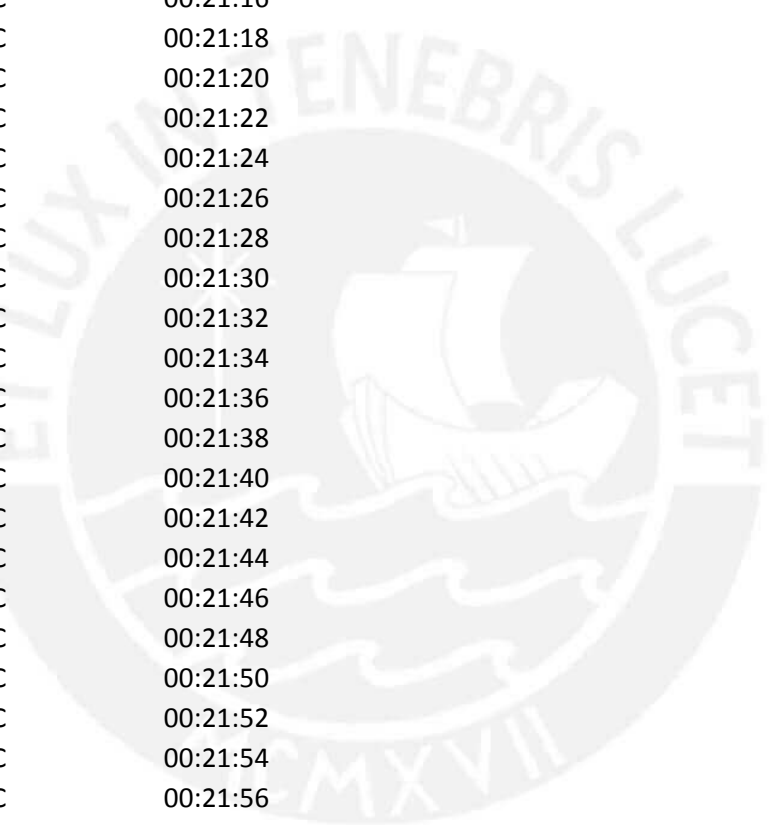


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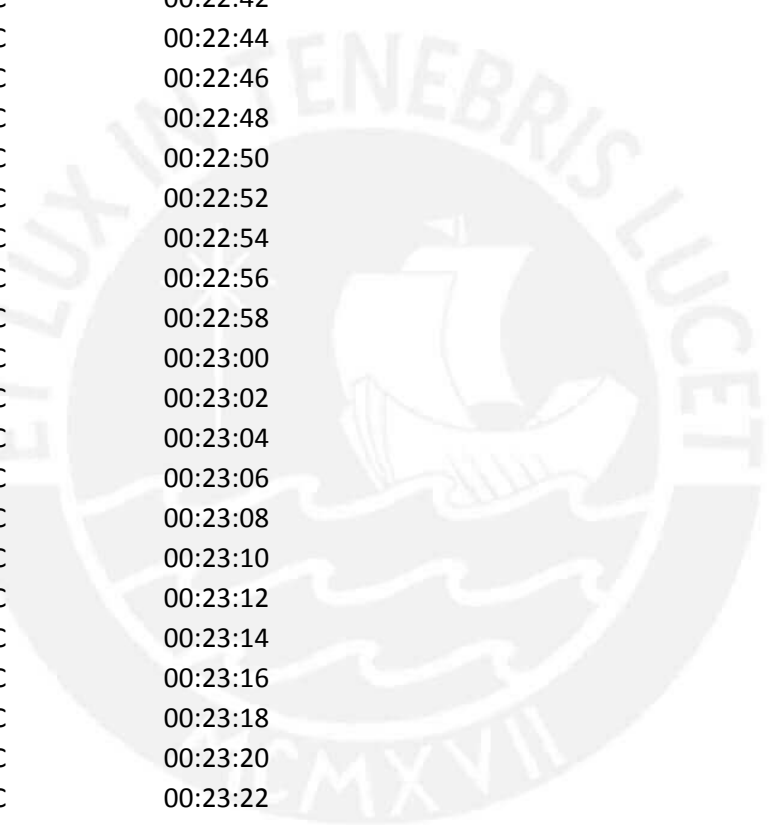
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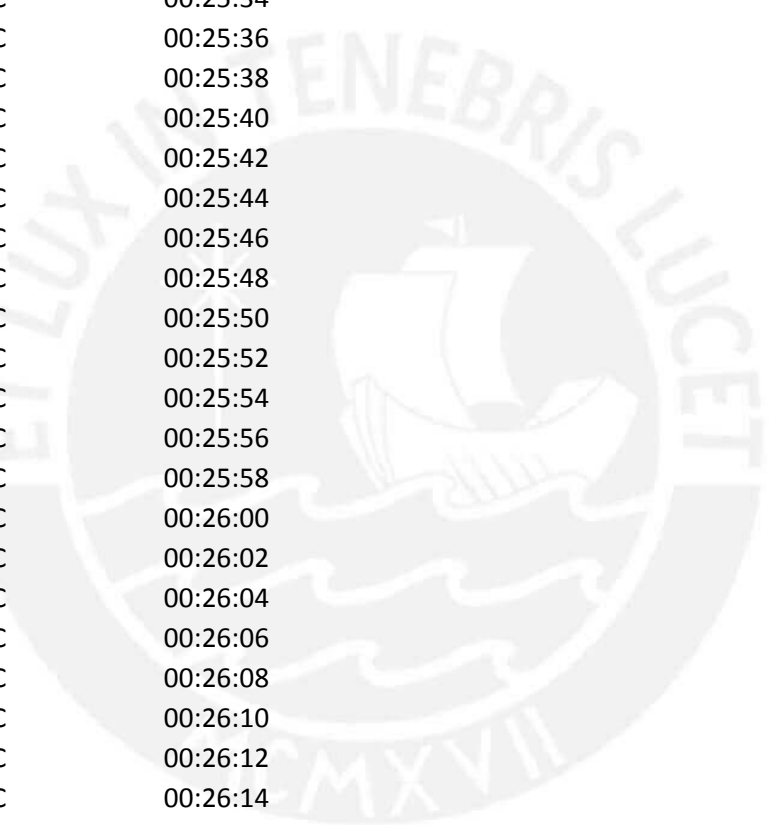


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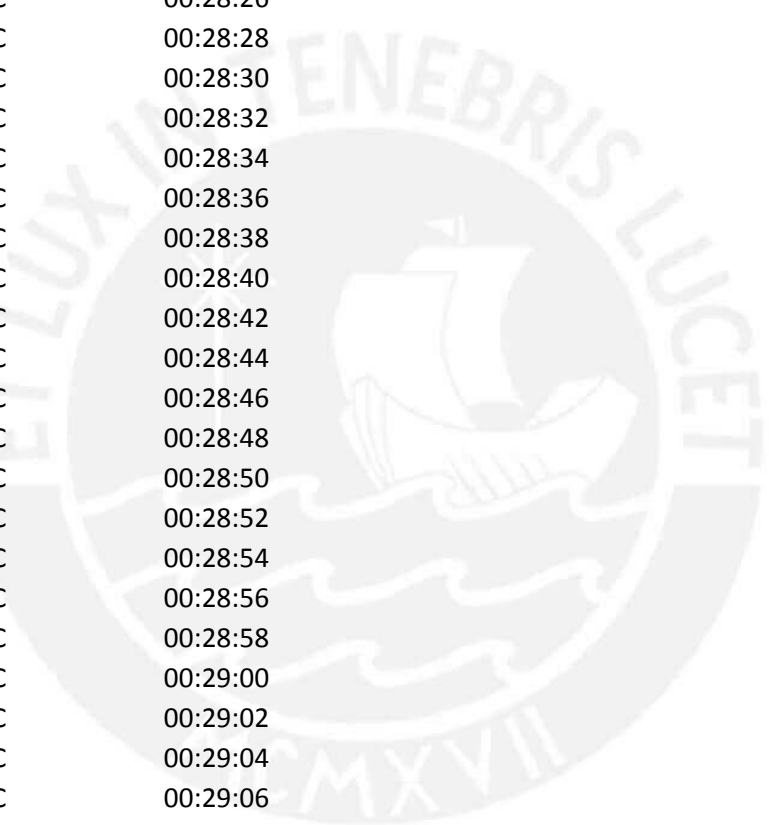
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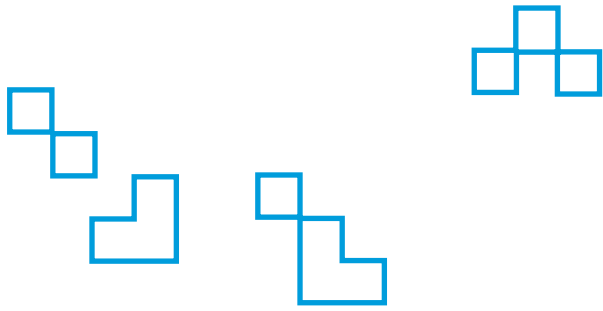
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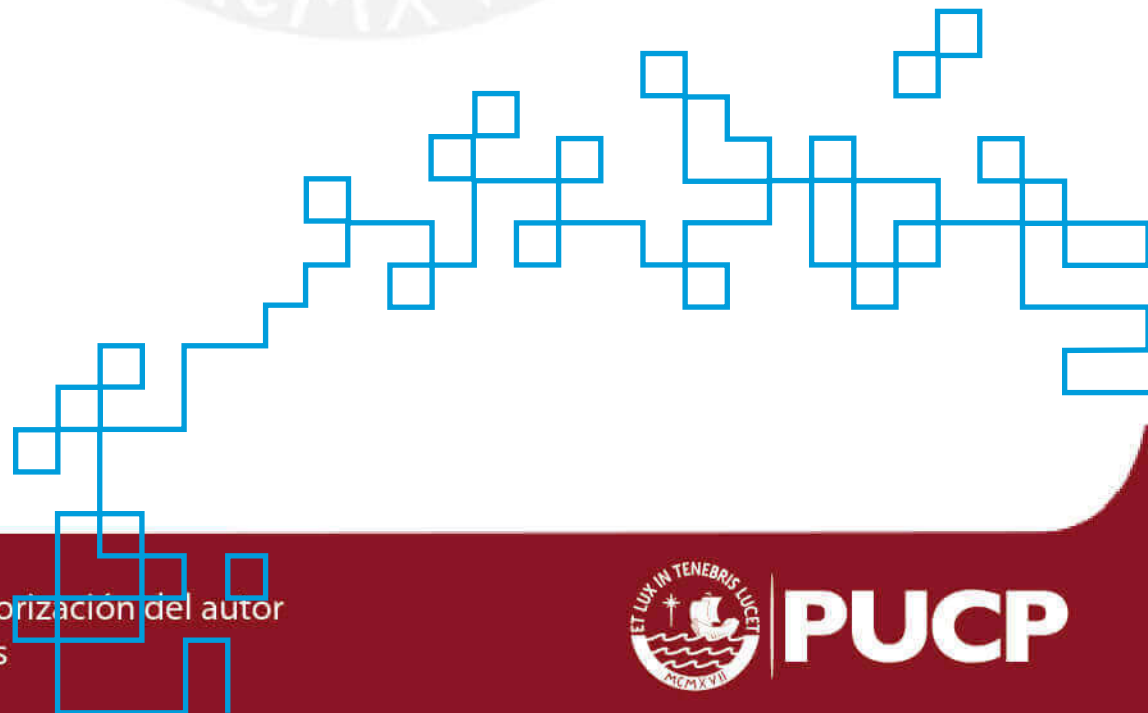


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Policarbonato Alveolar Polygal Especificaciones Técnicas



Policarbonato Alveolar Polygal

Especificaciones Técnicas

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1. Descripción de Grupo de productos

1.1 Dimensiones, pesos y colores

El policarbonato es el único termoplástico para construcción que combina un alto nivel de propiedades mecánicas, ópticas y térmicas. La versatilidad de este material lo hace adecuado para muchas aplicaciones de ingeniería. Al extruir láminas alveolares, las propiedades ópticas y de impacto en particular, hacen que este material sea el candidato ideal para una amplia gama de aplicaciones para cubiertas.



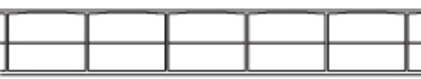
Longitud estándar de las láminas: 6000mm, 12000mm.

Longitud máxima: Sujeto a transporte

1.2 Láminas Estándar, dimensiones y pesos

Láminas estándar con doble y triple pared, fabricadas en varios colores y grados de transparencia, diseñadas para su uso en cubiertas convencionales y aplicaciones en vidrioado. Láminas estándar se fabrican con diferentes espesores, que van desde 4 a 16 mm


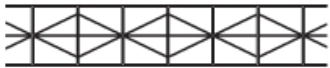

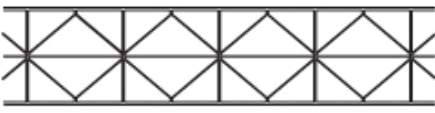
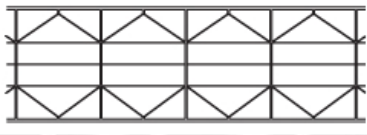
Dimensiones y Pesos de Láminas Estándar

Estructura	Espesor (mm)	Peso (g/m ²)	Ancho estándar (mm)
	4	800	980
	6	1300	1050
	8	1500	1200
	10	1700	1220
	16	2700	1250
			2100

1.3 Productos Especiales Estructurados

Láminas especiales estructuradas - desarrolladas para dar énfasis a las diferentes características de las láminas alveolares: resistencia de carga, aislamiento térmico, transmisión de luz, etc.

Dimensiones y Pesos de Láminas Especiales Estructuradas

Producto	Estructura	Espesor (mm)	Peso (g/m ²)	Ancho estándar (mm)
Triple-Clear		8	1650	1830
		10	1750	2100
Titan Sky		10	1750	1050 1200
		16	2500	2100
Selectogal		16	3000	1050 1200
Thermogal		20	3000	1200 2100
		25	3500	
		32	3800	980 1200
		35	4000	

Triple-Clear (PC3) - Especialmente fabricado con una apariencia de matiz claro, proporciona una excelente aislación térmica, gran flexibilidad, prácticamente irrompibles, tratamiento Anti-Fog que evita la acumulación de condensación y la caída de gotas, estructura rígida que proporciona una mayor resistencia a cargas de viento y nieve. Láminas Triple-Clear se fabrican en 8 y 10 mm.

Titan Sky - la estructura interna de paredes entrecruzadas de esta lámina le da el doble de resistencia y rigidez que las láminas de policarbonato estándar equivalentes. Titan Sky proporciona una excelente solución donde se requiera soportar cargas pesadas. Las láminas Titan Sky se fabrican en 10 y 16 mm de espesor.

Selectogal (RFX) Una patente exclusiva de Polygal que permite la penetración en los edificios de un calor controlado y una transmisión de la luz de día agradable, mientras reduce los costos de calefacción e iluminación. La sofisticada estructura prismática del Selectogal permite reflejar la mayor parte del calor del sol en el verano, pero permite una mayor penetración del calor solar en invierno. Selectogal se fabrica en un espesor de 16 mm.

Thermogal Su estructura única con paredes interiores en "X" proporciona a éstas láminas resistencia adicional, rigidez y cualidades de aislamiento sobresalientes. Disponible en diferentes

anchos y colores. Ideal para techos de poca pendiente y para el vidriado de ambientes cerrados de gran envergadura. Thermogal se fabrica en diferentes espesores, que van de 25 a 35 mm

1.4 Productos con coberturas especiales

Las coberturas especiales selectivas de las láminas de PC desarrolladas por Polygal es uno de los logros más avanzados en este campo. Estas capas permiten controlar la calidad de luz que penetra en un espacio cerrado, absorbiendo y reflejando una parte de la radiación solar.

La cobertura **PolyShade** de las láminas estructuradas de policarbonato produce un efecto especial metalizado. La cobertura PolyShade contiene un pigmento especial que otorga un brillo metálico a la superficie y proporciona un nivel óptimo de reflexión de la radiación solar para evitar el recalentamiento de una habitación. Las láminas PolyShade son fabricadas con diferentes colores: plata, azul metálico y verde metálico de diferentes espesores, que van desde 8 a 16 mm



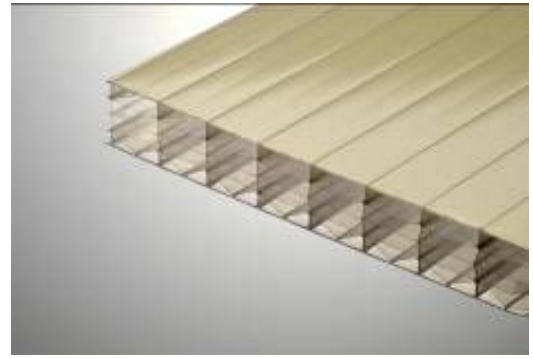
Primalite - Cobertura única que selectivamente refleja una parte importante de la radiación infraroja de la energía solar, transmitiendo al mismo tiempo luz de la radiación visible. Las láminas Primalite, son fabricadas en diferentes espesores, entre 8-32 mm.



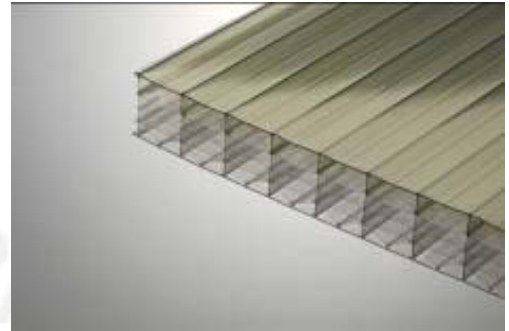
Polycoolite - cobertura selectiva específicamente diseñada para suministrar a las plantas la luz solar natural necesaria para la fotosíntesis. Bloquea la radiación UV, suministrando altos niveles en las gamas de azul y rojo y reflejando los verdes no utilizados por las plantas. Polycoolite refleja el indeseable exceso de calor de los rayos infra rojos.



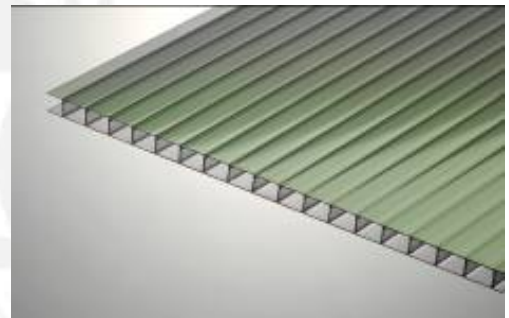
Silhouette con su sofisticada y brillante superficie exterior, irradia elegancia y buen gusto. Disponibles en una variedad de formatos, la lámina Silhouette se caracteriza por sus excepcionales cualidades de reflexión y selectividad, por lo que es una excelente opción para todos los revestimientos. Silhouette se fabrican en diferentes espesores, que van desde 8 a 32 mm



Spring -lámina transparente con una capa especial de co-extrusión en el lado exterior de la lámina, bajo la capa de protección UV. "Spring" bloquea la radiación solar infrarroja invisible y el calor. Resultados, temperaturas más bajas (entra menos calor en la estructura) pero permitiendo una excelente luminosidad. Las láminas Spring se fabrican en color azul y verde y en diferentes espesores entre 8 a 32 mm.



Rainbow - Efectos ópticos especiales de las láminas "Rainbow" de Polygal se combinan con el ángulo de incidencia de la luz, produciendo cambios en el color de la lámina (Ej. del púrpura al verde), de tal forma, las láminas "Rainbow" de Polygal crean una armonía única, tanto dinámica como variada.



2. Propiedades Térmicas

2.1 Temperatura de Servicio y Expansión Térmica

Temperatura de Servicio

Las láminas Alveolares de Polygal pueden ser utilizadas en una diversidad de aplicaciones y en diferentes temperaturas. Sin embargo, el rendimiento mecánico del material es reconocido como que se mantiene estable a lo largo de un servicio prolongado, a temperaturas comprendidas entre -40 °C a +100 °C. El PVC tiene una temperatura máxima de servicio de 60 °C mientras que la del acrílico es de 80 °C.

Expansión Térmica

El coeficiente de expansión lineal del policarbonato es $6.7 \times 10^{-5} \text{ m / m} \cdot ^\circ\text{C}$. Este es alto en relación a la mayoría de otros materiales utilizados habitualmente. Como consecuencia, se debe tener cuidado al considerar la expansión térmica de las láminas Alveolares de Policarbonato, tanto en sentido longitudinal como en el lateral.

En términos prácticos, es necesario permitir 3,5 mm/m en el largo como en el ancho para la expansión térmica.

2.2 Aislación Térmica y Valor “U”

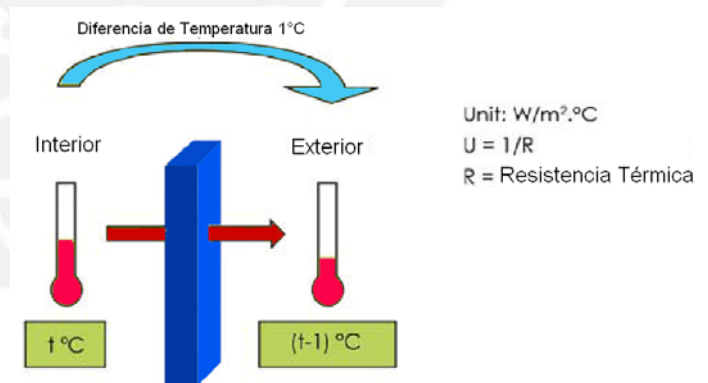
La definición de Aislación Térmica es la resistencia a la transferencia de calor como consecuencia de la diferencia de temperatura entre dos materiales

En el caso del PC Alveolar, la aislación térmica es importante en aplicaciones en que hay una diferencia entre la temperatura del aire del exterior al interior.



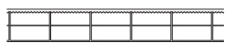
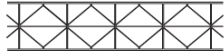

Ejemplos de la importancia de la aislación térmica se puede ver en la aplicación de estructuras cercanas como solarios, terrazas cerradas y piscinas, mientras que en cubiertas de estructuras abiertas como estaciones de buses y canopies, la aislación térmica no tiene importancia.

El valor U o K es el coeficiente que determina la pérdida de calor en las paredes de vidrio de un edificio. En la medida que el valor U disminuye la aislación térmica aumenta.

Definición: El calor fluirá a través de una pared de 1 metro cuadrado en una diferencia de temperatura de un grado centígrado entre los dos medios



Estructura	Espesor (mm)	Valor U [W/m ² ·°C]
	4	3.9
	6	3.6
	8	3.3
	10	3.0
	16	2.3

Producto	Estructura	Espesor (mm)	Valor U [W/m ² ·°C]
Triple-Clear		8	2.8
		10	2.6
Titan Sky		10	2.4
		16	2.1
Selectogal		16	2.3
Thermogal		20	1.9
		25	1.7
		32	1.3
		35	1.25

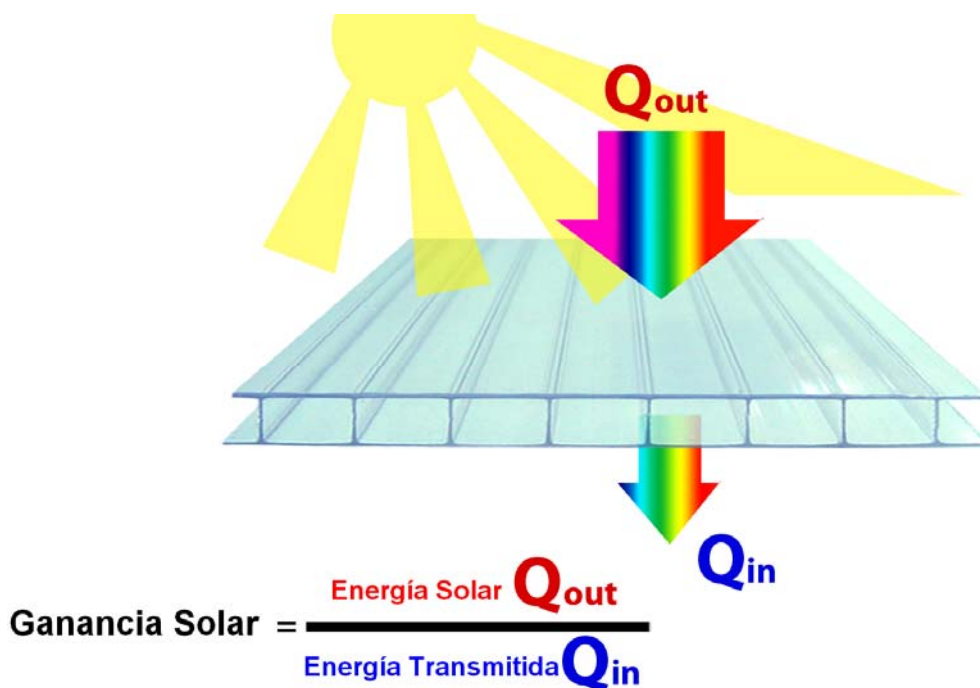


3. Propiedades Ópticas

3.1 Aumento del calor solar

El error más común en materiales translúcidos es que con el fin de reducir el calor del sol se reduce la transmisión de la luz, mientras que el valor que determina la cantidad de calor solar es SHGC (coeficiente de aumento de calor solar o aumento solar).

SHGC indica cuanto de la energía del sol que golpea la lámina es transmitida en forma de calor. A medida que el SHGC aumenta, el aumento del calor solar potencial a través de una lámina dada aumenta.



Una lámina con un SHGC de 0.6 admitirá el doble de la ganancia de calor solar que una con un SHGC de 0,3.

La importancia de la SHGC se puede ver en la siguiente tabla que compara dos colores:

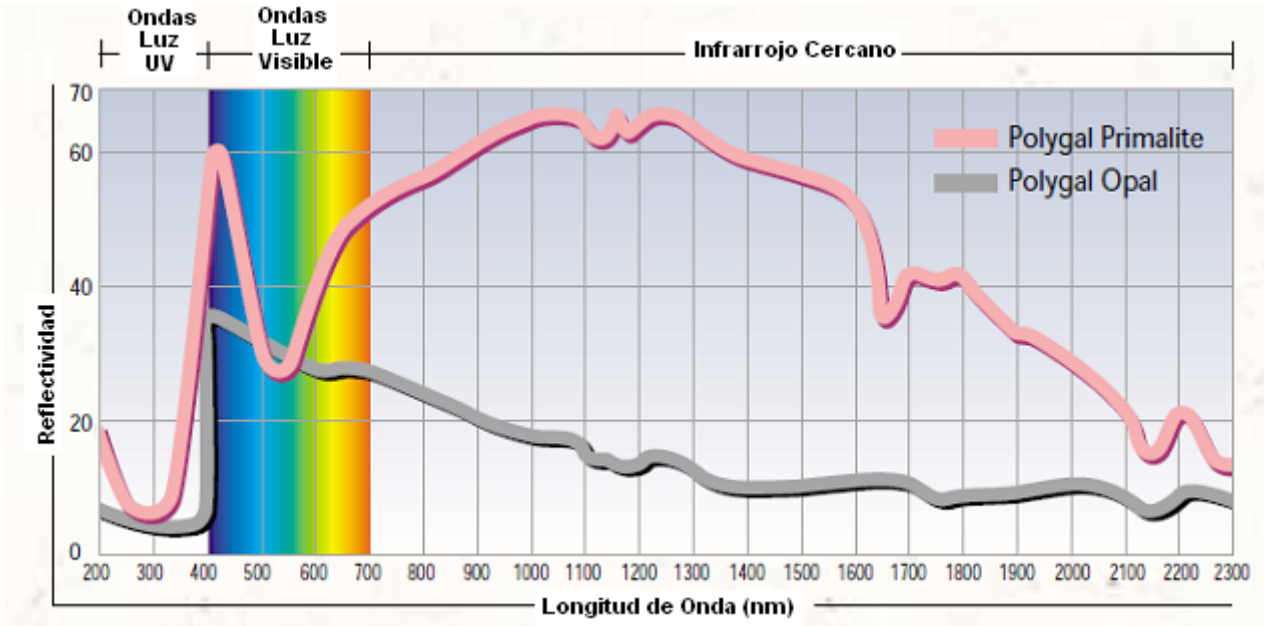
Color de lámina	LT [ASTM D 1003]	SHGC
10mm Primalite	45 %	0.38
10mm ICE	32 %	0.48

Se puede observar en la tabla que, aunque el color especial PRIMALITE da más luz que la de color ICE, la transferencia de calor solar es menor. Este hecho no encaja con el sentido común que nos dice que el PRIMALITE traerá más calor que el ICE, ya que aporta más luz.

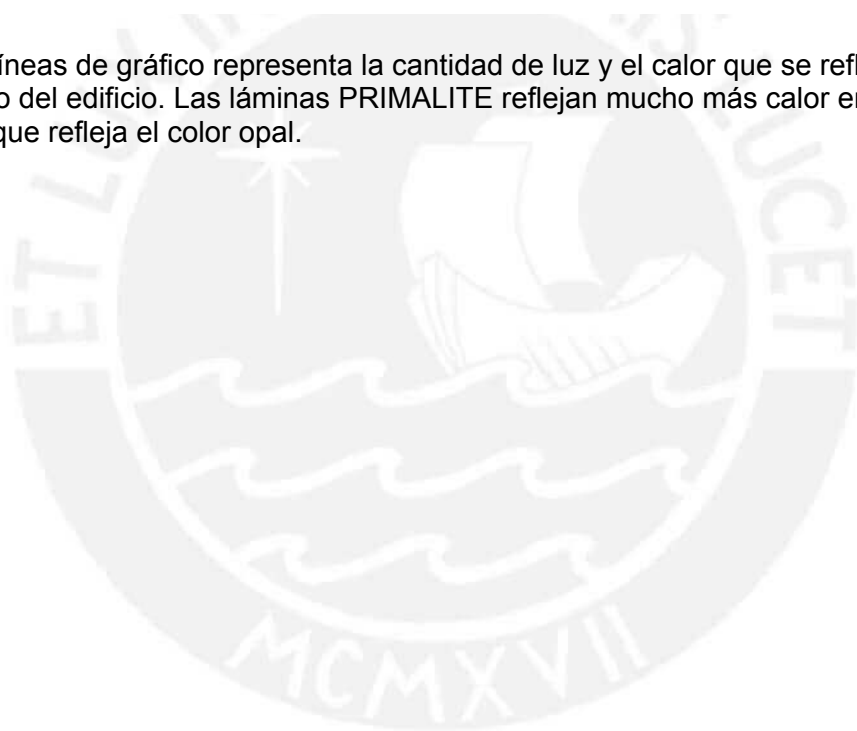
La explicación para esta extraordinaria propiedad del PRIMALITE está en la capacidad de un pigmento especial en la capa coextruida para filtrar (a través de la reflexión) el calor solar en la parte invisible, como puede verse en el gráfico a continuación.

El grupo de colores de coberturas especiales y sus propiedades ópticas están en el punto 3.3.

Comparación de reflexión de la luz de las láminas de color PRIMALITE y Opal



El área bajo las líneas de gráfico representa la cantidad de luz y el calor que se refleja en el techo del poli carbonato del edificio. Las láminas PRIMALITE reflejan mucho más calor en la región infrarroja que la que refleja el color opal.



3.2 Propiedades ópticas de láminas de color en volumen

Espesor (mm)	Color	Estructura	SHGC	LT (Transmisión de Luz % por ASTM D 1003)
4	clear	Estandard	0.77	82
6	clear	Estandard	0.75	80
8	clear	Estandard	0.74	79
8	clear	PC3	0.69	77
10	clear	Estandard	0.73	78
16	clear	Estandard	0.68	74 (86*)
25	clear	Thermogal	0.59	55 (79*)
32	clear	Thermogal	0.51	50
10	clear	Titan Sky		62 (79*)
6	bronce	Estandard	0.58	42
8	bronce	Estandard	0.58	42
10	bronce	Estandard	0.59	42
16	bronce	Estandard	0.56	42 (45*)
16	bronce	Titan Sky	0.46	42
25	bronce	Thermogal	0.38	20
32	bronce	Thermogal	0.33	15
6	turquesa	Estandard	0.59	52
8	turquesa	Estandard	0.61	52
10	turquesa	Estandard	0.61	52
16	turquesa	Estandard	0.56	52
25	turquesa	Thermogal	0.44	27
6	azul	Estandard	0.64	30
8	azul	Estandard	0.67	30
10	azul	Estandard	0.67	30
16	azul	Estandard	0.6	30
25	azul	Thermogal	0.44	20
32	azul	Thermogal	0.45	15
6	verde	Estandard	0.53	30
8	verde	Estandard	0.57	42
10	verde	Estandard	0.58	42
16	verde	Estandard	0.55	42
6	opalina	Estandard	0.47	32
8	opalina	Estandard	0.49	32
10	opalina	Estandard	0.48	32
10	MILK	Estandard	0.14	4
10	HWT	Estandard	0.17	6
16	opalina	Estandard	0.48	32 (57*)
25	opalina	Thermogal	0.36	20 (54*)
25	NGL	Thermogal	0.38	20 (51*)
32	NGL	Thermogal	0.38	15 (47*)
16	clear	Selectogal	0.35	75
16	bronce	Selectogal	0.32	47
16	azulblue	Selectogal	0.36	30
16	NGL	Selectogal	0.28	32

* Transmisión de Luz por ASTM D 1454

3.4 Propiedades ópticas de láminas con capas especiales

Espesor (mm)	Nombre del pigmento (color)	Estructura	SHGC	LT (Transmision de Luz % por ASTM D 1003)
6	Polyshade PSD gris metálico	Estandar	0.30	18
8	Polyshade PSD gris metálico (volume)	Estandar	0.32	18
8	Polyshade PSD gris metálico	Estandar	0.29	18 (24*)
10	Polyshade PSD gris metálico	Estandar	0.30	18 (24*)
16	Polyshade PSD gris metálico	Estandar	0.23	18 (20*)
10	Polyshade PSD gris metálico + HW	Titan Sky	0.14	2 (6*)
16	Polyshade PSD gris metálico + HW	Titan Sky	0.10	2 (5*)
32	Polyshade PSD gris metálico	Thermogal	0.33	25
10	Polyshade PSB azul metálico	Estandar	0.41	18
8	Polyshade PSB azul metálico (Volume)	Estandar	0.45	18
10	Polyshade PSG verde metálico	Estandar	0.32	18
8	Rainbow	Estandar	0.43	15
8	Spring IRG verde	Estandar	0.52	70
8	Spring IRB azul	Estandar	0.48	50
6	Spring IRB azul (volume)	Estandar	0.60	55
8	Spring IRB azul (volume)	Estandar	0.54	48
8	Spring IRG verde (volume)	Estandar	0.64	70
32	Spring IRG verde	Thermogal	0.36	44 (47*)
32	Spring IRB azul	Thermogal	0.29	24
16	Spring IRG verde	Titan Sky	0.27	48 (55*)
16	Spring IRB azul	Titan Sky	0.42	48
8	Primalite PRL	Estandar	0.39	45 (68*)
10	Primalite PRL	Estandar	0.38	45 (66*)
16	Primalite PRL	Estandar	0.27	32
16	Primalite PRL	Titan Sky	0.19	18
16	Silhouette Perla PNL	Titan Sky	0.32	20
25	Primalite PRL	Thermogal	0.29	18
32	Primalite PRL	Thermogal	0.24	15
8	Polycoolite	Estandar	0.53	45 (63*)
10	Polycoolite	Estandar	0.48	45
16	Polycoolite	Estandar	0.43	32
16	Polycoolite	Titan Sky	0.27	18 (54*)
8	Silhouette PRL	Estandar	0.50	40
32	Silhouette PRL	Thermogal	0.34	10 (45*)
8	Silhouette Gold	Estandar	0.37	35 (63*)
6	Silhouette Gold (volume)	Estandar	0.44	42
8	Silhouette Gold (volume)	Estandar	0.40	32
10	Silhouette Gold	Estandar	0.36	35 (61*)
32	Silhouette Gold	Thermogal	0.27	10 (43*)
6	Polyshade PNL Perla (Volume)	Estandar	0.42	35
8	Polyshade PNL Perla (Volume)	Estandar	0.45	32
10	Polyshade PNL Perla (Volume)	Estandar	0.47	35
8	PMT (Polymatt)	Estandar	0.73	77

* Transmisión de Luz por ASTM D 1454

4. Información Técnica

4.1 Acústica

Según la norma DIN 52210-75, la máxima clase obtenible de transmisión de sonido para un espesor particular es la siguiente:

Espesor de lámina (mm)	Valores de Reducción de sonido (dB)
4	15
6 - 8	18
10	19
16	21
20	22
25 - 32	23

4.2 Resistencia Química

Las láminas de Polygal se han utilizado con éxito en combinación con materiales de construcción y componentes de vidrio. La estabilidad química depende de muchos factores como la concentración de los agentes químicos y la exposición a temperatura. Considerando la complejidad de la compatibilidad química, todos los químicos que entran en contacto con el policarbonato siempre deberán ser testeados.

Polygal ofrece servicio de laboratorio para los ensayos de estabilidad química de los empaques y sellos a ser usados.

4.3 Comportamiento al Fuego

Polygal ha recibido altas clasificaciones en la mayoría de los ensayos de comportamiento al fuego Europeos, Americanos y otros. Una información más detallada y los reportes oficiales de los ensayos están disponibles en su centro de servicio local o con el distribuidor autorizado.

Inflamabilidad

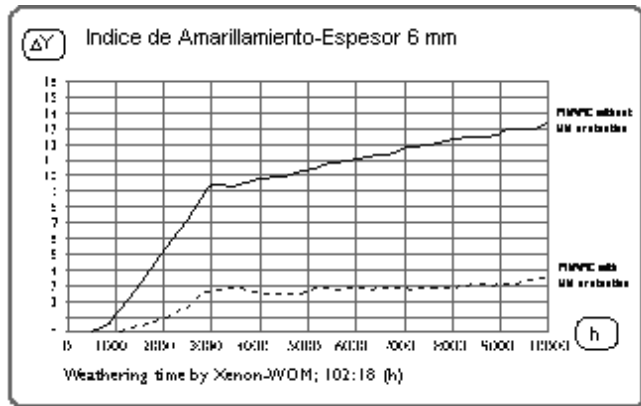
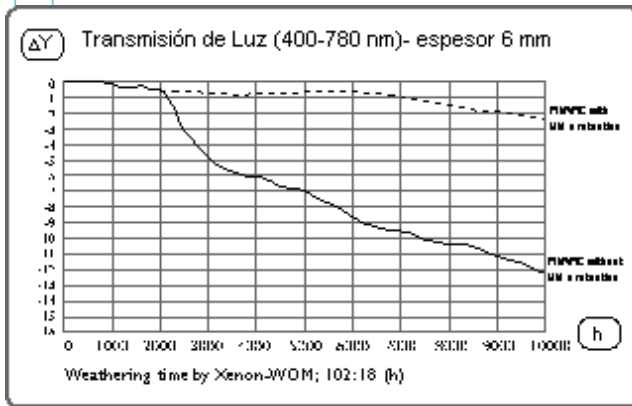
Norma	Clasificación*
BS 476/7	Class 1
DIN 4102	B-1 (10&16 mm)
NSP 92501	M-1, M-2
ASTM D-635	CC-1
ASTM-E-84	Class A
EN 13501	B, s1, d0

*Clasificación depende del tipo de lámina y espesor.

4.4 Protección UV

La radiación solar tiene un componente dañino en los rayos UV que inicia la degradación de muchos materiales poliméricos incluido el policarbonato. Esto depende de la ubicación geográfica, estaciones, etc

Las láminas de policarbonato Polygal ofrecen especialmente una absorción de UV y una capa de protección coextruida, lo que proporciona una gran estabilidad a largo plazo contra los dañinos rayos UV, protege contra la exposición a la intemperie y conserva el color original y la transmisión de luz. Como lo muestra, el ensayo de envejecimiento acelerado ilustrado en el siguiente gráfico.



Polygal garantiza por 10 años contra la intemperie, cubriendo decoloración, pérdida de transmisión de luz y pérdida de resistencia. Sin embargo la correcta instalación y buen mantenimiento garantizan un período aún más largo para la vida del producto.

El lado de la lámina con protección UV está indicado por un film impreso. En caso que el film impreso sea removido antes de la instalación, aún es posible identificar el lado con protección UV:

Lado marcado: de manera de asegurar la completa trazabilidad de nuestros productos y el seguimiento de los problemas de calidad, las láminas son impresas con tinta o laser (dependiendo el caso) cada metro. Esta marca aparece en el lado con protección UV.

Control Visual: en láminas transparentes, el borde superior de la lámina tiene un tinte azulado. En láminas de colores, las líneas de partición son más visibles en el lado con protección UV.

4.5 Resistencia al impacto-resistencia al granizo:

Pérdida de “resistencia al impacto en caso de granizo”, se determinará por un ensayo de impacto de acuerdo a la geometría FE de la norma ASTM D 5628-95 (diámetro del extremo de la pesa, 20 mm). En este ensayo, la falla es determinada cuando la pared superior de la lámina es penetrada por el extremo de la pesa. Esta lámina no alcanza el estándar requerido si la principal energía de falla obtenida en el ensayo es menor a 0,831 Joul. Esta energía es igual a la energía generada por una bola de hielo de 20mm de diámetro a una velocidad de 21m/s.

4.6 Curvar la lámina

Las láminas Polygal pueden ser exitosamente curvadas en frío, sobre perfiles de apoyo curvados, adaptándose a muchas aplicaciones, como por ejemplo, domos, techos transparentes, etc. Si el radio proporcionado no es menor al valor recomendado, entonces la tensión introducida por el curvado en frío-curva no tendrá ningún efecto adverso sobre el rendimiento mecánico de la lámina. Las láminas deberán siempre ser curvadas longitudinalmente, nunca a lo ancho de la lámina.

Valores de radios mínimos

Espesor de la lámina (mm)	Radio Min de curvatura [mm]
4	700
6	1050
8	1400
10	1750
16	2800
20	3500
25	4370
32	5600
35	6100

5. Información de la guía del usuario

5.1 Embajale

Los productos Polygal son generalmente despachados en containers de 20' y 40', protegidas en ambos lados con film de polietileno contra rayaduras y aseguradas para prevenir los daños causados por el movimiento dentro del container.

Los extremos de las láminas están selladas con cinta adhesiva para evitar que el polvo y los insectos entren por los alveolos de las láminas.

La longitud máxima de las láminas es de 5,80 metros para un contenedor de 20' y 11,80 metros para un contenedor de 40'. El despacho de láminas de diferentes longitudes debe ser coordinada previamente con el gerente de ventas regional. Se recomienda descargar los contenedores a mano usando un transportador de rodillos inclinados con una altura ajustable.

Las láminas deberán estar lejos de la exposición a la luz del sol y de acuerdo a las pautas de almacenamiento de la compañía.

5.2 Almacenamiento

Almacenar en un área seca, oscura y bien ventilada, SIN EXPOSICIÓN a la luz del sol, viento y objetos pesados para prevenir daño.

No almacene las láminas directamente sobre el piso, sino sobre una tarima seca, limpia, plana y cubierta por un material blando (cartón) para evitar que se dañen

Se recomienda una pendiente de apilamiento. Si el apilamiento es plano, apilar a un máximo de 3 pies (0,90 mt).

No se recomienda almacenar las láminas a la intemperie, en caso de ser inevitable, las láminas deberán ser cubiertas con un material opaco (cartón, madera, láminas de EPDM, etc), las que le proporcionarán protección contra el sol.

Si deja las láminas Polygal a la intemperie, el almacenamiento de láminas expuestas a la luz solar hará que el film protector de polietileno se pegue en la lámina y NO PODRÁ SER RETIRADO.

NO almacene láminas bajo revestimientos flexibles de PVC.

5.3 Limpieza

Láminas Polygal, estándar y especiales, podrán prolongar su vida útil y su desempeño con una simple limpieza:

- Enjuague con agua la lámina
- Use agua tibia jabonosa (jabón líquido para platos) para limpiar las láminas. Si la suciedad persiste, frote suavemente con un paño suave.
- Aplique un enjuague final. Siempre que sea posible emplee un paño suave y seco para evitar que queden manchas sobre la lámina

NUNCA recurra a esponjas, escobillas de goma o a objetos filosos o punzantes capaces de dañar la capa que protege a la lámina de la radiación UV (ultra- violeta).

5.4 Corte y Perforación

Corte – Láminas Alveolares de Polygal pueden ser cortadas con facilidad y precisión con un equipo de taller estándar. Este incluye sierra circular, cierra de vaivén (jig-saw) o sierra de mesa con 8 a 12 dientes por pulgada. El polvo de aserrín debe ser sacado de los alvéolos con aire comprimido limpio. Las sierras circulares deben tener hojas de dientes finos. Láminas de menor espesor (hasta 10 mm) se pueden cortar con cuchillos para cartón-fibra. Es importante que el cuchillo esté afilado.

Perforación – la perforación puede ser realizada con un taladro eléctrico usando el estándar de alta velocidad con brocas helicoidales de acero o con un taladro con una cuña angular. Cuando se está perforando, se deberá apoyar inmediatamente el taladro para evitar la vibración. Se pueden obtener perforaciones muy limpias . El uso de medios líquidos de refrigeración no es recomendable.

Ribeteado - Con cuchillas estándar para cartón-fibra.



Apéndice 1: Capacidad de Carga – Carga de Viento y Nieve

Con el fin de elegir la lámina adecuada para los estándares locales de las cargas de viento y nieve, se deben considerar los siguientes factores:

- Tipo de lámina (Ej. estructura y peso): 8 mm 2 paredes, 1500 gr/m² deflejará más que una Titan Sky 16 mm 2500 gr/ m².
- El ancho de lámina: 600mm de ancho deflejarán menos que una de 1200mm, bajo la misma carga.
- Distancia entre apoyos: Obviamente, la distancia más corta entre los apoyos mejora la resistencia a las cargas positivas.
- Tipo de conectores- Aluminio o Policarbonato
- Condiciones de apoyo (cuatro lados, dos lados, dos lados con costaneras)
- Estructura plana o curva
- Carga de viento positiva o negativa.
- Deflexión permitida- la estándar en PC Alveolar es de un 5% del ancho de la lámina.

Las siguientes tablas simplifican el complejo problema de la elección de las configuraciones de diseño adecuado.

Una simple distinción es entre una estructura plana y curva.

Para Estructura Plana:

Las tablas dan la distancia permitida entre costaneras (m) para láminas de 700 mm de ancho, la desviación máxima es del 5% del ancho de la lámina (35 mm).

Lámina	Carga						
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²	200 kg/m ²
6 mm Estándar	1.4	1.3	1.2	1.1	1.0	0.9	x
8 mm Estándar	1.8	1.6	1.5	1.4	1.3	1.2	0.9
10 mm Estándar	2.0	1.7	1.6	1.5	1.4	1.3	1.1
10 mm Titan Sky	2.1	1.8	1.6	1.4	1.3	1.2	1.0
16 mm Estándar	∞	∞	2.5	1.8	1.6	1.4	1.3
16 mm Selectogal	∞	∞	2.6	1.9	1.7	1.5	1.4
16 mm Titan Sky	∞	∞	∞	∞	∞	∞	∞
25 mm Thermogal	∞	∞	∞	∞	∞	∞	∞
32 mm Thermogal	∞	∞	∞	∞	∞	∞	∞

* El signo infinito (∞) representa dos lados apoyados o carga de viento negativa.

Las tablas dan la distancia permitida entre costaneras (m) para láminas de 1050 mm de ancho, la desviación máxima es del 5% del ancho de la lámina (50mm).

Lámina	Carga						
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²	200 kg/m ²
6 mm Estándar	1.3	1.1	1.0	0.9	0.8	0.7	x
8 mm Estándar	1.7	1.5	1.4	1.3	1.2	1.0	0.9
10 mm Estándar	1.8	1.6	1.5	1.4	1.3	1.2	1.0
10 mm Titan Sky	2.1	1.9	1.7	1.5	1.4	1.3	1.1
16 mm Estándar	2.6	2.1	1.8	1.6	1.5	1.4	1.2
16 mm Selectogal	∞	2.7	2.2	2.0	1.8	1.7	1.3
16 mm Titan Sky	∞	2.8	2.4	2.2	1.9	1.8	1.6
25 mm Thermogal	∞	∞	∞	∞	∞	∞	∞
32 mm Thermogal	∞	∞	∞	∞	∞	∞	∞

* El signo infinito (∞) representa dos lados apoyados o carga de viento negativa.

Las tablas dan la distancia permitida entre costaneras (m) para láminas de 1200 mm de ancho, la desviación máxima es del 5% del ancho de la lámina (60mm).

Lámina	Carga						
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²	200 kg/m ²
6 mm Estándar	1.1	1.0	0.9	0.8	x	x	x
8 mm Estándar	1.7	1.3	1.1	1.0	0.9	0.8	0.7
10 mm Estándar	1.9	1.7	1.6	1.5	1.4	1.3	1.2
10 mm Titan Sky	2.0	1.8	1.7	1.6	1.5	1.4	1.3
16 mm Estándar	2.3	2.0	1.8	1.7	1.6	1.5	1.4
16 mm Selectogal	2.7	2.6	2.1	1.9	1.7	1.6	1.2
16 mm Titan Sky	2.8	2.7	2.2	2.0	1.8	1.7	1.6
25 mm Thermogal	∞	∞	2.3	2.1	1.9	1.8	1.7
32 mm Thermogal	∞	∞	2.8	2.4	2.1	2.0	1.9

* El signo infinito (∞) representa dos lados apoyados o carga de viento negativa.

Para estructura curvada:

Las tablas dan el ancho permitido de acuerdo al tipo de lámina, carga de viento y radio de curvatura.

Ancho máximo permitido para lámina estándar de 6 mm

Radio (m)	Carga					
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²
1.05	2.1	1.8	1.6	1.35	1.2	1.1
1.2	1.9	1.5	1.3	1.2	1.05	0.9
1.5	1.4	1.2	1.05	0.9	0.8	0.75
1.8	1.2	1.05	0.85	0.75	0.7	0.6
2	1.05	0.9	0.8	0.7	0.6	x
2.5	0.85	0.7	0.6	x	x	x

Ancho máximo permitido para lámina estándar de 8 mm

Radio (m)	Carga					
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²
1.4	2.1	2.1	1.7	1.5	1.4	1.2
1.8	1.8	1.5	1.3	1.2	1.05	0.9
2.2	1.5	1.2	1.05	1.05	0.9	0.8
2.6	1.2	1.05	0.9	0.8	0.7	0.7
3	1.05	0.9	0.8	0.7	0.7	0.6

Ancho máximo permitido para lámina estándar de 10 mm

Radio (m)	Carga					
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²
1.75	2.1	2.1	1.9	1.7	1.5	1.4
2	2.1	1.8	1.6	1.4	1.3	1.2
2.2	2.1	1.7	1.4	1.3	1.2	1.1
2.5	1.7	1.5	1.3	1.2	1.05	1.05
3	1.5	1.2	1.1	1.05	0.9	0.85
4	1.2	1.05	0.9	0.8	0.8	0.7

Ancho máximo permitido para lámina estándar de 16 mm

Radio (m)	Carga					
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²
2.8 - 3.1	2.1	2.1	2.1	2.1	2.1	2.1
3.1 - 3.5	2.1	2.1	2.1	2.1	1.9	1.9
4	2.1	2.1	2.1	1.9	1.7	1.5
5	2.1	1.9	1.7	1.5	1.4	1.4

Ancho máximo permitido para lámina Titan Sky de 16 mm

Radio (m)	Carga					
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²
2.8 - 3.6	2.1	2.1	2.1	2.1	2.1	2.1
3.8 - 4.5	2.1	2.1	2.1	2.1	1.9	1.8
4.5 - 5	2.1	2.1	1.9	1.7	1.6	1.5
5.5 - 8	1.8	1.6	1.4	1.3	1.2	1.1
2.8 - 3.6	2.1	2.1	2.1	2.1	2.1	2.1
3.8 - 4.5	2.1	2.1	2.1	2.1	1.9	1.8

Ancho máximo permitido para lámina Thermogal de 25 mm

Radio (m)	Carga					
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²
4.4 - 5.5	2.1	2.1	2.1	2.1	2.1	2.1
6 - 7	2.1	2.1	2.1	2.1	1.8	1.8
9	2.1	2.1	1.9	1.7	1.6	1.6
11	2.1	1.9	1.7	1.5	1.5	1.4

Ancho máximo permitido para lámina Thermogal de 32 mm

Radio (m)	Carga					
	80 kg/m ²	100 kg/m ²	120 kg/m ²	140 kg/m ²	160 kg/m ²	180 kg/m ²
5.6	2.1	2.1	2.1	2.1	1.9	1.8
6	2.1	2.1	2.1	1.9	1.8	1.6
6.5	2.1	2.1	2.0	1.8	1.6	1.5
7	2.1	2.0	1.9	1.7	1.6	1.5
7.5	2.1	2.0	1.7	1.6	1.5	1.4
10	1.9	1.7	1.5	1.4	1.3	1.2

Apéndice 2: Instrucciones de Instalación

Planificación de la Estructura de apoyo.

- Instale las láminas con los alvéolos paralelos al flujo de la lluvia y con una pendiente de al menos 10 °. En muros y aplicaciones a dos aguas siempre asegúrese que los alvéolos estén posicionados verticalmente.
- Vigas de soporte deben tener al menos 30 mm de ancho para asegurar un buen anclaje de las láminas y accesorios de fijación.
- En caso de una estructura curva, verificar el radio de curvatura en frío más pequeño permitido de acuerdo al espesor de las láminas
- Asegúrese que un profesional calificado verifique y apruebe la estructura antes de la ejecución

Preparación de la estructura de apoyo

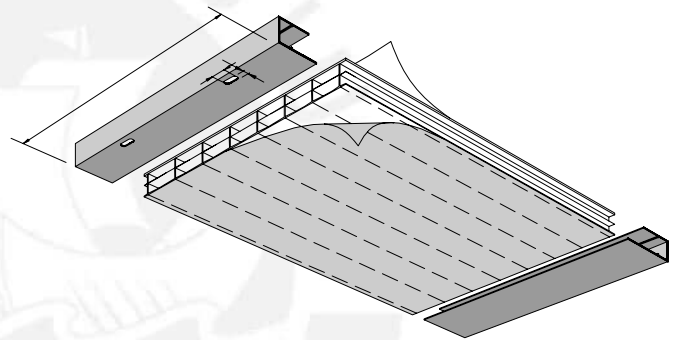
- Complete toda la estructura metálica y pintura antes de comenzar el trabajo de instalación de las láminas.
- Verifique las medidas en terreno y planifique los requerimientos del techo antes de ordenar los productos Polygal para el proyecto.

Preparación de las láminas

- Remueva el film protector gris.
- Despliegue y doble hacia atrás el film protector impreso 10 cm por cada lado.
- Pegue la cinta de remate perforada en el borde inferior de la lámina y la cinta de remate sellada en el borde superior.

Preparación de los perfiles de remate de la lámina

- Use un perfil de remate de aluminio para proteger el borde inferior de la lámina. Para los bordes superiores se pueden usar perfiles de remate de policarbonato.
- Use una sierra para metales para cortar el perfil de aluminio en piezas del mismo tamaño del ancho de la lámina al cual será adosada.
- Perfore canales de drenaje en los perfiles de remate usados en la sección inferior del techo del edificio para permitir el flujo de agua condensada a lo largo de los perfiles.
- Adose el perfil de remate a la lámina con el lado corto en la pared superior de la lámina.



Instalación de las Láminas

Paso 1 – Coloque la lámina con el film protector impreso hacia arriba

Paso 2 – Deslice la base del perfil conector por debajo de la lámina y use tornillos autoperforantes para anclaje a la estructura

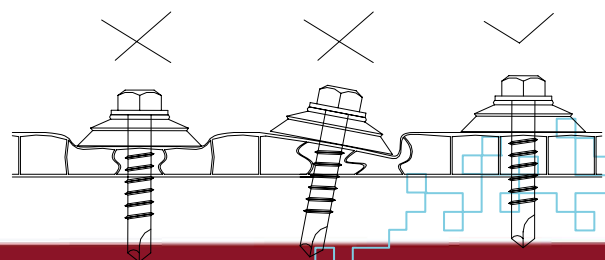
Paso 3 – Coloque la tapa en su lugar, ayudándose un soporte amortiguador de choques debajo de la base, utilice un mazo de goma para conectar éste a la base. Para los perfiles de aluminio, fijar el perfil tapa al perfil base con correctos tornillos (ver Catálogo de Accesorios Polygal).

Paso 4 – Continúe agregando láminas y perfiles hasta alcanzar el borde del edificio. Después de completada la instalación, remueva todo el film protector de las láminas.

Terminaciones y refuerzos de fijación

- Coloque los tornillos de fijación con las empaquetaduras de fijación sólo en la línea de apoyo de la estructura.
- No apretar demasiado los tornillos.

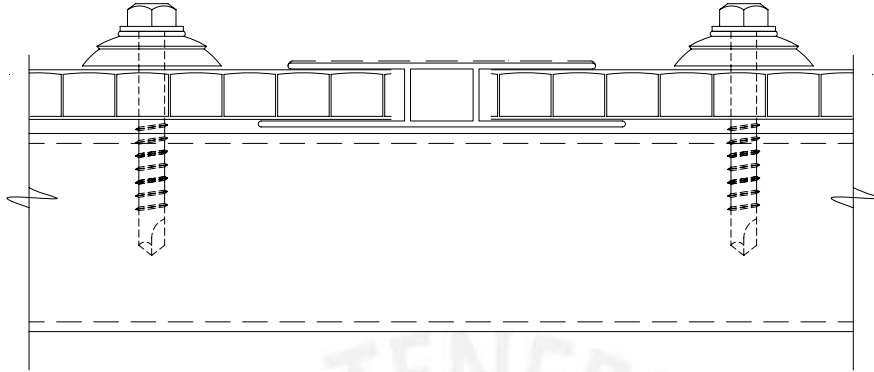
Para mejores resultados use tornillos y accesorios Polygal, diseñados especialmente para el uso de las láminas Polygal.



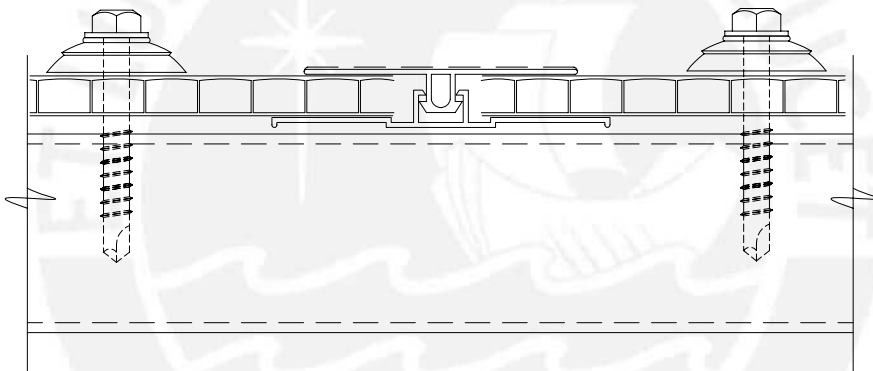
Apéndice 3: Sistema de Conexión

Perfiles de conexión de policarbonato

Conector HP – conexión para láminas de 4 a 16 mm. Para estructuras verticales livianas (revestimiento)

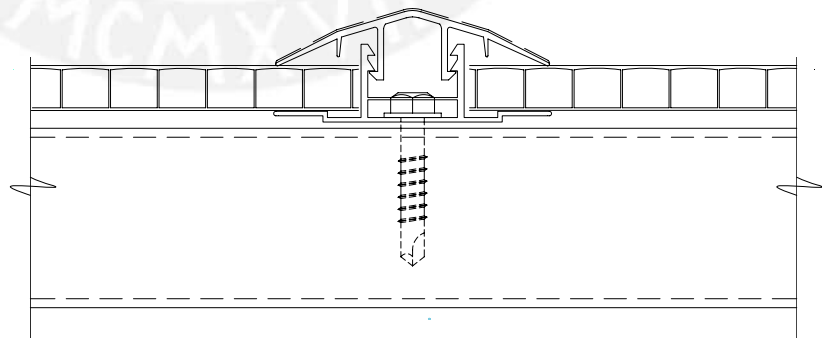


Perfil SP - conexión para láminas de 6 a 10 mm. Estructuras livianas, aplicaciones de agricultura, DIY.

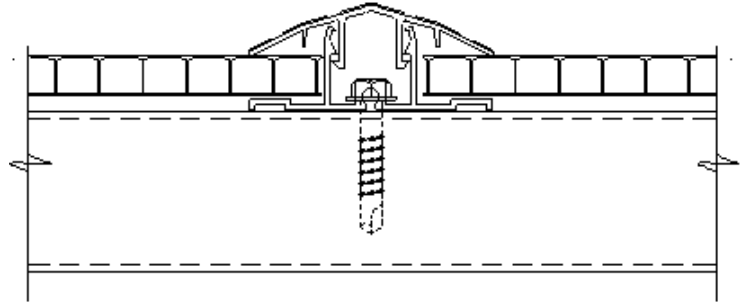


Perfil HCP – conexión para láminas de 6 a 16 mm. Perfil tapa de policarbonato y perfil base de aluminio o policarbonato. Para una amplia gama de proyectos de arquitectura

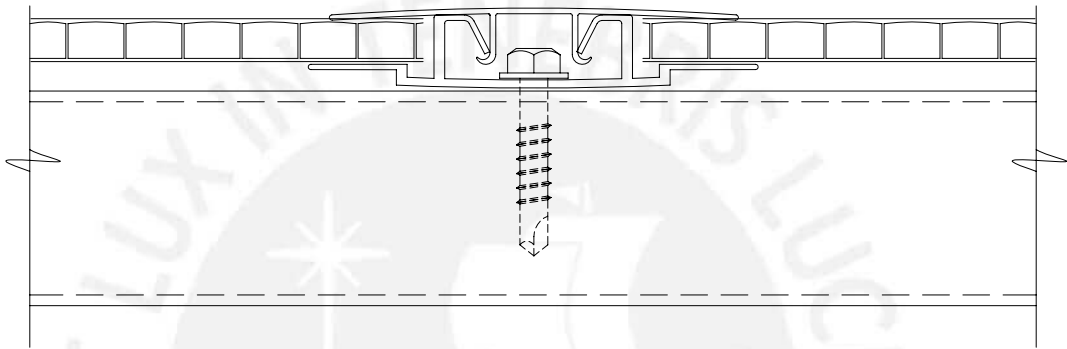
HCP con perfil base de policarbonato



HCP con perfil base de aluminio

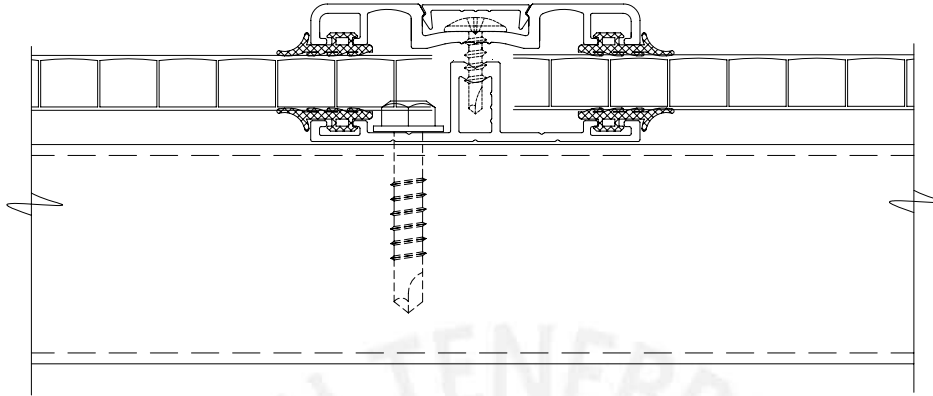


Perfil Easy Clip (ECP)– conexión para láminas de 8 a 10 mm. Para una amplia gama de proyectos de arquitectura.

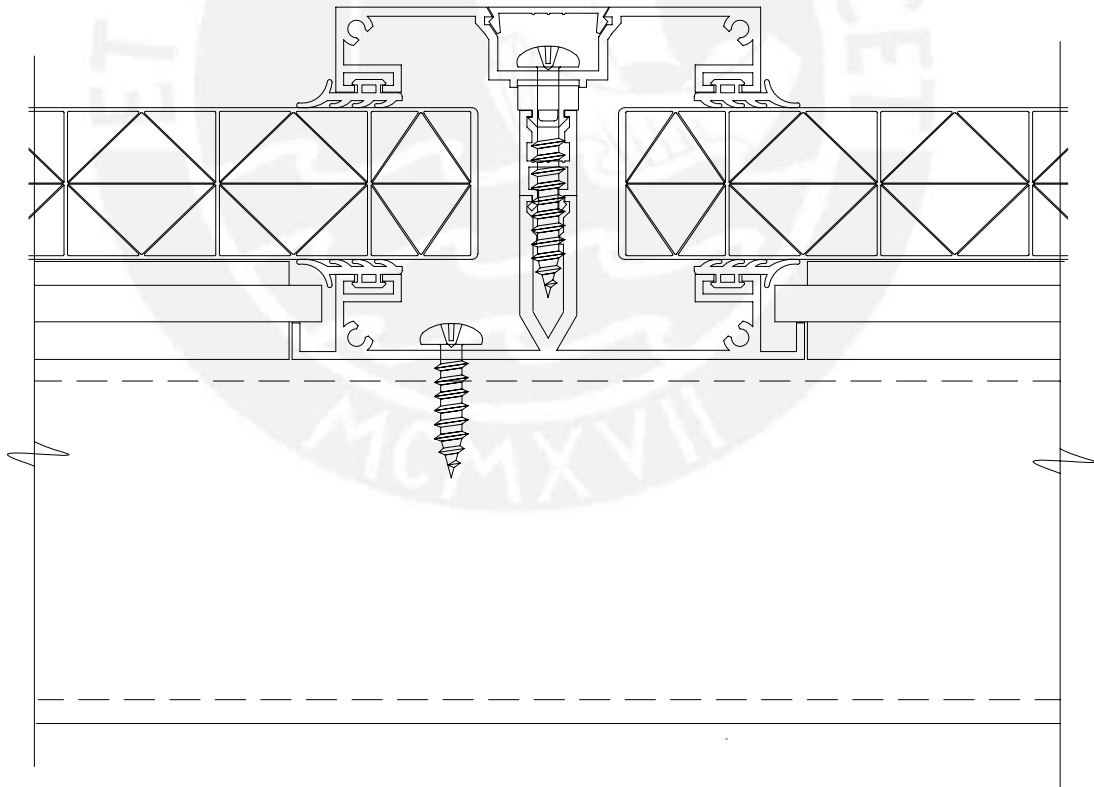


Sistema de conexión de Aluminio

Sistema Mega Lock (MGL)– especialmente diseñado para el uso de láminas de policarbonato entre 6 y 16 mm. El sistema tiene una ranura de 20 mm, que mejora sus propiedades de fijación y previene fallas debido a cargas de viento y nieve o expansión térmica. Es utilizable en una amplia gama de proyectos de arquitectura.



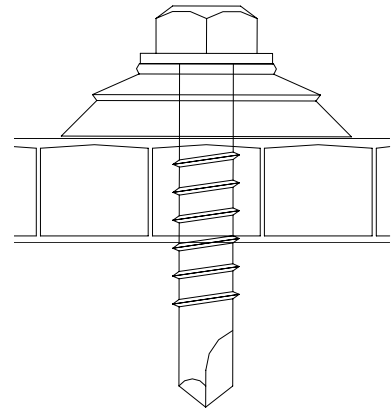
Sistema de Aluminio 6-36 - sistema de sujeción de gran envergadura, especialmente desarrollado para aplicaciones para la instalación de láminas alveolares entre 25 y 35 mm. La láminas ya sean transparentes o semi transparentes, se sujetan con estos perfiles a las vigas que soportan el peso del techo. El sistema con esta gran ranura (30 mm traslapada), permite una fijación de lámina más sencilla y ayuda a prevenir fallas debido a cargas de viento y nieve o expansión térmica. Es utilizable en una amplia gama de proyectos de arquitectura.



Accesorios de terminación

EPDM + INOX Domo de fijación

El domo de EPDM junto a la arandela de metal y a los tornillos autoperforantes, proporcionan un excelente comportamiento, libre de problemas en el sistema de fijación, con una alta efectividad de doble sellado entre la empaquetadura de EPDM y los tornillos y entre la cabeza del tornillo y la arandela de metal. Se recomienda encarecidamente utilizar tornillos autoperforantes, especialmente protegidos para la corrosión.



Cintas de sellado

Cinta AntiDUST es una cinta no-tejida usada en los bordes superior e inferior de las láminas alveolares de policarbonato y en láminas de acrílico.

Cinta AntiDUST está específicamente diseñada para evitar la acumulación de moho, algas y polvo en el interior de los alvéolos de las láminas.

Ventajas de la cinta AntiDUST sobre otros productos:

- Fácil aplicación
- Adecuado drenaje de condensación
- Mantiene la claridad de las laminas alveolares
- Fabricación extra durable y cinta de materiales de larga vida.

Cinta AntiDUST está hecha de material no tejido, el cuál es diseñado para adaptarse sin dificultad a la expansión y contracción de las láminas alveolares.

Perfiles de borde U

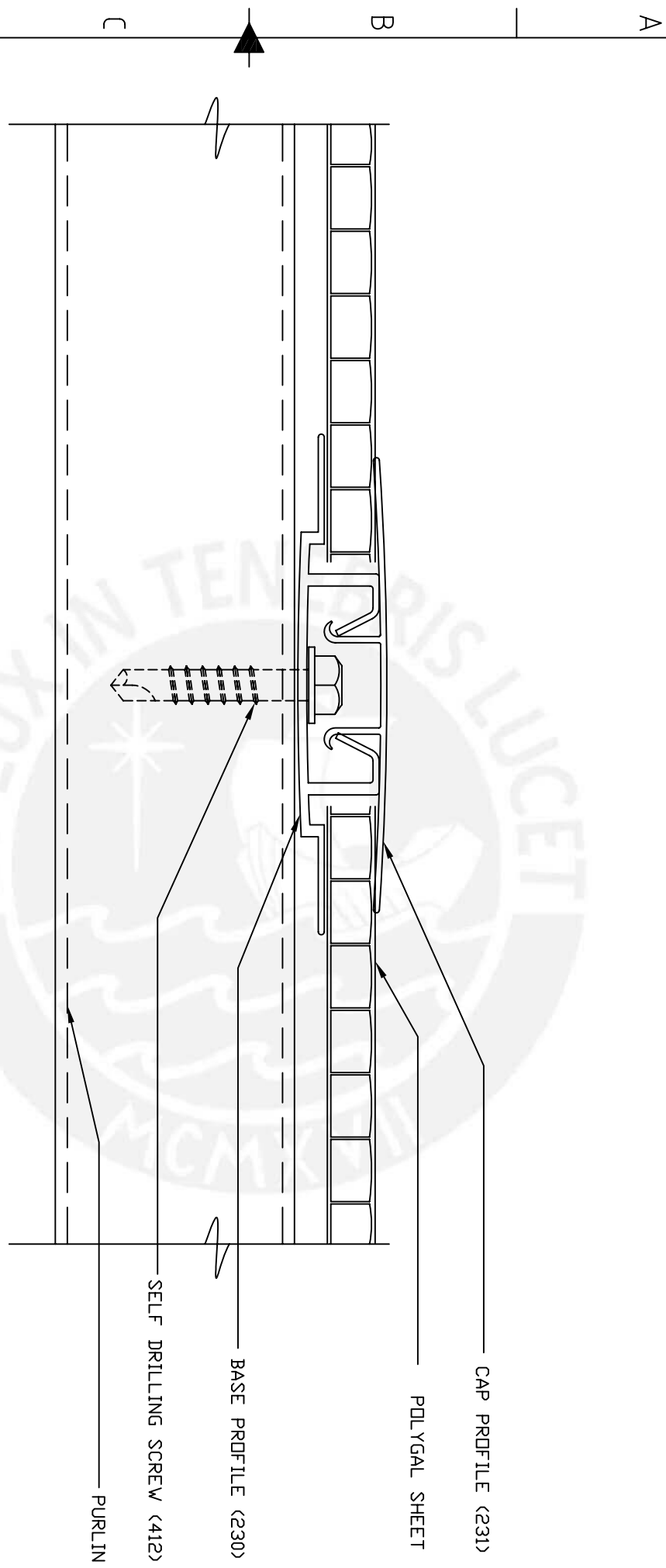
En los bordes superior e inferior de la lámina se deben usar perfiles de borde U, de aluminio o policarbonato. (Ver detalles en Apéndice 4)

Apéndice 4: Detalles de dibujos

- 1 Perfiles de conexión de policarbonato (detalles de conexión ECP)
- 2 Sistema de conexión de Aluminio (detalles de conexión MGL)
- 3 Conexión a la pared de costado (ECP profiles)
- 4 Conexión en el borde superior de la pared
- 5 Conexión en el borde superior del revestimiento
- 6 Conexión en el borde inferior de la canal de agua
- 7 Conexión en el borde inferior del revestimiento
- 8 Caballete de conexión

CONNECTION DETAIL

ECP POLYCARBONATE CONNECTION SYSTEM



POLYCAL[®]
PLASTICS INDUSTRIES LTD.

POLYCAL TECH. SUPPORT DEPT. – FOR REVIEW ONLY

DRAWING NUMBER

TITLE

POLYCAL II Tel: 972-4-5555-2222 Fax: 972-4-5555-3333 E-mail: techsupport@polycal.com

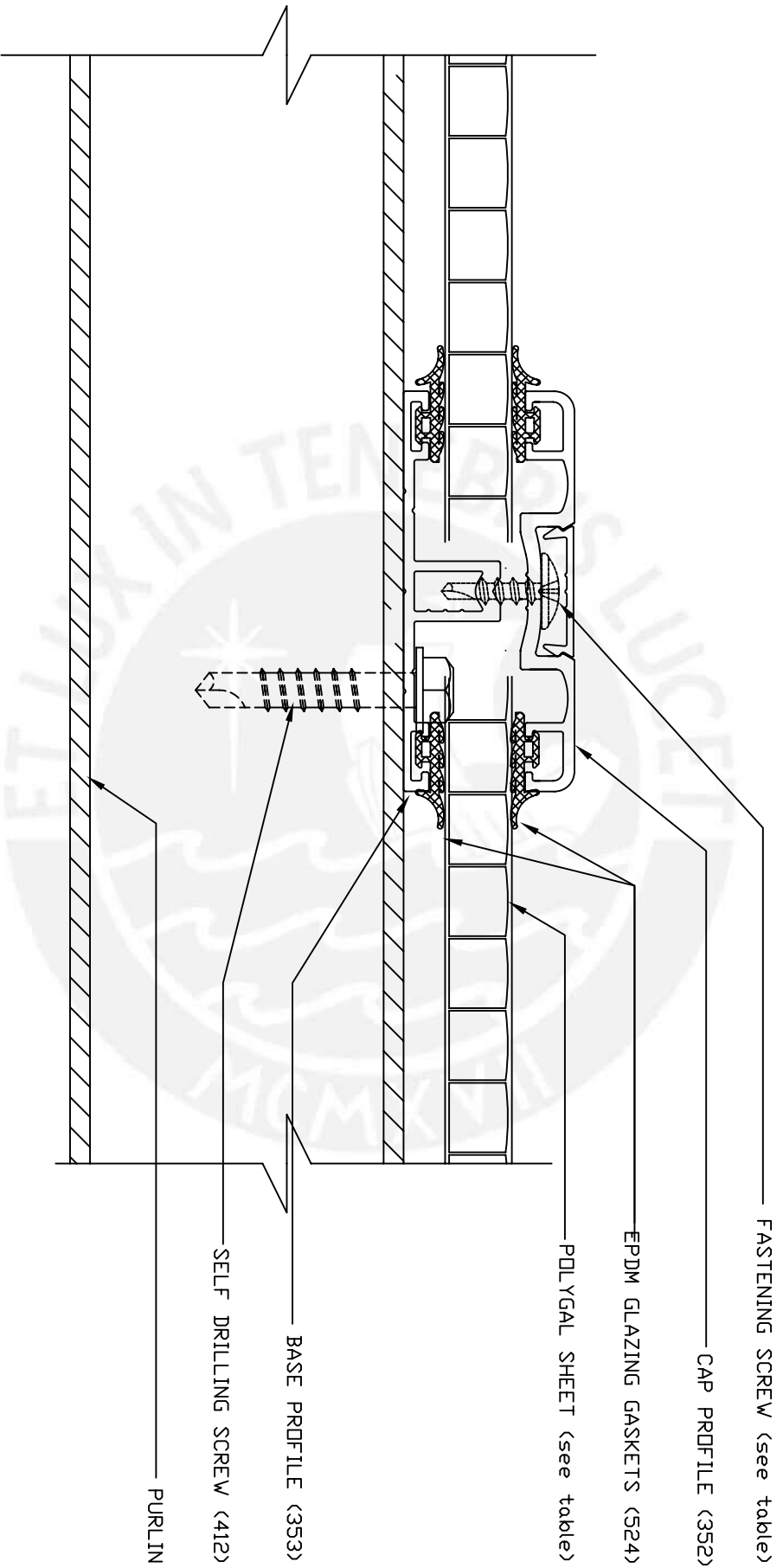
SCALE 1:1

EDITION

DATE

CONNECTION DETAIL

Mega Lock ALUMINIUM GLAZING SYSTEM



ACCESSORIES TABLE

SHEET THICKNESS	SCREW #
8 mm (5/16")	431
10 mm (3/8")	431
16 mm (5/8")	430

POLYGAL[®]

PLASTICS INDUSTRIES LTD.

POLYGAL TECH. SUPPORT DEPT. - FOR REVIEW ONLY

DRAWING NUMBER

TITLE

POLYGAL II Tel: 972-4-555-222 Fax: 972-4-555322 E-mail: techsupport@polygal.com

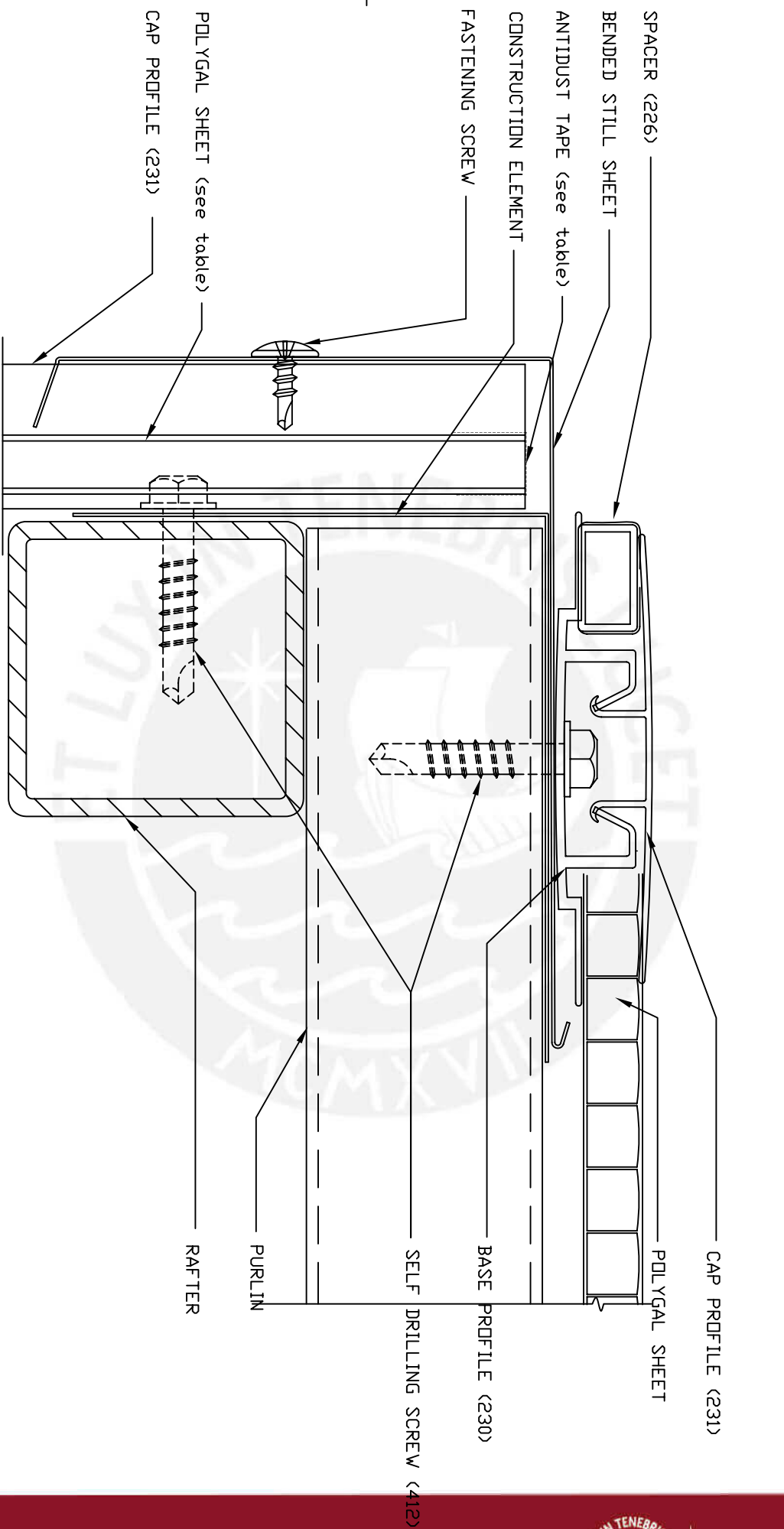
SCALE 1:1

EDITION

DATE

SECTION 3a - SIDE DETAIL

ECP CONNECTING SYSTEM



ACCESSORIES TABLE

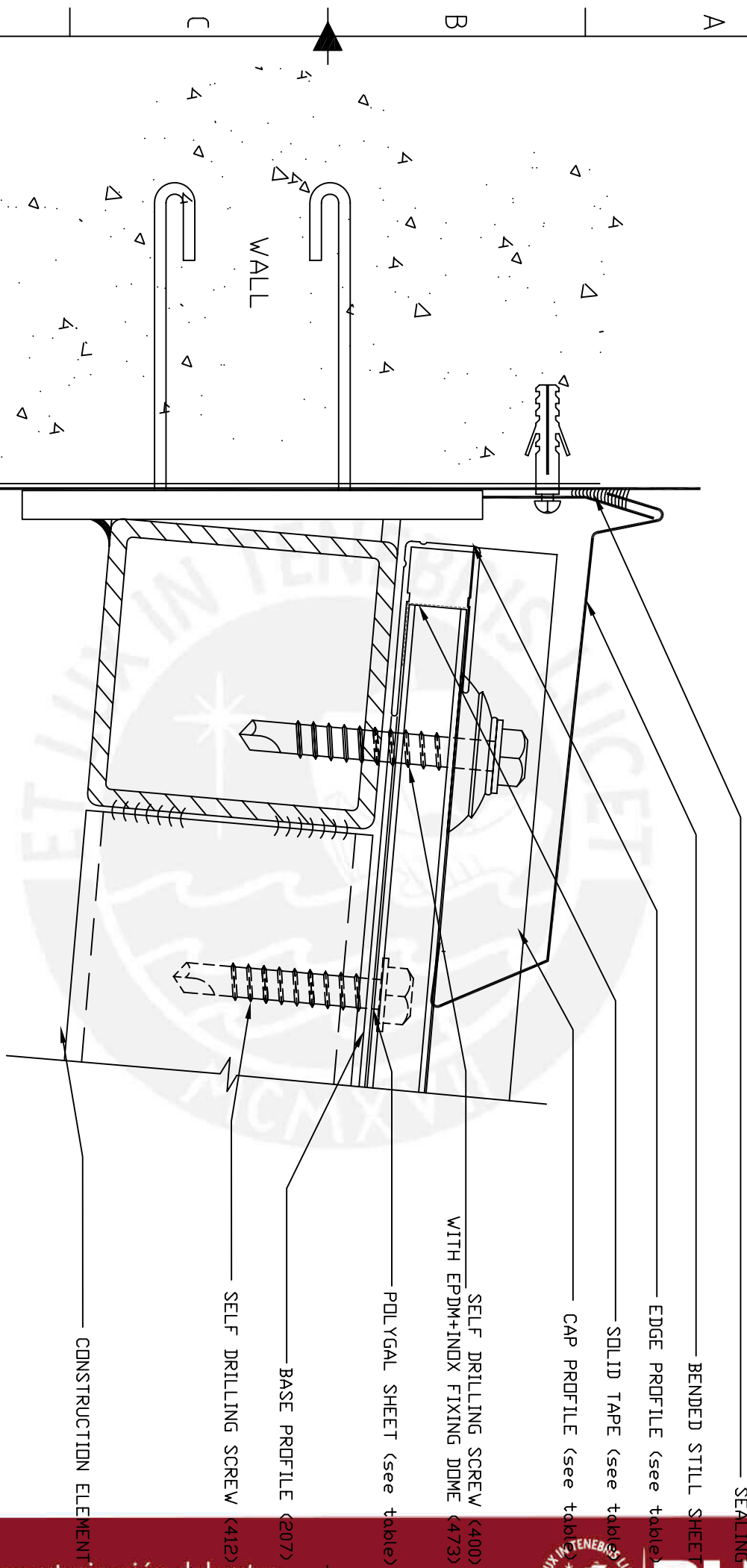
SHEET THICKNESS	ANTIDUST TAPE#
8 mm (5/16")	512
10 mm (3/8")	513
16 mm (5/8")	513

POLY GAL [®]		POLY GAL TECH. SUPPORT DEPT. - FOR REVIEW ONLY	
PLASTICS INDUSTRIES LTD.		DRAWING NUMBER	TITLE
POLY GAL II tel: 972-4-555-222 fax: 972-4-555322 e-mail: techsupport@polygal.com		SCALE 1:1	EDITION
		5	DATE



SECTION 4A - TOP DETAIL (WALL CONNECTION)

HCP CONNECTION SYSTEM



ACCESSORIES TABLE 4

SOLID TAPE#	EDGE PROFILE#	SHEET THICKNESS
512	311	8 mm (5/16")
513	312	10 mm (3/8")
513	313	16 mm (5/8")

POLYGAL
PLASTICS INDUSTRIES LTD.

POLYGAL TECH. SUPPORT DEPT. - FOR REVIEW ONLY

DRAWING NUMBER: _____ TITLE: _____

SCALE 1:1

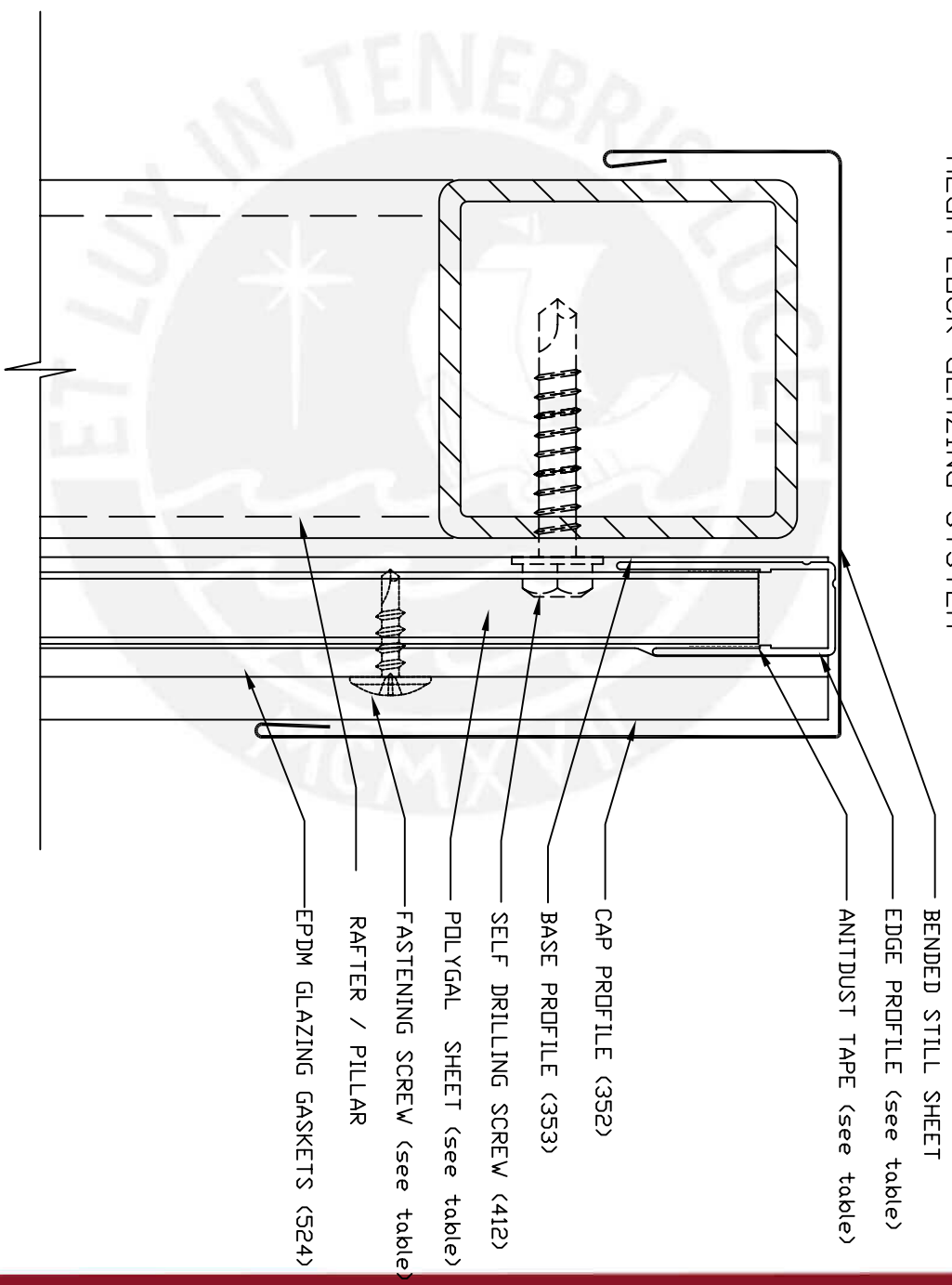
EDITION: _____ DATE: _____

POLYGAL IL | tel: 972-4-555-222 | fax: 972-4-555332 | e-mail: techsupport@polygal.com



TOP CONNECTION DETAIL

MEGA LOCK GLAZING SYSTEM



- BANDED STILL SHEET
- EDGE PROFILE (see table)
- ANITDUST TAPE (see table)
- CAP PROFILE (352)
- BASE PROFILE (353)
- SELF DRILLING SCREW (412)
- POLYGLAL SHEET (see table)
- FASTENING SCREW (see table)
- RAFTER / PILLAR
- EPDM GLAZING GASKETS (524)

ACCESSORIES TABLE

SHEET THICKNESS	EDGE PROFILE#	SCREW#	ANTIDUST TAPE
8 mm (5/16")	311	431	508
10 mm (3/8")	312	431	509
16 mm (5/8")	313	430	509

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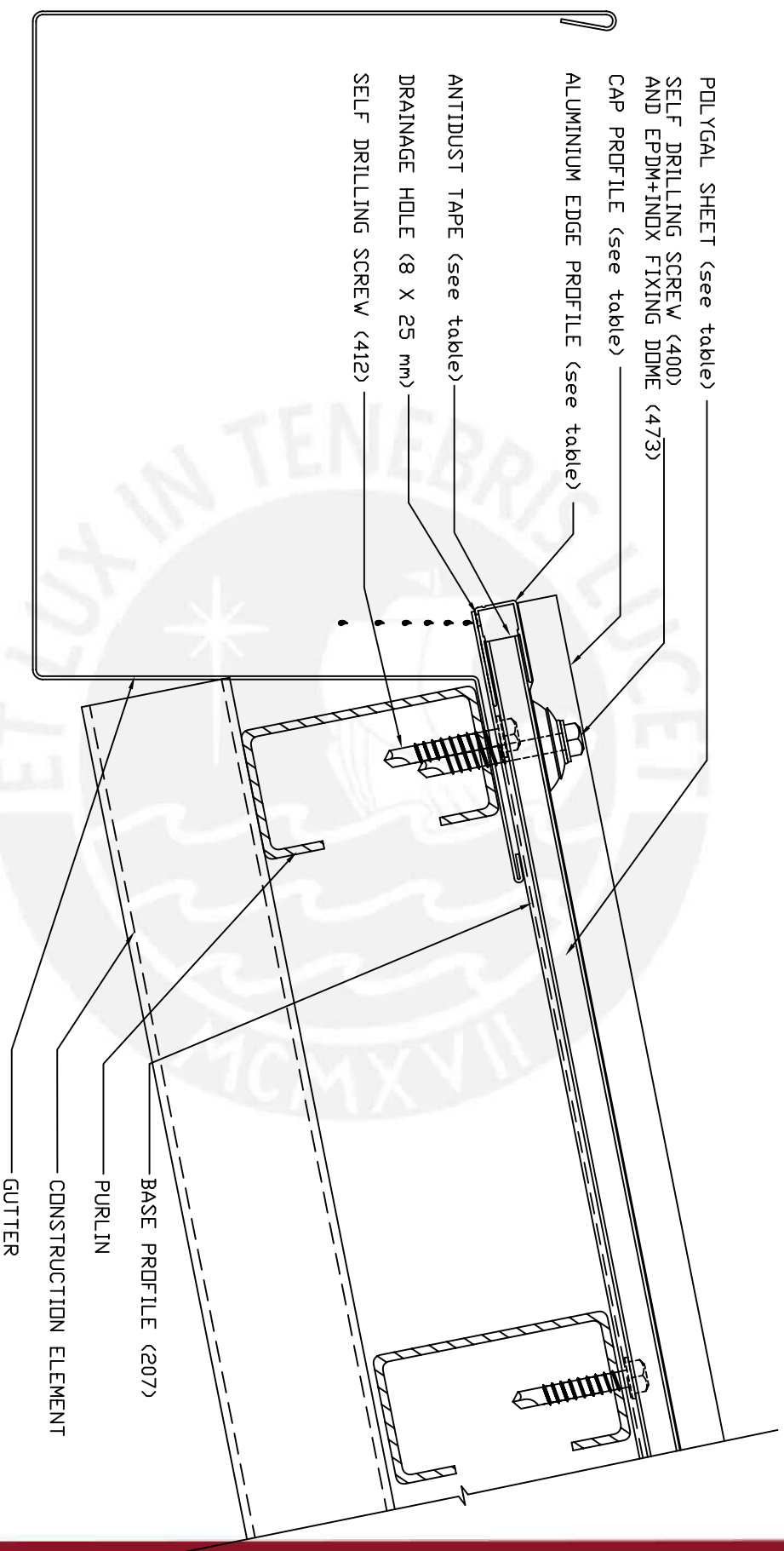
SCALE 1:1

EDITION

DATE

SECTION 2b - EDGE DETAIL

HCP POLYCARBONATE CONNECTION SYSTEM



ACCESSORIES TABLE

SHEET THICKNESS	CAP PROFILE#	EDGE PROFILE#	ANTI-DUST TAPE
8 mm (5/16")	210	311	508
10 mm (3/8")	210	312	509
16 mm (5/8")	211	313	509

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SCALE 1:1

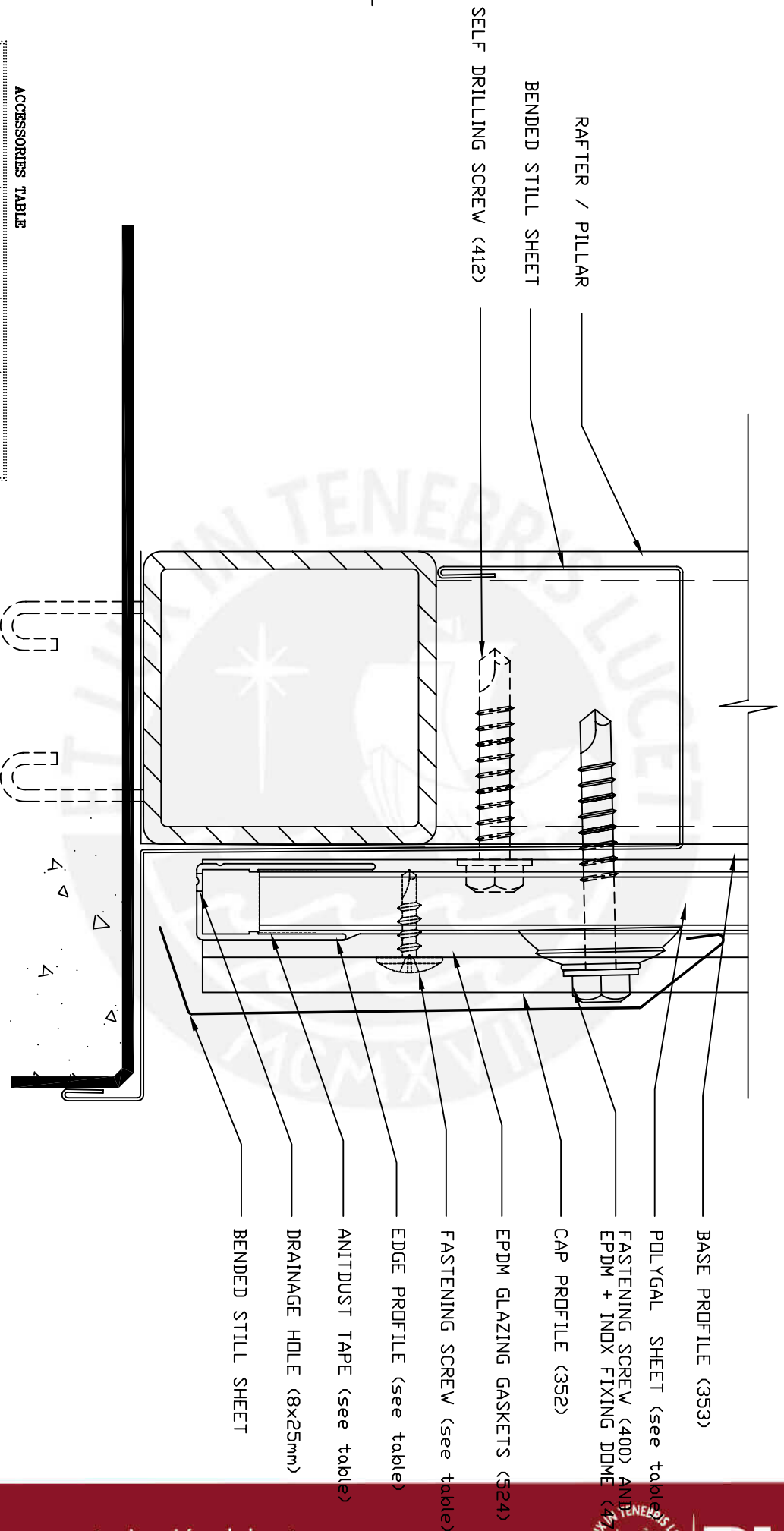
EDITION

DATE



SILL CONNECTION DETAIL

MEGA LOCK GLAZING SYSTEM



ACCESSORIES TABLE

SHEET THICKNESS	EDGE PROFILE#	SCREW#	ANTIDUST TAPE
8 mm (5/16")	311	431	508
10 mm (3/8")	312	431	509
16 mm (5/8")	313	430	509

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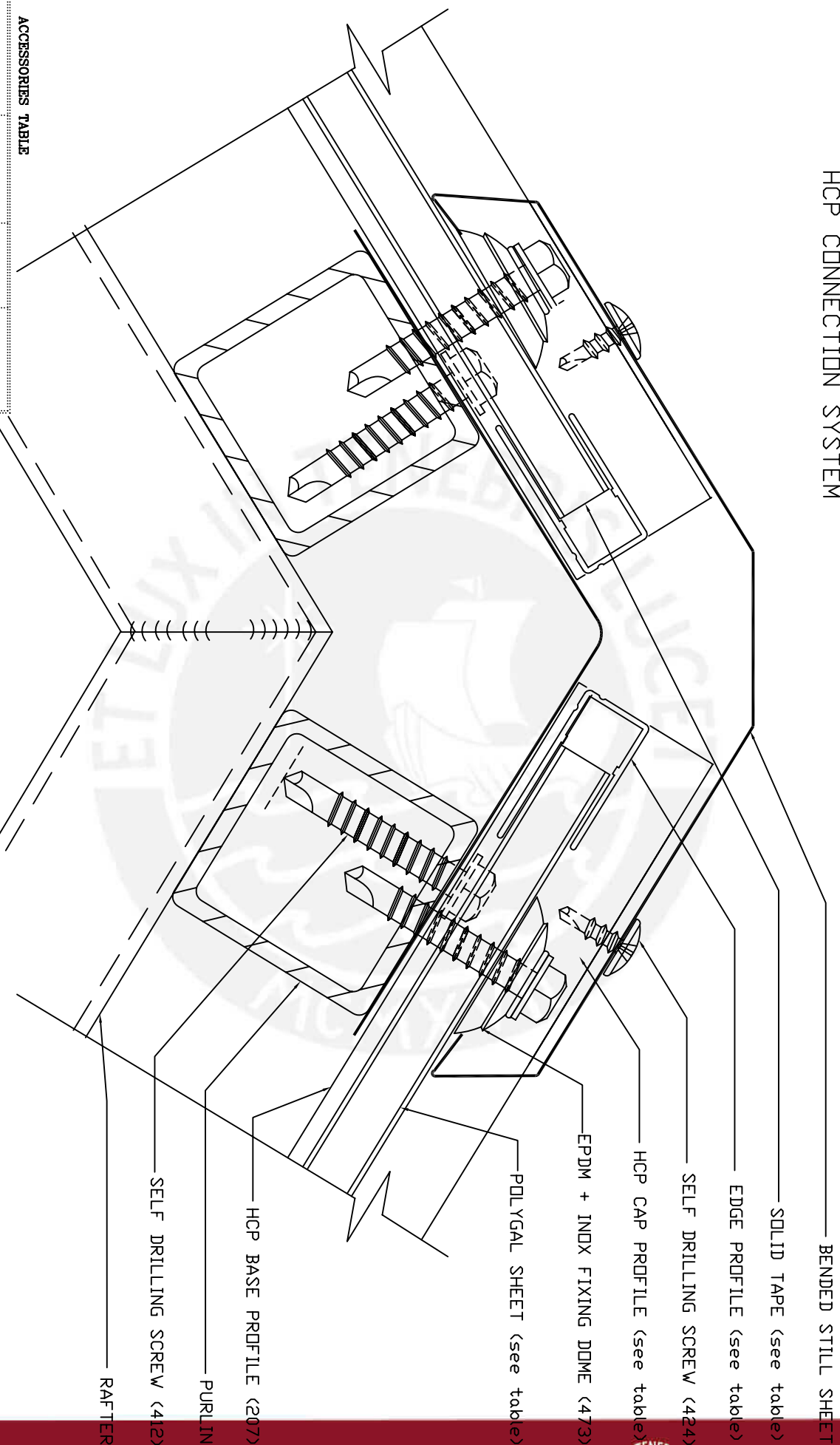
SCALE 1:1

EDITION

DATE

RIDGE CONNECTION DETAIL (6-b)

HCP CONNECTION SYSTEM



ACCESSORIES TABLE

SHEET THICKNESS	EDGE PROFILE#	CAP PROFILE#	SOLID TAPE
8 mm (5/16")	311	210	512
10 mm (3/8")	312	210	513
16 mm (5/8")	313	211	513

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SCALE 1:1

EDITION

DATE

SELF DRILLING SCREW (412)

RAFTER

HCP BASE PROFILE (207)

PURLIN

POLYGAL SHEET (see table)

EPDM + INOX FIXING DOME (473)

HCP CAP PROFILE (see table)

SELF DRILLING SCREW (424)

EDGE PROFILE (see table)

SOLID TAPE (see table)

BENDED STILL SHEET