HCP
HC PHOTONICS CORP.

Operation Manual

Temperature Controller & Crystal Oven

Temperature controller

Model :   TC-038D

Voltage :   24VDC

Crystal oven

Model :   OV30D / OV50D

Customer Service

www.hcphotonics.com

service@hcphotonics.com

Tel: +886 3 6662123

Fax: +886 3 6662124

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1.1 TC-038D general specification

1. PID control
2. Auto tuning and programmable
3. Input voltage: 24 VDC
4. Temperature tuning range: Ambient temperature to 200℃
5. Tuning tuning resolution: 0.1℃
6. Ambient operation temperature: 0 to 55℃
7. Transportation and storage environment: -20 to 70℃
8. Maximum power consumption: 60W
9. Communication Interface: USB
10. Controller dimension: 150(L) x 90(W) x 65(H) mm^3
11. Accessories: Crystal oven, connection cables and power supply

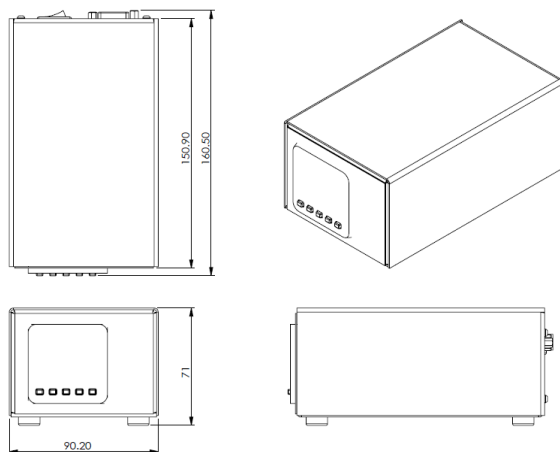Fig. 1.1.1 TC-038D controller and accessories

Fig 1.1.2 Mechanical drawing of the TC-038D (Unit : mm)

1.2 Front / rear panel introduction

Fig. 1.2.1 The front panel of TC-038D controller, the function of A to G has been listedbelow

	Name	Function
A	PV display	Indicates PV (measured temperature) or function codes
B	SV display	Indicates SV (target set temperature) or function values
C	Data change key	Press to increase the parameter value on SV. Holding down the key will gradually increase change speed.
D	Data change key	Press to decrease the parameter value on SV. Holding down the key will gradually increase change speed.
E	Shift key	Press to shift the digits left on SV.
F	Mode key	Press to change the content on display of PV.
G	Level key	Press to change the levels (Initial setting level, operation level, adjustment level) on PV. Setting -> operation: Hold for >1s Operation -> Setting: Hold for >3s Operation -> Adjustment: Press for <1s

Fig. 1.2.2 The rear panel of the TC-038D controller, the function of H to K has been listed below.

	Name	Function
H	Pin assignment	Connection port to crystal oven
I	Power switch	ON/OFF power switch
J	Port	Connection port to PC
K	Port	Connection port to power supply

1.3 System setup

1. Connect the power supply to the temperature controller (Function K).

2. Connect the crystal oven to the temperature controller (Function H).

3. Open the power switch (Function I)

4. Set the target temperature (Function C/D)

5. Wait till the temperature stabilized

1.4 Parameters setting

Warning: All parameters are preset before shipment and not recommended to change. Some important parameters are listed below for reference when needed.

Level	Name	Function	Description
Setting	$\bar{\iota}N$-t	Sensor input type	Setting the type and the range for the input sensor, value 1 for PT100 sensor with -199~500 deg. C range.
Setting	$5L$-H	Set point upper limit	Setting the set point upper bound for the current operation.
Setting	$5L$-L	Set point lower limit	Setting the set point lower bound for the current operation.
Adjustment	$[MWt$	Communications	ON/OFF: Communication enabled / disabled
Adjustment	Rt	PID auto tuning	Press the switch key and select Rt-2 to execute PID auto tuning, when the execution ends, it returns to off.

## 1.5 Error message

A quick reference for error message..

| Message	Name	Description
$5.ERR$	Sensor input error	Temperature sensing error or out of range, typically due to the OVEN has not been connected correctly or the sensor type has been set wrong.
$E333$	AD converter Error	Error from the internal circuit, if turning off/on the controller doesn't help, please send back for further investigation.
$E111$	Memory error	Error from the internal circuit, if turning off/on the controller doesn't help, please send back for further investigation.

2. Software

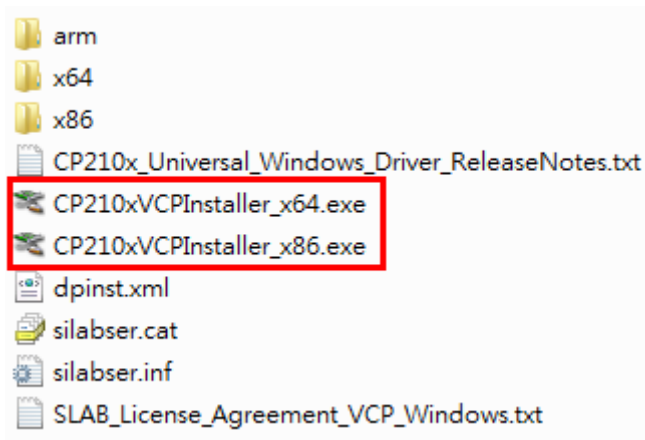## 2.1 Installation:

2.1.1 Install drivers

1. Enter the folder "1. Driver".
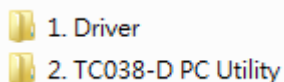
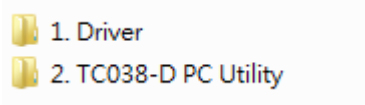2. Select and enter the folder according to your system OS.
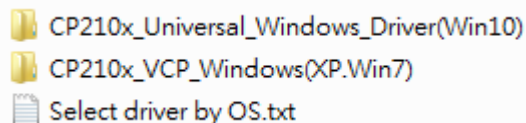
3. Select and install the driver according to your system type(x86 or x64). The system

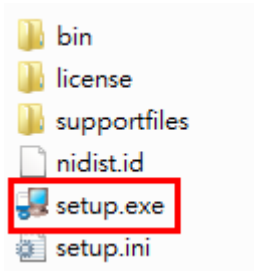type can be checked in computer -> properties.
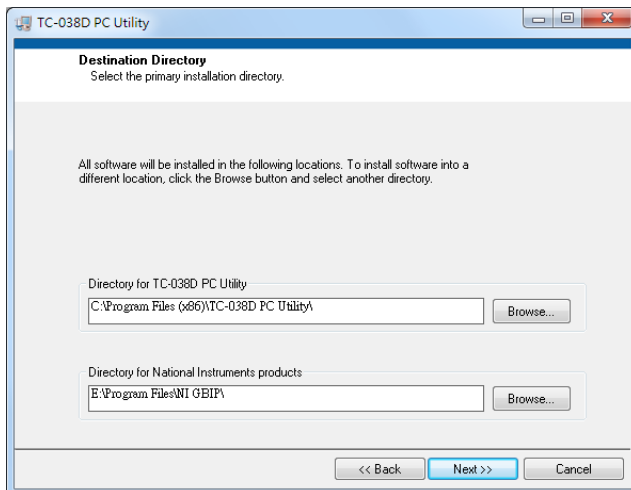
1.2 Install TC-038D PC utility
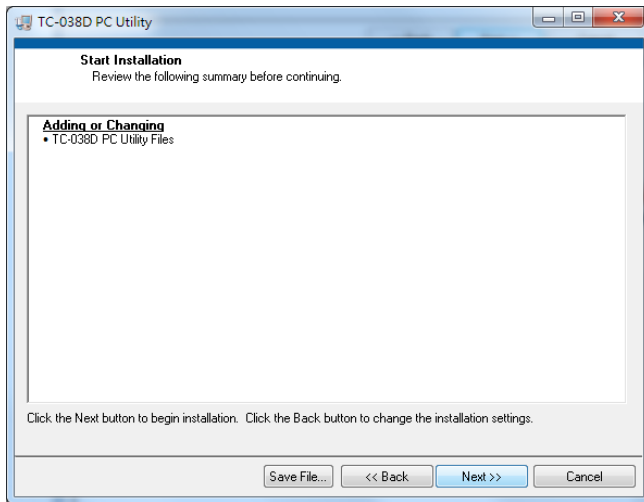
1. Enter the folder "2. TC-038D PC Utility".

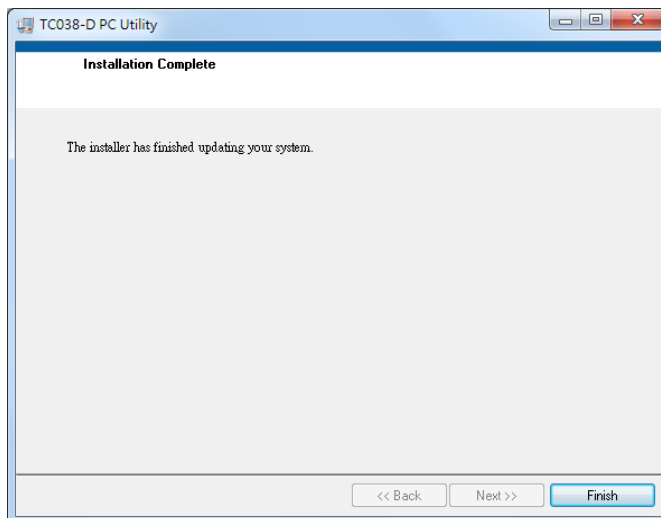2. Double click the "setup.exe".

3. Choose the installation folder and target. Then press "Next" button.

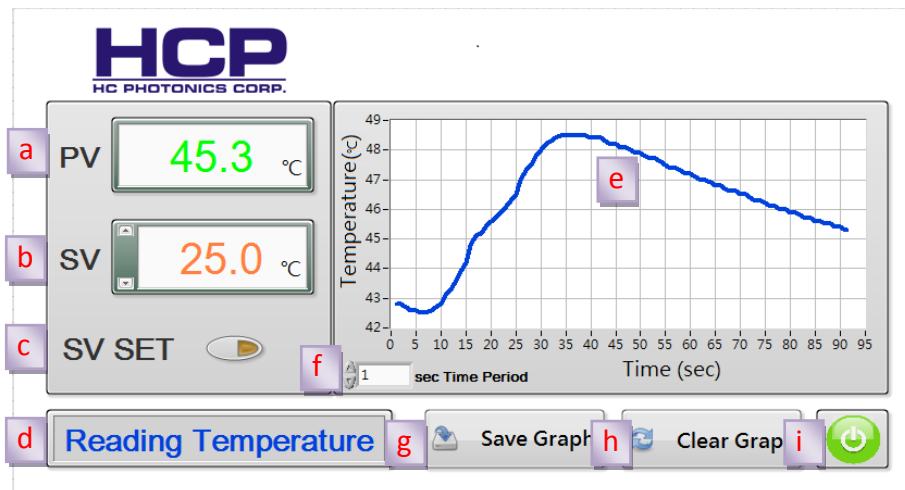4. Press "Next" button to start installation.

5. Press "Finish" button to finish the installation process.

2.2 Operation:

2.2.1 Program overview:

|	Name	Function
a	PV	Show the current temperature.
b	SV	Show the current set temperature.
c	SV Set	Set the temperature shown in SV.
d	Program status	Show the current program status.
e	PV graph	Temperature recording and displaying.
f	Time period	Set the PV reading period.
g	Save graph button	Export the graph data into excel format.
h	Clear graph button	Clear the graph.
i	End button	End the software.

2.2.2 Start to use:

1. Connect the **TC-038D** power cord and switch on power.

2. Connect the **TC-038D** USB cable to PC.
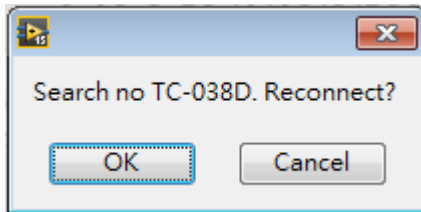
3. Run **TC-038D** on desktop.

4. The process of initialization will take few seconds.
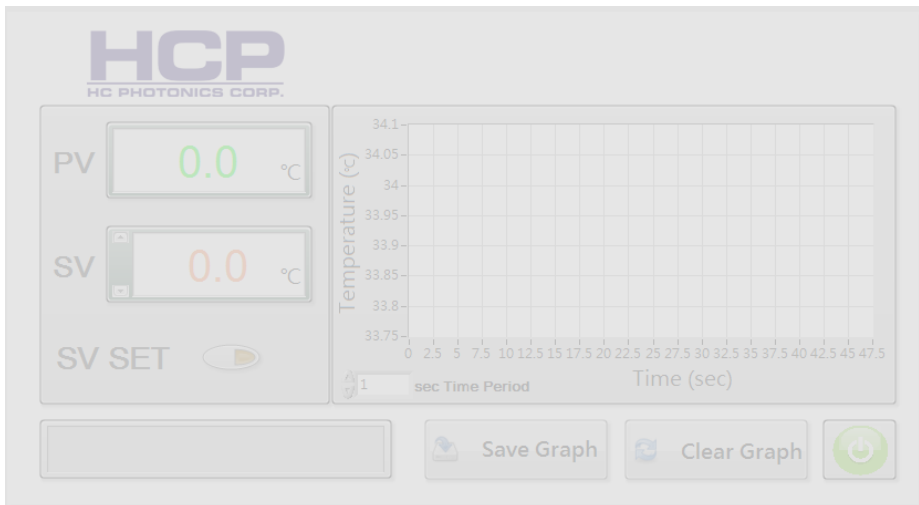
5. Begin to use.
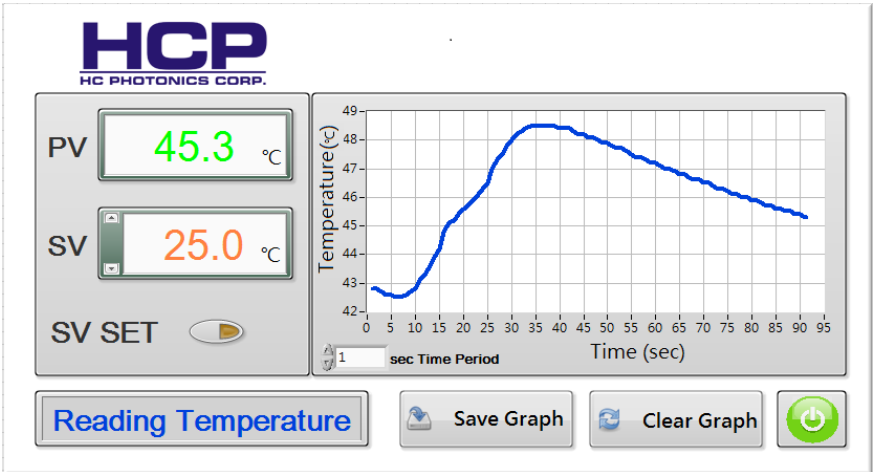
6. If the process of initialization has any issue, the error dialog will show on screen.
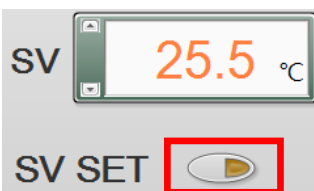   Please check the power and USB, then press "OK" button.

2.2.3 Temperature control:

1. Adjust the temperature set point in SV textbox. You can key in the set point or adjust by up and down arrow.
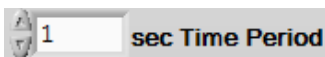

2. Set the temperature to the set point by pressing "SV SET" button.

2.2.4 Setting the PV reading period.

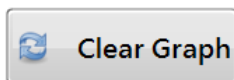Adjust the PV reading period by "Time Period" textbox.

2.2.5 Save data:

Press the "Save Graph" button, an excel window will be popped up that contains the graph data.

2.2.6 Clear graph:

Press the "Clear Graph" button, the figure will be cleaned.

3. Crystal oven

3.1 Overview:

The HCP OV-X0D oven is designed for temperature control by TC-038D controller, the general specification including the dimensions and drawings are shown below.

3.1.1 General specification

General specification	
Sensor	PT100
Material	Brass and Teflon
Available temperature range	Ambient temperature to 200℃
Temperature stability	±0.1 ℃
Power	24V / 40W
Storage temperature	-20 ~ 70 ℃
Over heating protection	~210℃

3.1.2 Dimension

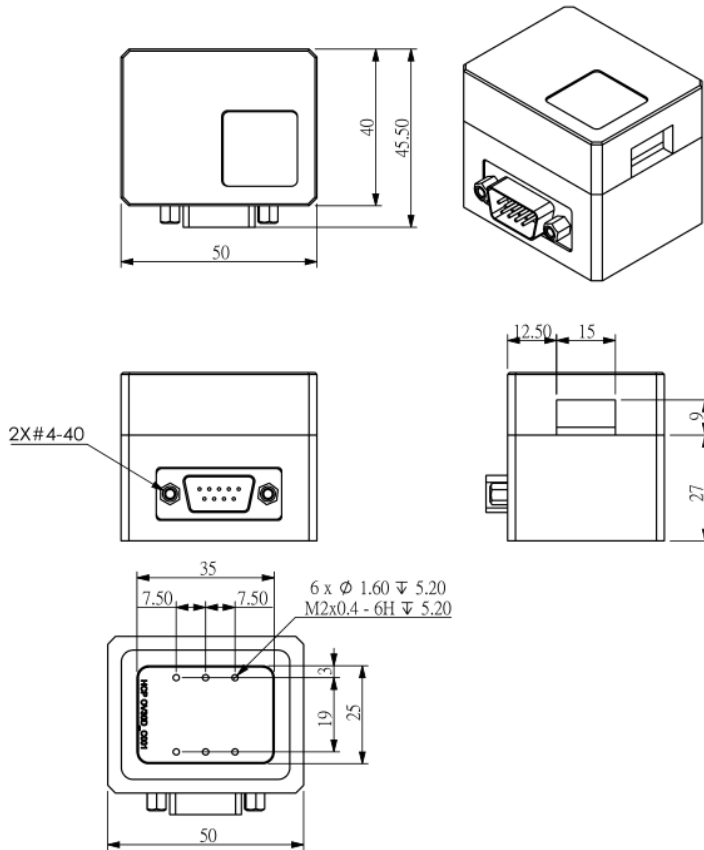|	OV-30D	OV-50D
Dimension-LxWxH (mm^3)	40x50x43	60x70x43
Heating plate (mm^2)	35x25	55x45
Over heating protection	Yes	Yes

3.1.3 Drawing

1. OV-30D

Fig 3.1.3.1 Mechanical drawing of OV-30D (Unit : mm)
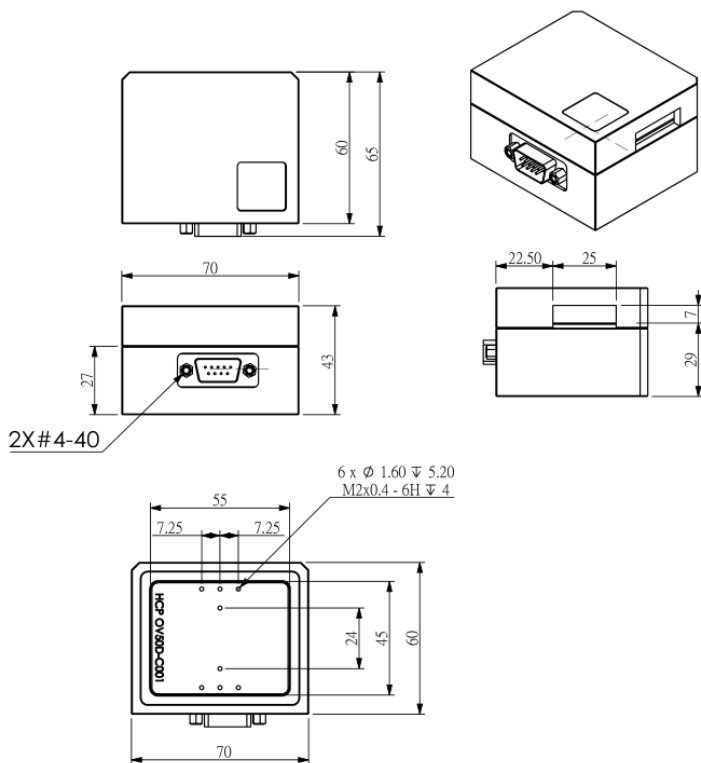
2. OV-50D

Fig 3.1.3.2 Mechanical drawing of OV-50D (Unit : mm)
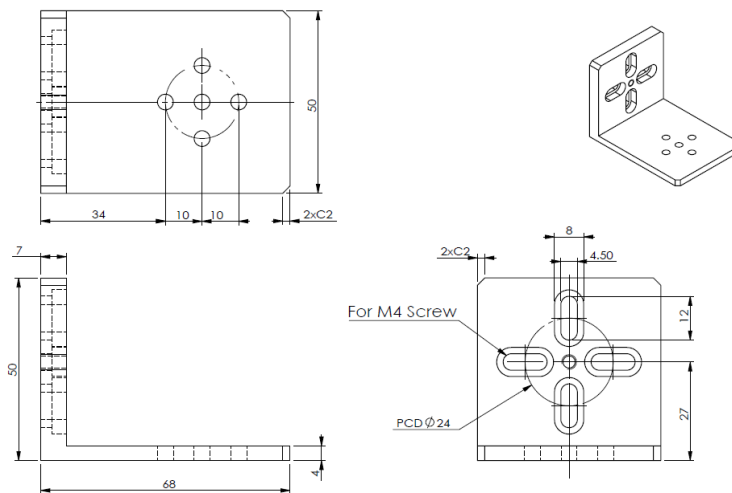
3. Bottom plate and L-adaptor board

Fig 3.1.3.3 Mechanical drawing of bottom plate and L-adaptor board (Unit : mm)

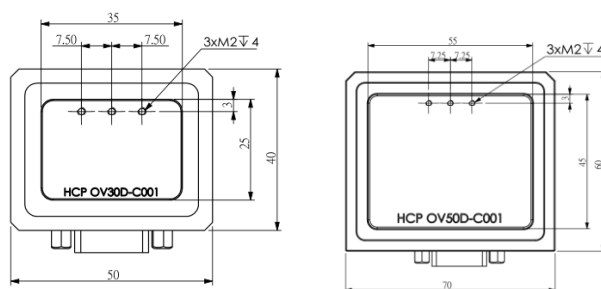## 4. Previous version of the OV-30D / OV-50D (Heating surface)
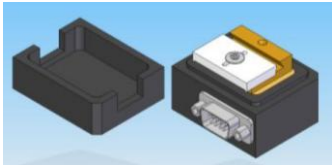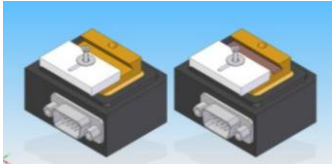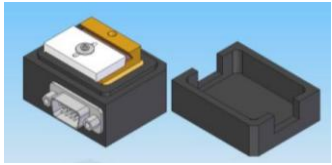
Fig 3.1.3.4 Mechanical drawing of OV-30D, OV-50D (previous version, heating surface)

3.2 Setup procedure for chip holder

No	Figure	Description
1		1.1 Open the Teflon cover.
2		2.1 Slightly loose the screw. 2.2 Move the white Teflon to the left slightly. 2.3 Put the crystal into the holder by a clip carefully. *** Make sure to avoid any surface scratch or damage on crystal input/ output surfaces.**
3		3.1 Push the white Teflon to the right slightly until the crystal is clamped. 3.2 Tight the screw *** Operation without the cover will affect the thermal uniformity of crystal. Please put the cover on after alignment.**

4. Safety and warranty

Please pay special attentions to following statements for your own safety.

<u>WARNING</u>

Situation has the potential to cause bodily harm or death.
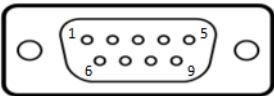
• Heed all warnings on the unit and in the operating instructions.

• Do not use this equipment in or near water.

• This equipment is grounded through the grounding conductor of the power cord.

• Route power cords and other cables to avoid possible damages.

• Disconnect power before cleaning the equipment. Do not use liquid or aerosol

cleaners but only a damp lint-free cloth.

Warranty

1 year after delivery under proper operation.

Appendix

A. Pin assignment

TC-038D & Crystal Oven		
9 pins layout	**Pin Number**	**Functionality**
	1	Empty
	2	Empty
	3	GND
	4	Sensor
	5	Sensor
	6	Heater
	7	Heater
	8	Empty
	9	Empty

B. Verification of conformity

ASP

ADVANCED SAFETY PRODUCT
ASP TECHNOLOGY CORP

8F.-1,No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan
TEL:886-2-22613919, FAX:886-2-22613918, E-mail:ASP.twn@gmail.com

VERIFICATION OF CONFORMITY

We Hereby Certify that

The following mentioned product has been tested in typical configuration by ASP.

Applicant:

HC PHOTONICS CORP.
F4,No.2,Technology Rd.V,Hsinchu Science Park,Hsinchu 300, Taiwan

Product:

Temperature Controller

Model:

TC-038D

Is in compliance with the European Council Directive:
2014/30/EU

The submitted samples comply with the requirements of the following standard(s):

EN 61326-1:2013

CE

This verification refers only to the units submitted for test. The CE mark as shown above can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

Signed for and on behalf of ASP Technology Corp.

Kevin Ku/ Manager.
ASP Technology Corp.

September.17.2018
Date.

The technical report issued by ASP will support you affix the CE marking.

T.D. No.: PN8E44

A. Verification Of Conformity

ASP

ADVANCED SAFETY PRODUCT
ASP TECHNOLOGY CORP

8F.-1,No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan.
TEL:886-2-22613919, FAX:886-2-22613918, E-mail:ASP.Twn@gmail.com

VERIFICATION OF CONFORMITY

We Hereby Certify that

The following mentioned product has been tested in typical configuration by ASP.

Applicant:

HC PHOTONICS CORP.
F4, NO.2, TECHNOLOGY RD.V, HSINCHU SCIENCE PARK, HSINCHU 300, TAIWAN

Product :

TEMPERATURE CONTROLLER

Model :

TC-038D

Is in compliance with the European Council Directive

(EU) 2015/863

The submitted samples comply with the requirements of the following standard(s):

EN 62321:2013

$C \in$

This verification refers only to the units submitted for test. The CE mark as shown above can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

Signed for and on behalf of ASP Technology Corp.

Kevin Ku/ Manager.
ASP Technology Corp.

2018.12.05
Date.

The technical report issued by ASP will support you affix the CE marking.

T.D. No.: PN8H23

A. Verification Of Conformity

ASP

ADVANCED SAFETY PRODUCT
ASP TECHNOLOGY CORP

8F,-1, No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan
TEL:886-2-22613919, FAX:886-2-22613918, E-mail: ASP.Twn@gmail.com

VERIFICATION OF CONFORMITY

We Hereby Certify that

The following mentioned product has been tested in typical configuration by ASP.

Applicant:

HC PHOTONICS CORP.

F4,NO.2,TECHNOLOGY RD.V,HSINCHU SCIENCE PARK,HSINCHU 300, TAIWAN

Product:

TEMPERATURE CONTROLLER

Model:

TC-038D

Is in compliance with the European Council Regulation (EC) No 1907/2006.

This is to certify on the basis of the tests undertaken.

C E

Based on the description of the REACH (1907/2006/EU)directive, manufacturer or his authorized representative within EC shall affix the CE marking to the products if he ensure the products complies with the relevant standards and draws up a declaration of conformity.

Signed for and on behalf of ASP Technology Corp.

Kevin Ku/ Manager.
ASP Technology Corp.

2018.12.05
Date.

The technical report issued by ASP will support you affix the CE marking.

T.D. No.:PN8H24

A. Verification Of Conformity