

- Tentative Specification
- Preliminary Specification
- Approval Specification

Panelsemi PID Product Specifications

Customer:	
APPROVED BY	SIGNATURE
Name / Title _____	
Note _____	
Please return 1 copy for your confirmation with your signature and comments.	

Approved By	Checked By	Prepared By
Titus Chang	Taylor Juan	KuanPo Liu

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REVISION HISTORY

Version	Date	Page (New)	Section	Description
Ver 1.0	Oct. 20, 2022	All	All	The Approval Specification was 1 st issued.

1. GENERAL DESCRIPTION

1.1 OVERVIEW

- ✧ Panelsemi PID products can be assembled to a large miniLED Display based on 27.5" units. For example this display can be assembled up to 256 units to present as a 8K resolution video wall or more huge dimension
- ✧ The unit of 27.5" is composed by 8 pcs of 9" LED panels with EE system for PID (Public Information Display) products . It can be tiled into a large display and have a higher brightness , low power consumption with COB (Chip on Board) technology. The control board receives the data and communication signals from a NOVASTAR's receiver card .
- ✧ According 27.5" unit to reveal all informations in this specification.

1.2 FEATURES

CHARACTERISTICS ITEMS	SPECIFICATIONS
Driving Technology	Panelsemi Active Matrix
Resolution	480 × 270
Pixel Pitch [mm]	1.27
LED Lamp.	RGB COB
Weight [kg]	8.4±0.5
Physical Size [mm]	609.92 (H) × 343.08 (V) × 70.32 (D)
Brightness [nits]	600
Brightness Uniformity	≥ 95%
Color Uniformity	±0.005
Color Gamut	NTSC 112% (DCI 97%)
Contrast Ratio	200,000:1 (@ < 1Lux)
Effective Optical Bit ^{*Note 1}	14 bits
	(Gamma 2.2)
Power Consumption (Max) [W/m ²]	290
Power Consumption (Avg) [W/m ²]	96.7
Power Input Voltage [AC]	100~240
Viewing angle[°]	160/160
Frame Rate (Hz)	240
Refresh Rate (KHz)	5.76
Certification	CCC / BSMI / PSE / UL / CE
RoHS Compliance	

*Note 1: The PWM Driver IC was claimed 16 bits but it's effective optical bit will lose 6 bits (base on Gamma 2.2) .

1.3 MECHANICAL SPECIFICATIONS**1.3.1 OUTLINE DIMENSIONS**

Dimension	Spec
Width	609.92mm
Height	343.08mm
Depth	70.32mm
Weight	8.4±0.5 kg

1.3.2 CABINET MATERIALS

ADC 12

. ABSOLUTE MAXIMUM RATINGS**2.1 ABSOLUTE RATINGS OF ENVIRONMENT**

Item	Value		Unit	Note
	Min.	Max.		
Operating Ambient Temperature	0	+45	°C	
Storage Temperature	-20	+60	°C	
Operating Ambient Humidity	10%	80%	RH	w/o condensation
Storage Humidity	10%	80%	RH	w/o condensation

3. ELECTRICAL CHARACTERISTICS

3.1 ELECTRICAL SPECIFICATIONS

	Items	Unit	Reference Value
Power Characteristics	Power Consumption (Max)	W / m ²	250
	Power Consumption (Avg)	W / m ²	83
	Power Supply	V	AC 100~240
Electrical Characteristics	Frame Rate	Hz	240
	Gray Level	Bits	14
	Refresh rate	Hz	5760

3.2 INPUT / OUTPUT SIGNAL SPECIFICATIONS

3.2.1 RJ45 :

RJ45 connector, 4pair data path, input display resolution request to be 960*540, must be using standard CATx (CAT5e/6) cable

3.2.2 RJ45 CONNECTOR PIN DEFINE :

Pin No.	Pin Function
1	Data 0+
2	Data 0-
3	Data 1+
4	Data 2+
5	Data 2-
6	Data 1-
7	Data 3+
8	Data 3-

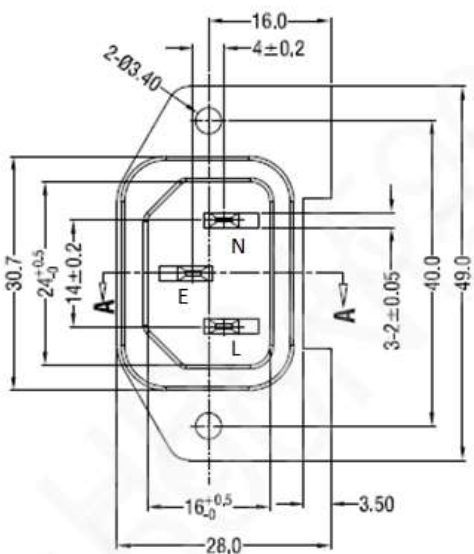
4. INPUT / OUTPUT TERMINAL PIN ASSIGNMENT

4.1 AC POWER PIN ASSIGNMENT

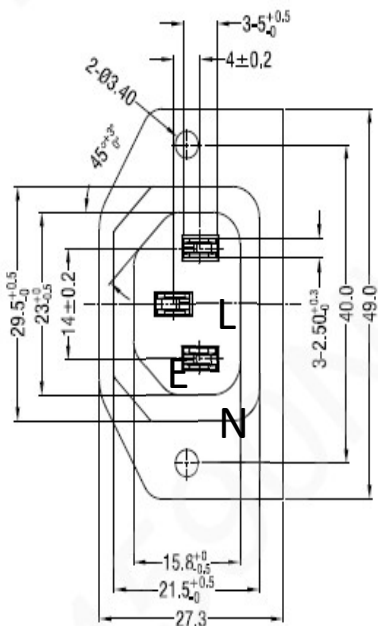
Pin	Name	Description	Note
L	Live	AC Voltage	
N	Neutral	AC Voltage	
E	Earth	Ground	

4.2 AC CONNECTOR TYPE

Inlet (Standard type : C14)



Outlet (Standard type : C13)

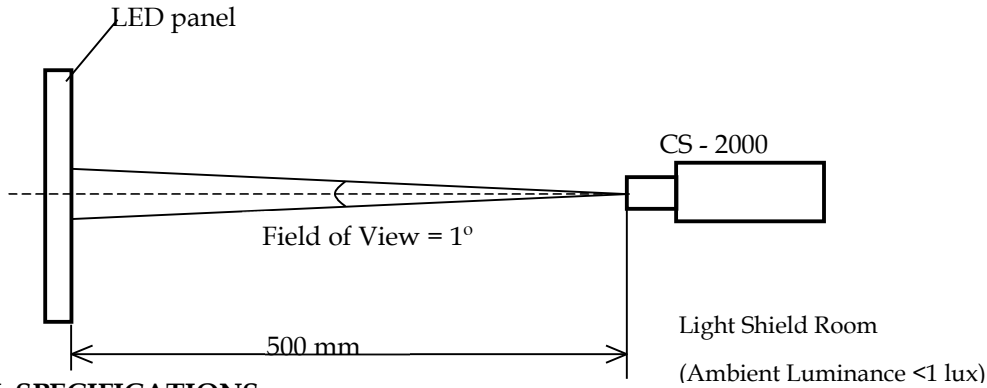


5. OPTICAL CHARACTERISTICS

5.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	°C
Ambient Humidity	Ha	50±10	%RH

The module should be stabilized at given temperature for 0.5hr to avoid abrupt temperature change during measuring in a windless room.



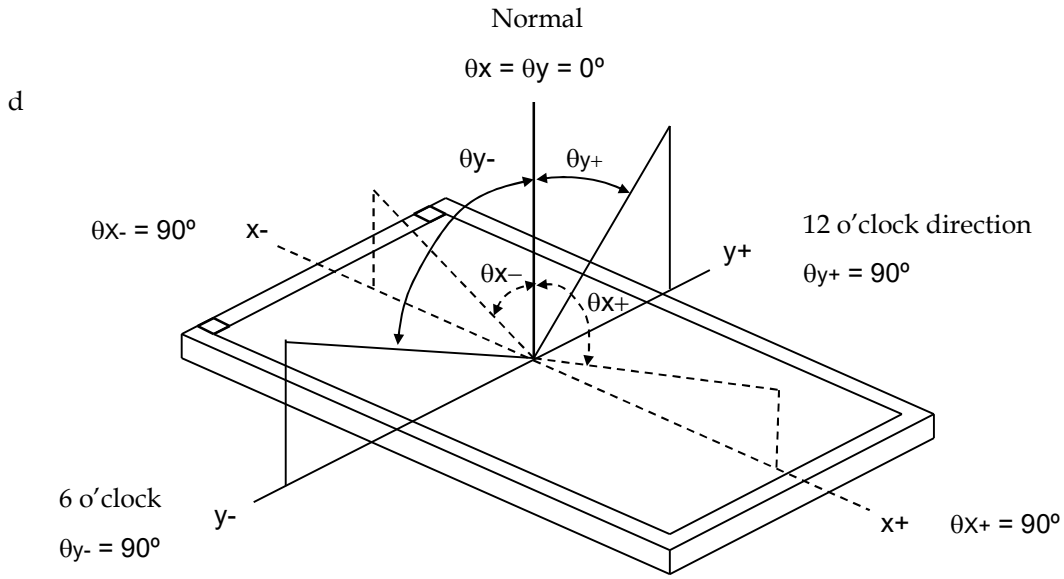
5.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown as below.

Item	Symbol	Condition	Typ.	Unit	Note
Brightness	L		600	nit	(1),(3)
Brightness Uniformity	U		95%	-	(1),(3)
Color Chromaticity	White	W _x	0.29	-	(1),(3)
		W _y	0.31	-	
	Blue	B _x	(0.123)	-	
		B _y	(0.077)	-	
	Green	G _x	(0.214)	-	
		G _y	(0.738)	-	
	Red	R _x	0.695	-	
		R _y	0.305	-	
Contrast Ratio	CR		(200,000)	-	(2)
Viewing Angle	Horizontal	θ _{x+}	80	Deg.	(2)
		θ _{x-}	80		
	Vertical	θ _{y+}	80		
		θ _{y-}	80		

Note (1) Definition of Viewing Angle (θ_x, θ_y) :

Viewing angles are measured by USB2000 which is calibrated by CS2000.



Note (2) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

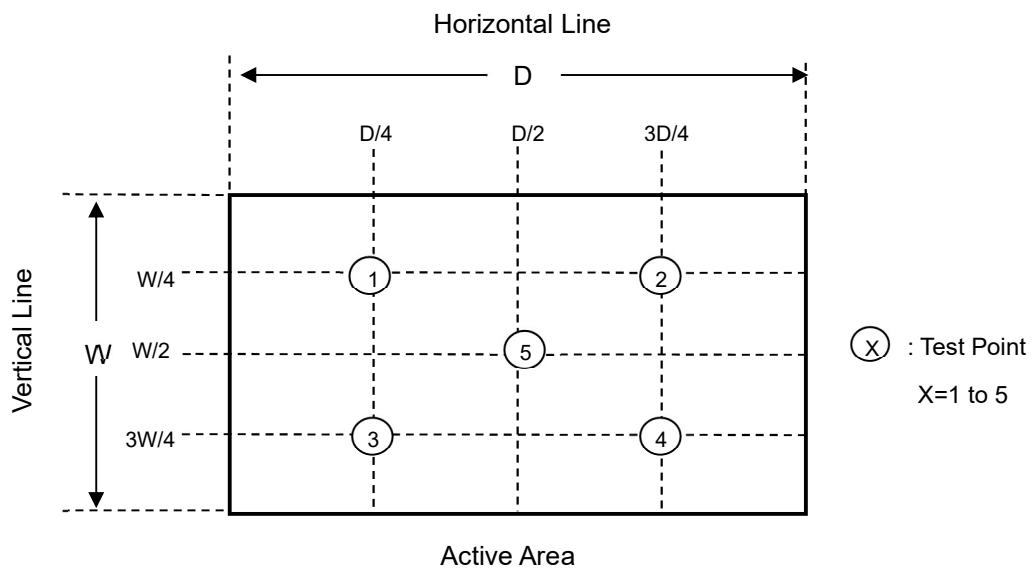
$$\text{Contrast Ratio (CR)} = \frac{\text{Surface Luminance of L1023}}{\text{Surface Luminance of L0}} \quad \text{Surface Luminance of L255 / Surface Luminance of L0}$$

L255 : Luminance of gray level 255

L0 : Luminance of gray level 0

CR = CR (X), where CR (X) is corresponding to the Contrast Ratio of the point X at the figure in Note (3).

Note (3) Definition of measurement position:



6. PRECAUTIONS**6.1 ASSEMBLY AND HANDLING PRECAUTIONS**

- [1] Do not apply improper or unbalanced force such as bending or twisting to LED panels during assembly.
- [2] It is recommended to assemble or to install LED panels into cabinet in clean working areas. The dust and oil may cause electrical short to LED panels.
- [3] Do not apply pressure or impulse to LED panels to prevent the damage.
- [4] Always follow the correct power-on sequence when LED panels are assembled and turned on.
- [5] Use a soft dry cloth without any chemicals for cleaning, because the surface of the LED panels are very soft and easily scratched.
- [6] Moisture can easily penetrate into LED panels and may cause the damage during operation.
- [7] When storing LED panels as spares for a long time, the following precaution is necessary.
 - [7.1] Do not leave LED panels in high temperature and high humidity for a long time. It is highly recommended to store LED panels in the temperature range from -20 to 60°C at normal humidity without condensation.
 - [7.2] LED panels shall be stored in dark place. Do not store LED panels in direct sunlight or fluorescent light environment.
- [8] Unpacking in order to prevent LED panels broken:
 - [8.1] Moving boxes by one operator may cause boxes fell down and LED panels broken by abnormal methods. Two operators carry one box with their two hands. Do handle boxes carefully, such as avoiding impact, putting down, and piling up gently.
 - [8.2] To prevent boxes sliding from carts and falling down, boxes should be placed on a surface with resistance.
 - [8.3] To prevent LED panels broken or a COF damaged in an box, please follow the instructions below:
 - [8.3.1] Do not peel a protection film of a LED panel off in an box.
 - [8.3.2] Do not install FFC or Power cables of a LED panels in an box.
 - [8.3.3] Do not press the surface of LED panels in an box.
- [9] Handling - In order to prevent LED panels , COFs , and components damaged:
Handle LED panels one by one.
- [10] Avoid any metal or conductive material to contact PCB components, because it could cause electrical damage or defect.

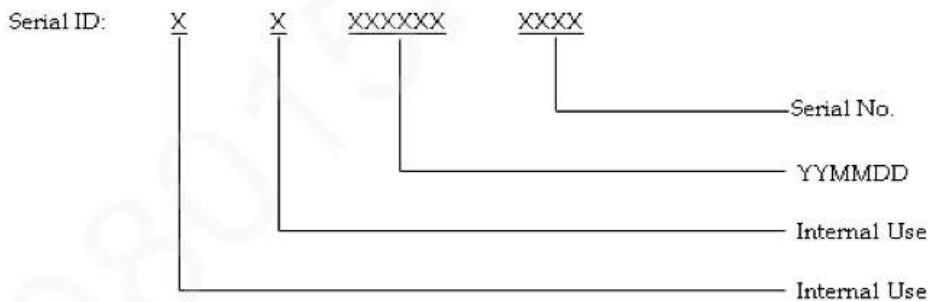
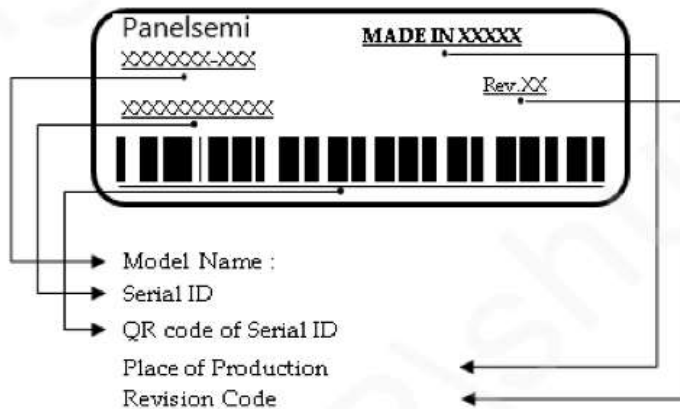
6.2 SAFETY PRECAUTIONS

- [1] After the end of life, LED panels are not harmful in case of normal operation and storage.

7. DEFINITION OF LABELS

7.1 MODULE LABEL

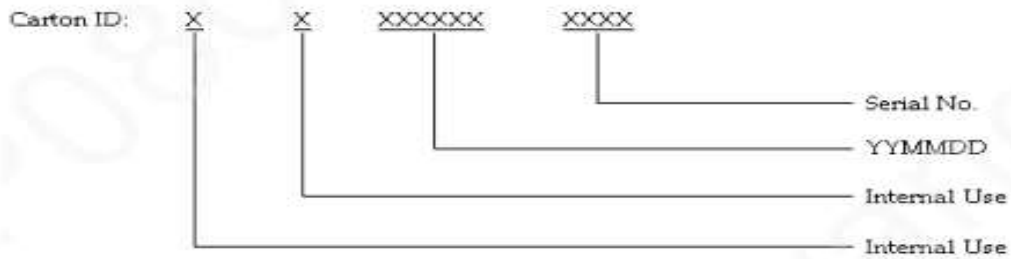
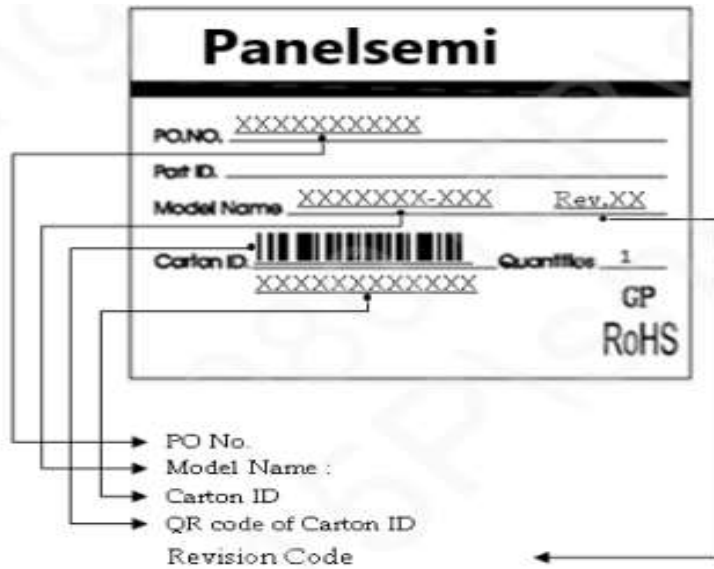
The barcode nameplate is pasted on each module as illustration, and its definitions are as following explanation.



Serial ID includes the information as below:
 (1)Serial No.:Manufacturing sequence of product
 (2)Manufacture Date:
 YY=Year → 2020=20,2021=21...
 MM=Month → 1~12 for Jan.~Dec.
 DD=Date → 1~31 for 1st to 31st
 Revision Code:Cover all the change

7.2 CARTON LABEL

The barcode nameplate is pasted on each box as illustration, and its definitions are as following explanation.



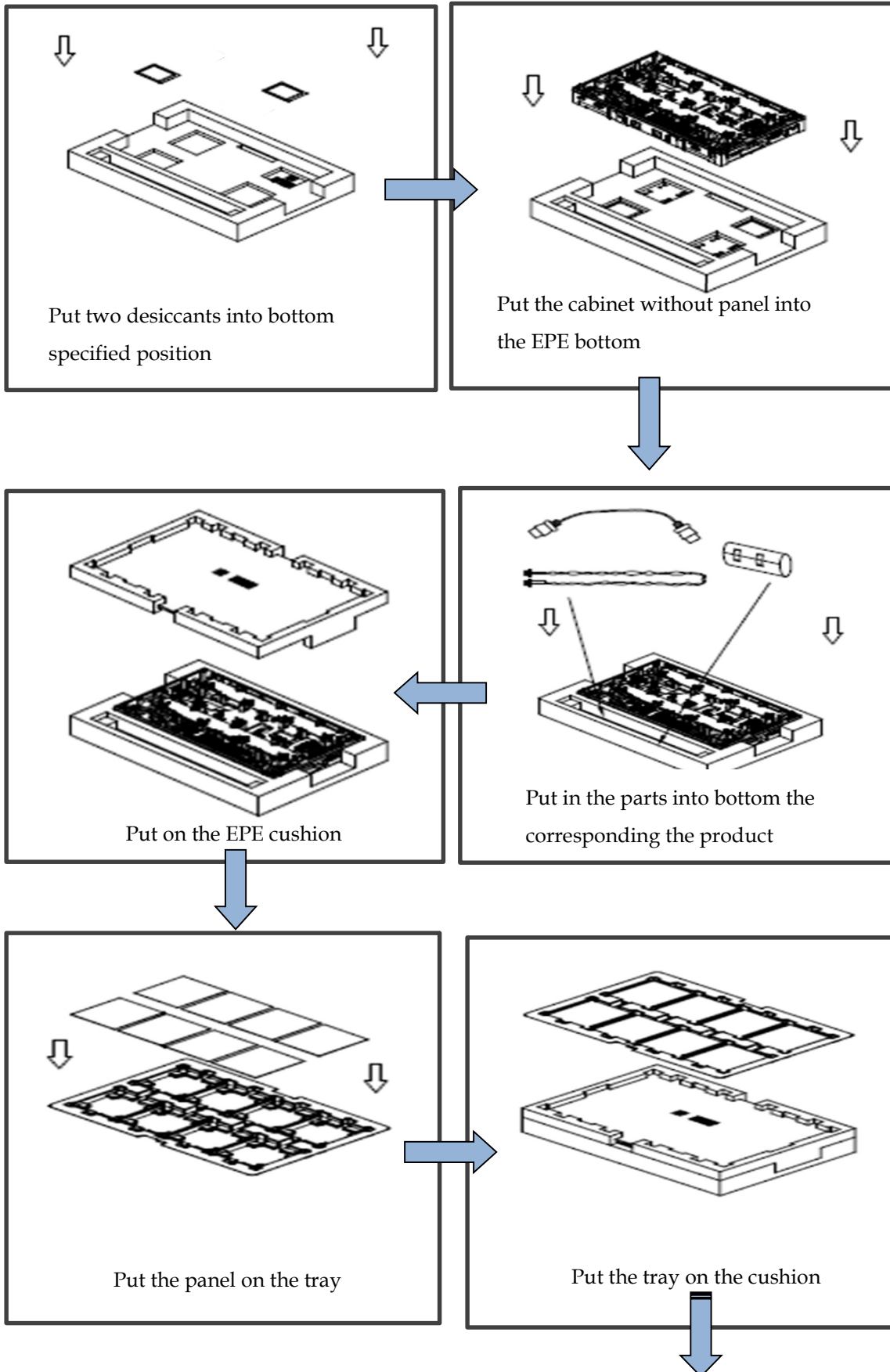
Carton ID includes the information as below:

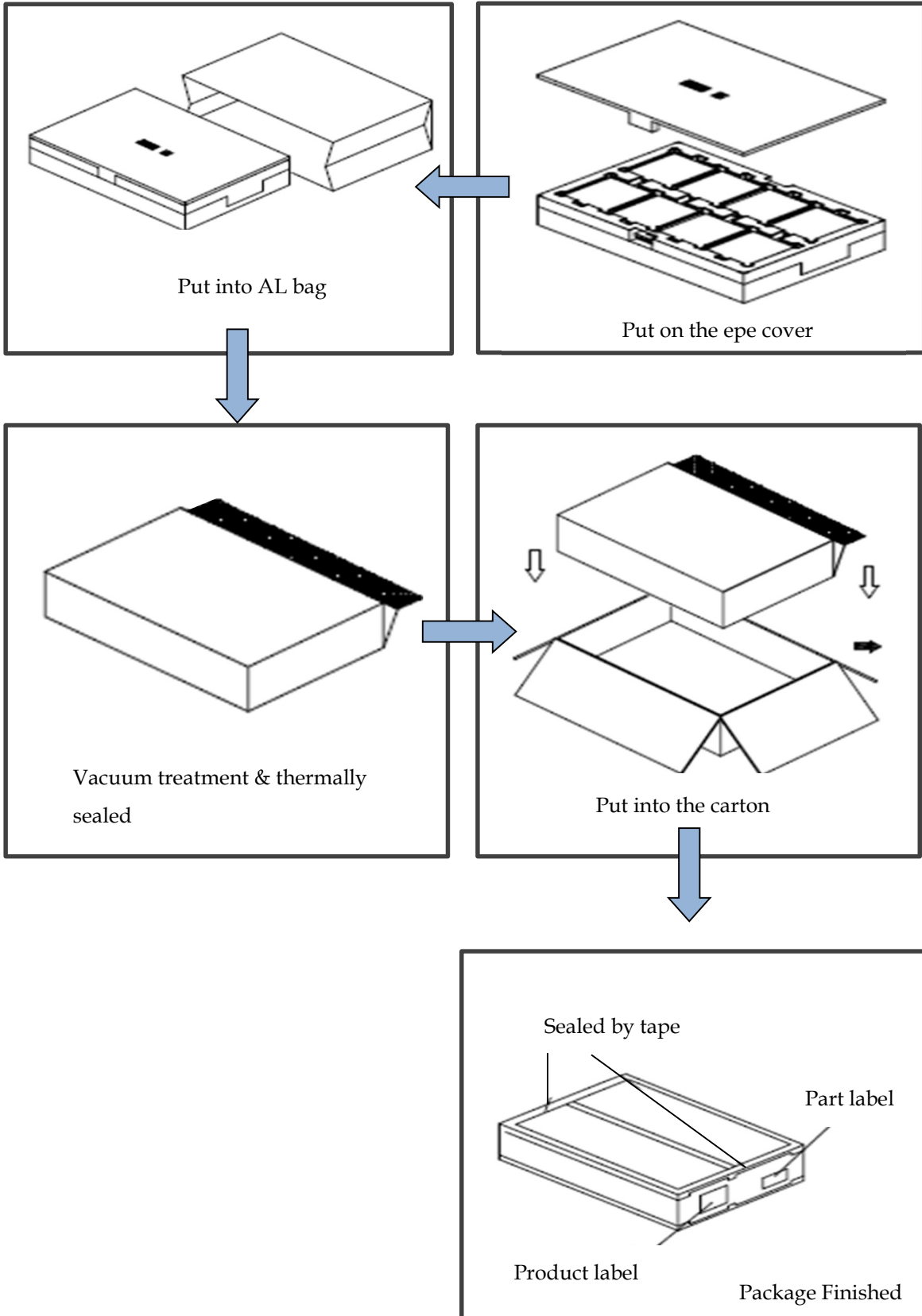
- (1) Serial No.: Manufacturing sequence of product
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8. PACKAGING

Package Assembly Diagram





9. MECHANICAL CHARACTERISTIC

9.1 FRONT VIEW



9.2 BACK VIEW



9.3 DIMENSIONS

Dimension	Spec
Width	609.92 mm
Height	343.08 mm
Depth	70.32 mm
Weight	8.4±0.5 kg

10. OTHER