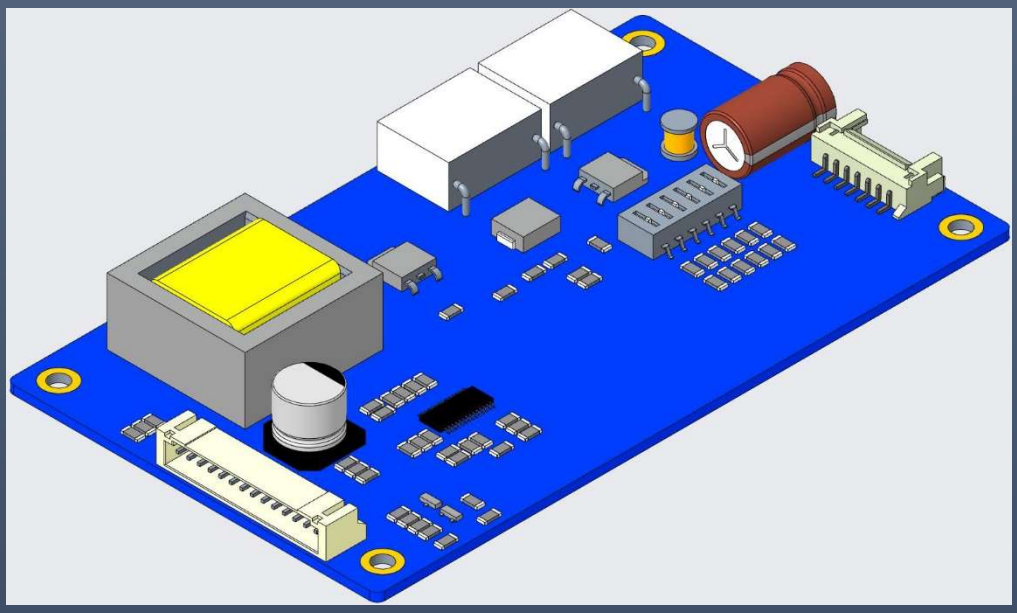
2021

Data Sheet



Product Name : LED Driver
(for Multi Panel Supportable Type)

Model No : CVT345-xxx…xxx
("xxx…xxx" : target LCD Part No)

CONTENTS

Revision History

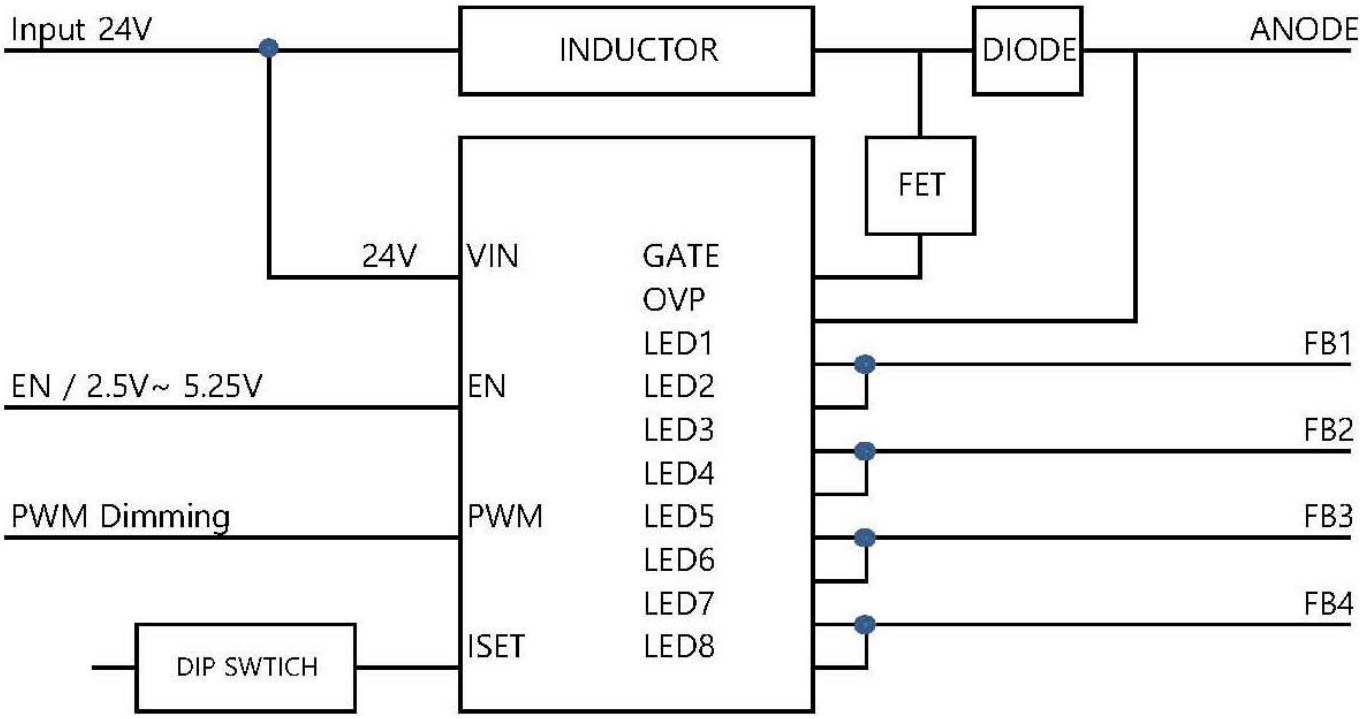
PCB Version	Rev. date	Revision Details
1.0	Feb 2020	Engineering Sample
2.0	Apr 2020	Addition of supportable LCD Model : BOE 33.2”, DV332X2M-NV0 / Chapter 2.3.5 (Dip S/W #1)
	Jul 2020	Addition of supportable LCD Model : BOE 33.6”, DV366FBM-N10 / Chapter 3.2.2 (Dip S/W #4 & #5)
		Addition of supportable LCD Model : LG 42” & 43” / Chapter. 3.2.1 & 3.2.3
	Aug 2020	Changing the Product Part Numbering Style : from “CVT345-MULTI” to “CVT345-xxx…xxx” (the “xxx…xxx” means the target LCD Part Number.)
	Nov 2020	Addition of supportable LCD Model : LG 27”, LM270QQ2-SPA3 / Chapter 3.2.5 (Dip S/W #1)
	Jan 2021	Addition of supportable LCD Model : LG 27”, LB270WR1-SPA1 / Chapter 3.2.5 (Dip S/W #1)
	Mar 2021	Addition of supportable LCD Model : AUO 36.6”, P366IVN01.0 / Chapter 3.2.5 (Dip S/W #1)

1. Spec Summary

This specification defines all the technical figures as an users' manual regarding this LED driver supportability for various type displays such as 42", 43", 49" & 55" models listed below which have not been built-in the mating LED Driver..

LG 27",	LM270QQ2-SPA3	4CH 145mA 58.3V
LG 42",	LC420EQE-PGF1,	6CH 160mA 50.4V
LG 43",	LD430EUE-FHB1	2CH 155mA 118.2V
LG 43",	LC430EQE-FHA1,	6CH 160mA 48.8V
LG 43",	LC430EQE-FHM1,	6CH 160mA 48.8V
LG 43",	LC430EQE-FHM2,	6CH 160mA 48.8V
LG 43",	LC430EQE-FHP1,	6CH 160mA 48.8V
LG 43",	LD430EQE-FLA1,	6CH 55mA 160V
LG 43",	LD430EQE-FPA2,	6CH 50mA 159.6V
LG 49",	LD490EUE-FHB1,	2CH 170mA 138.2V
LG 49",	LD490EGE-FHM1,	2CH 180mA 158.1V
LG 55",	LD550EUE-FHB1,	2CH 155mA 175.8V
AUO 43",	P430HVN01.3,	4CH 80mA 54V
BOE 29",	DV290FBM-N10,	4CH 105mA 39V
BOE 33.2",	DV332X2M-NV0,	2CH 100mA 57V
BOE 36.6",	DV366FBM-N10,	2CH 400mA 39V
LG 27",	LB270WR1-SPA1,	8CH 135mA 54.7V
AUO 36.6",	P366IVN01.0,	6CH 43mA 99.3V

2. Block Diagram



3. Electrical Characteristics

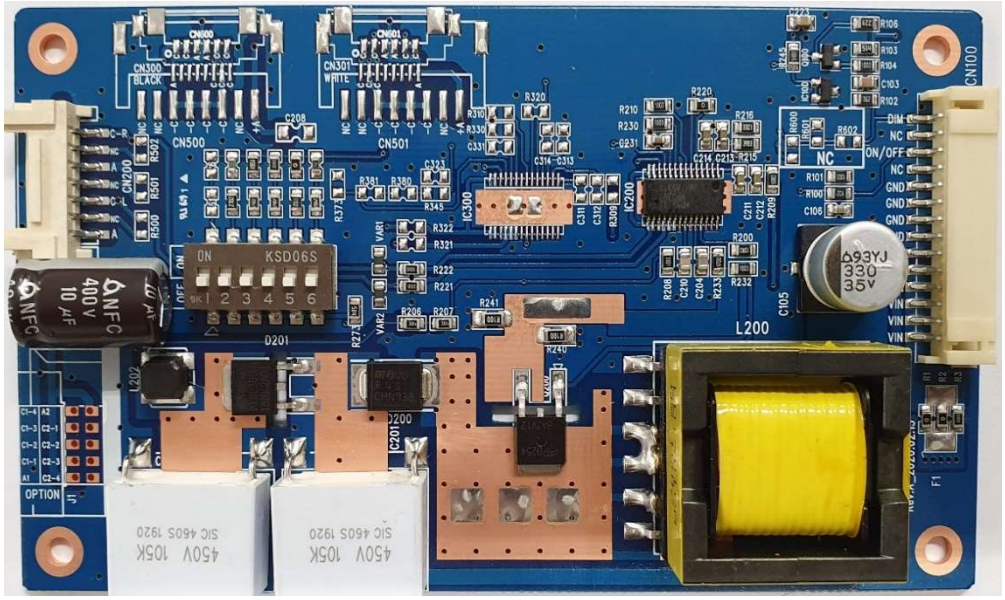
3.1 Input Requirement

Parameter			Symbol	Values			Unit	Remark
				Min	Typ	Max		
Power Supply Input Voltage			VBL	21.6	24	26.4V	Vdc	
Input Current of Power Supply			IBL	-	-	2.5	A	
			In-Rush	-	-	5		
Power Consumption			PBL	-	-	60	W	
Input Voltage for Control System Signals	On/Off	On	V on	2.5	-	5.25	Vdc	
		Off	V off	-0.3	-	0.8	Vdc	
	Brightness Adjust		ExtVBR-B	10	-	100	%	On Duty
	Pulse Duty Level (PWM)		High Level	2.5	-	5.25	Vdc	High : On duty Low : Off duty
			Low Level	0.0	-	0.7	Vdc	
			Normal Frequency.	100	-	1K	Hz	
			Frequency Range	60	-	10K	Hz	
	Analog Dimming Control		Duty	10	-	100	%	

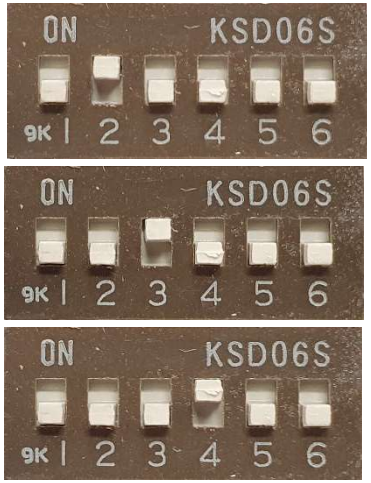
3.2 Output Voltage and Current for targeting LCD Models

3.2.1 Output Connector ”CN200”, 20037WR-H07AA / Yeon-Ho

Panel Type	Nos of CH & Power Consumption	Setting guide (DIP Switch)	Output Voltage Range			Output Constant Current (mA)		
			Min.	Typ.	Max.	Min.	Typ.	Max.
LD430EUE-FHB1	2 CH, 37.4W	#2	-	118.2	140	147.3	155	162.7
LD490EUE-FHB1	2 CH, 47W	#3	129.2	138.2	147.2	160	170	180
LD490EGE-FHM1	2 CH, 56.9W	#4	145.4	158.1	170.9	171	180	189
LD550EUE-FHB1	2 CH, 59.4W	#2	175.8	191.5	207.3	147.3	155	162.7

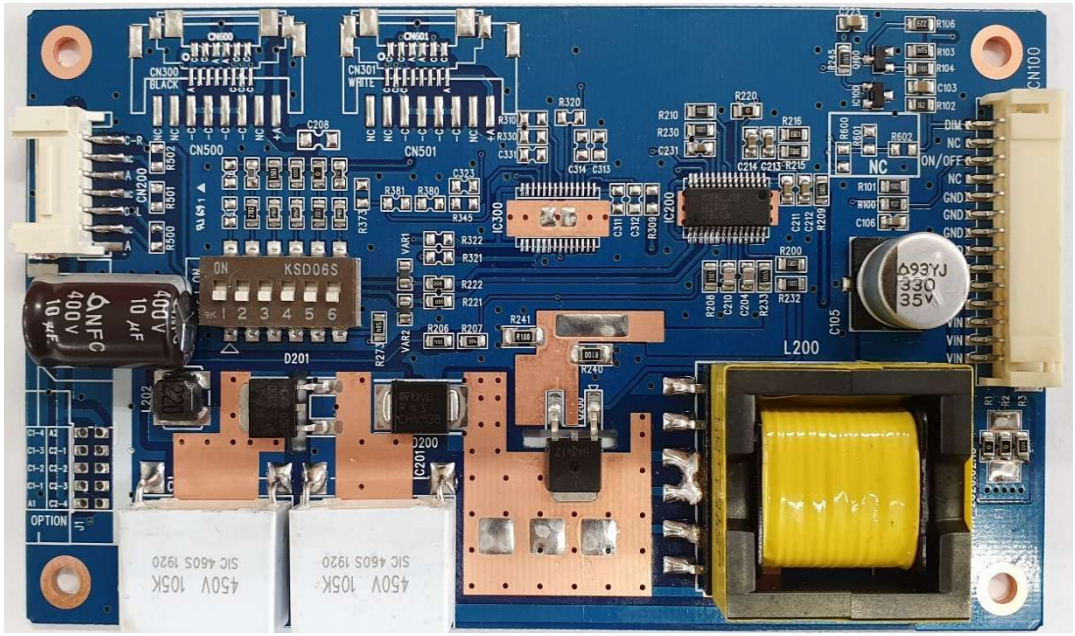


Dip Switch Setting



3.2.2 Output Connector ”CN400”, 2022WR-06P / Yeon-Ho

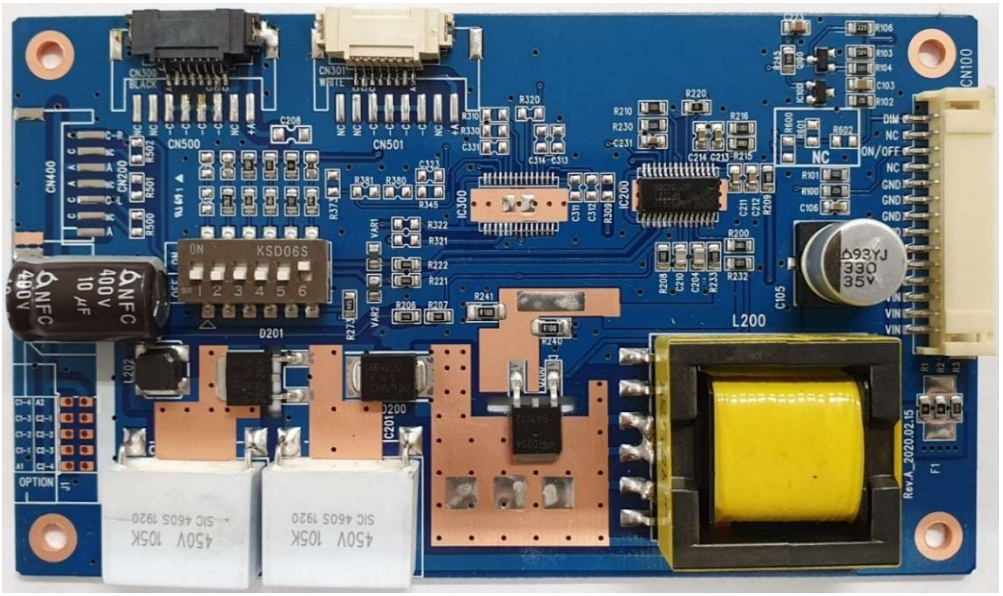
Panel Type	Nos of CH & Power Consumption	Setting guide (DIP Switch)	Output Voltage Range			Output Constant Current (mA)		
			Min.	Typ.	Max.	Min.	Typ.	Max.
BOE 36.6”, DV366FBM-N10	2 CH, 34.2W	#4, #5	36.4	39.0	41.9	380	400	420



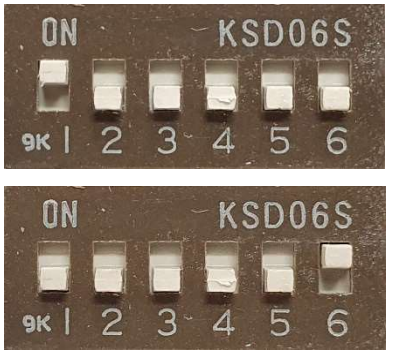
Dip Switch Setting

3.2.3 Output Connector ”CN300”, IS100-L08T-46-B / UJU & ”CN301”, IS100-L08T-46-C / UJU

Panel Type	Nos of CH & Power Consumption	Setting guide (DIP Switch)	Output Voltage Range			Output Constant Current (mA)		
			Min.	Typ.	Max.	Min.	Typ.	Max.
LC420EQE-PGF1	6 CH, 48.4W	#1	46.4	50.4	54.4	152	160	168
LC430EQE-FHA1	6 CH, 46.9W	#1	40.8	48.8	56.8	152	160	168
LC430EQE-FHM1	6 CH, 46.9W	#1	40.8	48.8	56.8	152	160	168
LC430EQE-FHM2	6 CH, 46.9W	#1	40.8	48.8	56.8	152	160	168
LC430EQE-FHP1	6 CH, 46.9W	#1	40.8	48.8	56.8	152	160	168
LD430EQE-FLA1	6 CH, 52.83W	#6	151.1	160.1	170.1	52.25	55	57.75
LD430EQE-FPA2	6 CH, 48.7W	#1	150.6	159.6	169.2	47.5	50	52.5

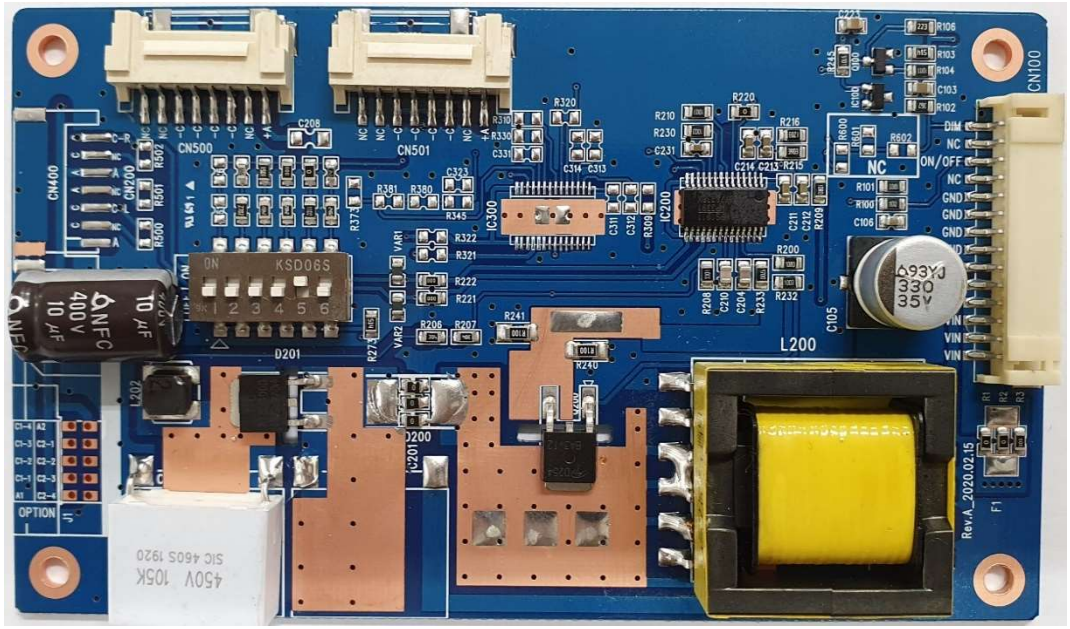


Dip Switch Setting



3.2.4 Output Connector ”CN500”, 20022WR-08P / Yeon-Ho & “CN501”, 20022WR-08P / Yeon-Ho

Panel Type	Nos of CH & Power Consumption	Setting guide (DIP Switch)	Output Voltage Range			Output Constant Current (mA)		
			Min.	Typ.	Max.	Min.	Typ.	Max.
AUO 43”, P430HVN01.3	8 CH, 34.82W	#5	50.4	54.4	64.8	76	80	84



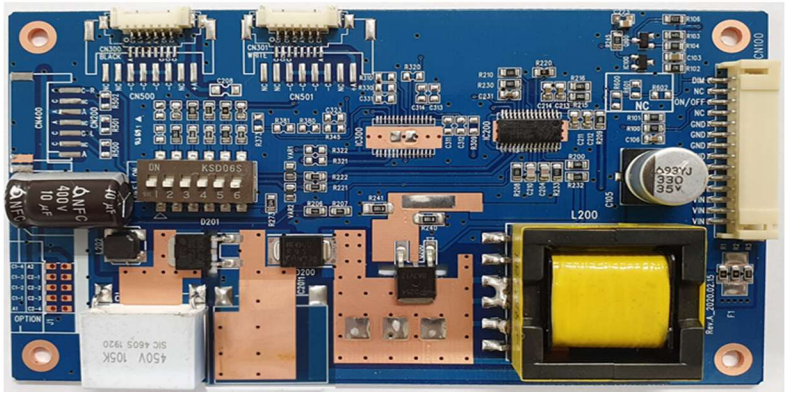
Dip Switch Setting

3.2.5 Output Connector “CN600”, 12505WR-06P / Yeon-Ho & “CN601”, 12505WR-06P / Yeon-Ho

Panel Type	Output Connector	Nos of CH & Power Consumption	Setting guide (DIP Switch)	Output Voltage Range			Output Constant Current (mA)		
				Min.	Typ.	Max.	Min.	Typ.	Max.
BOE 29”, DV290FBM-N10	CN600, CN601	8 CH, 32.76W	#1	36.4	39.0	41.9	99.8	105	110.2
BOE 33.2”, BOE DV332X2M-NV0	CN600, CN601	8 CH, 45.6W	#1	55.1	57	58.9	95	100	105
LG 27”, LM270QQ2-SPA3 [hardware setting : Note 1]	CN600	4 CH, 33.8W	#1	54.5	58.3	62.1	137.7	145	152.2
LG 27”, LB270WR1-SPA1 [hardware setting : Note 2]	CN600, CN601	8 CH, 59.1W	#1	51.1	54.7	58.3	130	135	140
AUO 36.6”, P366IVN01.0	CN600, CN601	6 CH, 25.6W	#1	-	99.3	110.3	-	-	43

[Note 1] input power needs 24V DC condition,
-. setting the R208 at 10kΩ for OVP setting at 75V,
-. setting the R610 at 11kΩ and the R611 at 0Ω for DIP Switch #1 setting

[Note 2] input power needs 24V DC condition,
-. setting the R208 at 10kΩ for OVP setting at 75V,
-. setting for DIP Switch #1 by the R610 at 10kΩ / nd the R611 at 3.6kΩ and the R380 at 10kΩ / the R381 at 3.6kΩ
-. Others : an addition of drive I/C Chipset (“MP3391” made by MPS)
and changing the rating of C206 at 10μF → 22 μF, D201 diod at 10A, 300V → 10A 100V



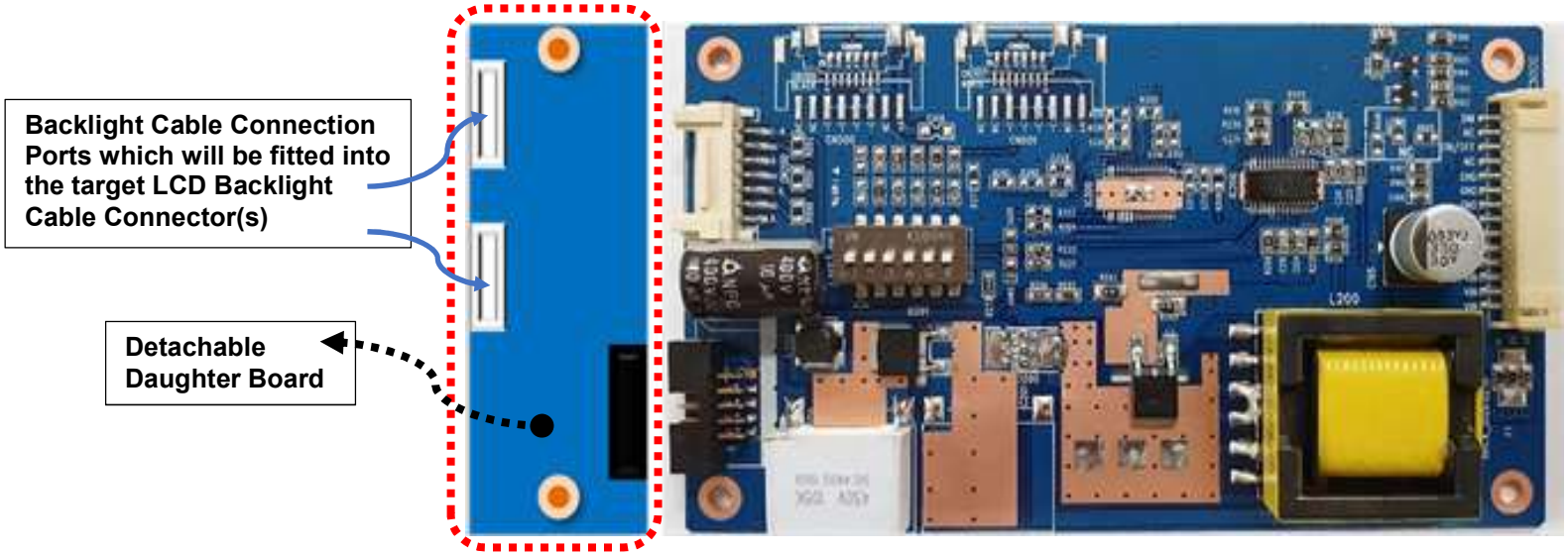
Dip Switch Setting

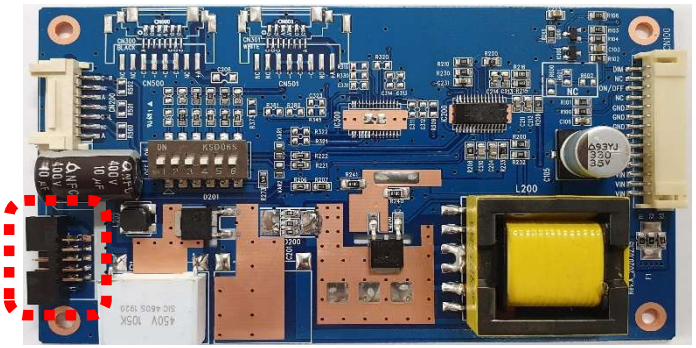
3.2.6 Output Connector ”J1”, 2 x 5 pin header type

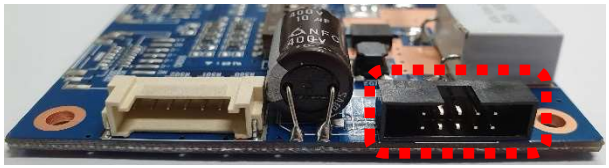
This is an extra connection port for other models which are not the same as the specified cases (from Chapter 3.2.1 ~ Chapter 3.2.5) on this spec. The basic concept of this port reservation on LED Driver is the most suitable way for the connection with this CVT345 LED Driver to the none common (popular) Backlight Connector style LCD Models in the worldwide market.

In other words, for any different Backlight Cable connector types, this port “J1” has been reserved by a Pin Header type Connector so that a Daughter Board can be fitted to this connector (indicated below in red dotted line box).
The Daughter Board consists of ;

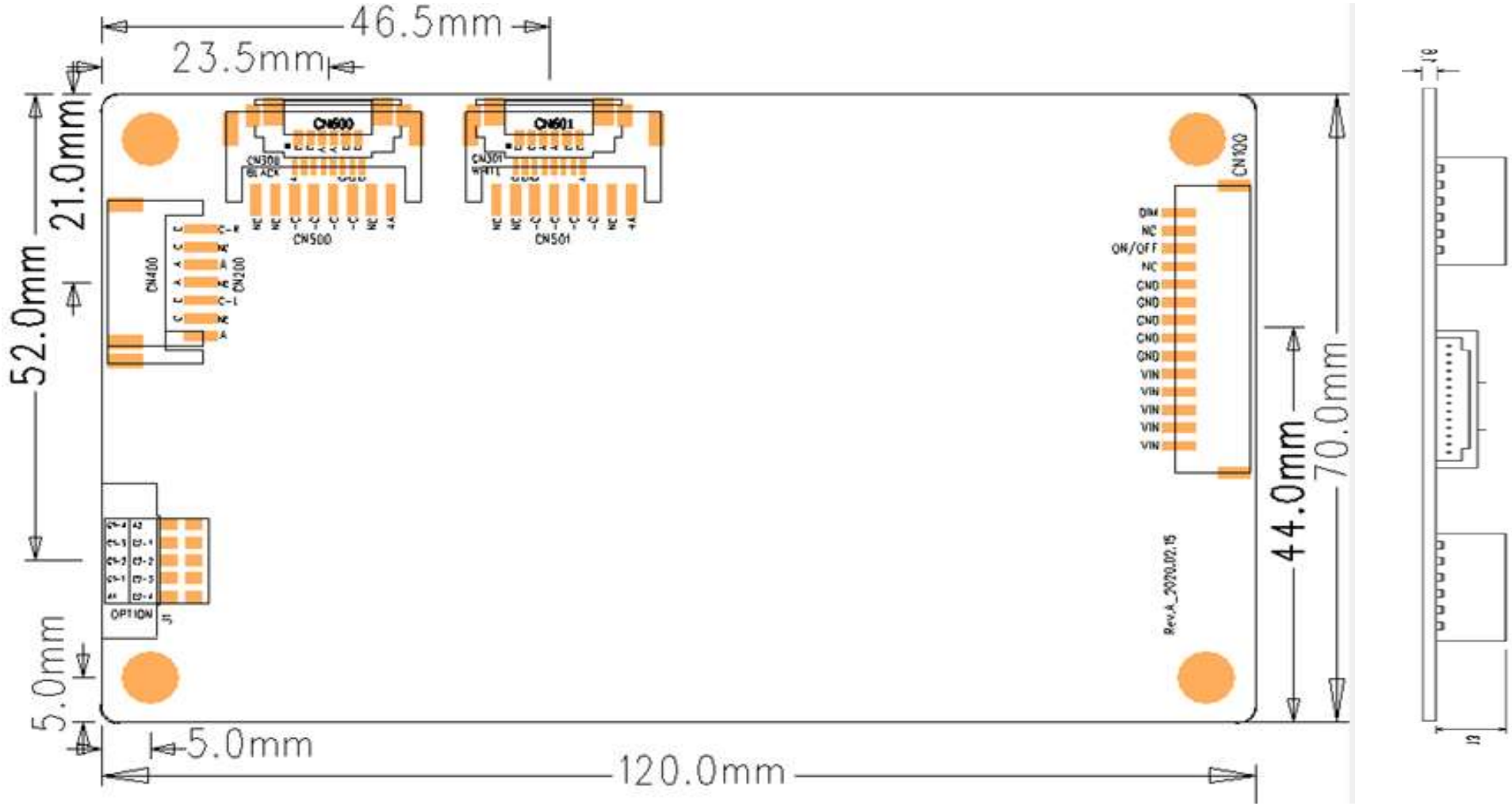
- a mating female connector of J1 connector in order to make one body
- female connector(s) on the other side which will be fitted into backlight cable connector(s) of target LCD panel





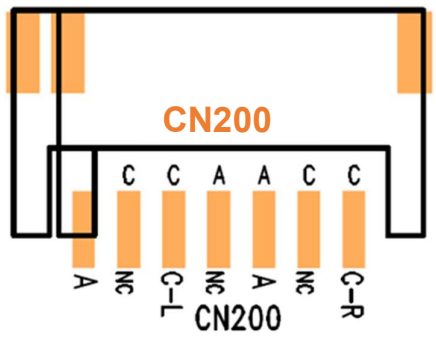


4. Dimension : 120 x 70 x 13 mm, weight (90g)



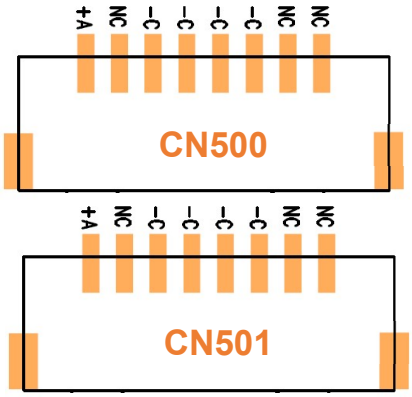
5. Connectors and Pin Assignment

Output Connector and its Pin Map Table



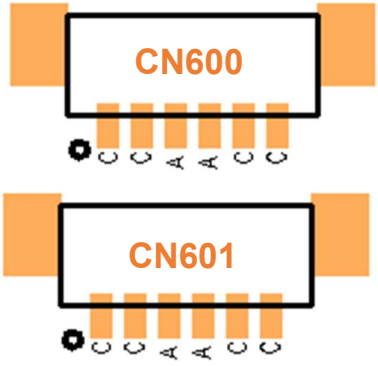
CN200 : 20037WR-H07AA(YEON-HO)

Pin No.	Sym-bol	Description
1	A	LED Input Current(anode)_1
2	NC	No Conection
3	C-L	LED Output Current(Cathode)1
4	NC	No Conection
5	A	LED Input Current(anode)_2
6	NC	No Conection
7	C-R	LED Input Current(Cathode)_2



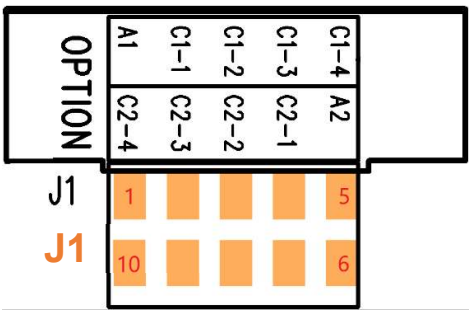
CN500, CN501 : 20037WR-H08AA(YEON-HO)

Pin No.	Sym-bol	Description
1	NC	No Conection
2	NC	No Conection
3	-C	LED Output Current(Cathode)1
4	-C	LED Output Current(Cathode)2
5	-C	LED Output Current(Cathode)3
6	-C	LED Output Current(Cathode)4
7	NC	No Conection
8	+A	LED Input Current(anode)



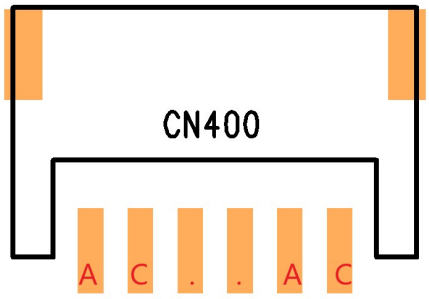
CN600, CN601 : 12505WR-06P
(YEON-HO / 1.25mm Pitch, 6Pin)

Pin No.	Sym-bol	Description
1	C	LED Output Current(Cathode)
2	C	LED Output Current(Cathode)
3	A	LED Input Current(anode)
4	A	LED Input Current(anode)
5	C	LED Output Current(Cathode)
6	C	LED Output Current(Cathode)



J1 : Dual 2*5Pin Right angle(2.0mm)

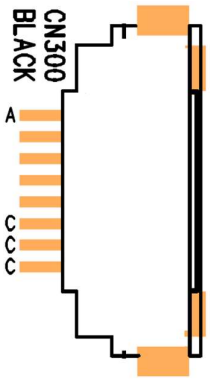
Pin No.	Sym-bol	Description
1	A1	LED Input Current(anode)1
2	C1-1	LED Output Current(Cathode)
3	C1-2	LED Output Current(Cathode)
4	C1-3	LED Output Current(Cathode)
5	C1-4	LED Output Current(Cathode)
6	A2	LED Input Current(anode)2
7	C2-1	LED Output Current(Cathode)
8	C2-2	LED Output Current(Cathode)
9	C2-3	LED Output Current(Cathode)
10	C2-4	LED Output Current(Cathode)



CN400 : 20022WR-06P

(YEON-HO / 2.0mm Pitch, 6Pin)

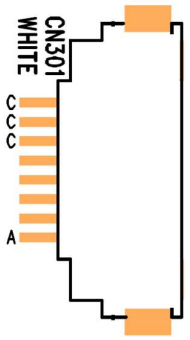
Pin No.	Sym-bol	Description
1	A	LED Input Current(anode)/CH1+
2	C	LED Output Current(Cathode)/CH1-
3	NC	NC
4	NC	NC
5	A	LED Input Current(anode)/CH1+
6	C	LED Output Current(Cathode)CH1-



CN300 : IS100-L08T-C46-B

(UJU / Black color)

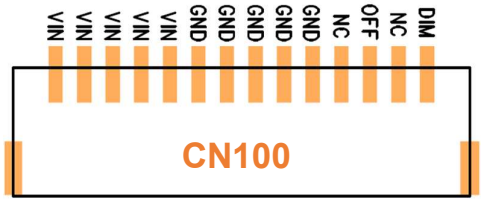
Pin No.	Sym-bol	Description
1	FB-R1	LED Output Current(Cathode)
2	FB-R2	LED Output Current(Cathode)
3	FB-R3	LED Output Current(Cathode)
4	NC	Default : NC , Option : Cathode
5	NC	Default : NC , Option : Cathode
6	NC	Default : NC , Option : Cathode
7	NC	NC
8	VLED	LED Input Current(anode)



CN301 : IS100-L08T-C46-C
(UJU / Natural color)

Pin No.	Sym-bol	Description
1	VLED	LED Input Current(anode)
2	NC	NC
3	NC	Default : NC , Option : Cathode
4	NC	Default : NC , Option : Cathode
5	NC	Default : NC , Option : Cathode
6	FB-L3	LED Output Current(Cathode)
7	FB-L2	LED Output Current(Cathode)
8	FB-L1	LED Output Current(Cathode)

Input Connector and its Pin Map Table



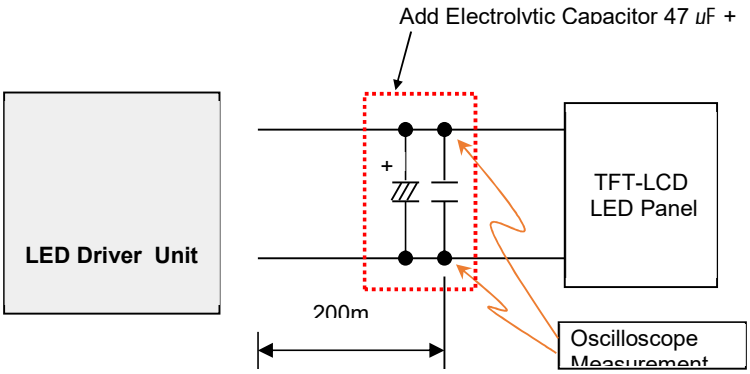
CN100: 20022WR(YEON-HO)
(YEON-HO / 2mm Pitch, 14Pin)

Pin No.	Sym-bol	Description
1~5	VIN	Voltage input (24V)
6~10	GND	Ground
11	NC	No Conection
12	ON/OFF	LED Driver on/off(Active High)
13	NC	No Conection
14	DIM	PWM

6. Power Characteristics

6.1 Ripple and Noise

The ripple and noise are defined as a periodic or random signal over frequency band at the 10Hz ~ 20MHz, measuring by an oscilloscope capable 20MHz bandwidth.



Output Voltage	LED Output
Ripple Voltage Range (mV)	5000

※ The ripple & noise are measured at the 20MHz bandwidth by a 12" twisted pair-wire which is cut off through the 0.1uF & 47uF parallel capacitor.

☞ Test condition

- Temperature: 25℃ room temperature
- Test equipment: PWM Dimming 100%

6.2 Overshoot

The output overshoot at the boot up must not exceed 25% than ordinary operating voltage value with or without under the working load condition.

6.3 In-rush

At the moment of turning on, the rise time of output voltage has to be shorter than 200msec, which is measured from the 10% point to the 90% point at the normal state

☞ Test condition

- Temperature : 25℃ room temperature
- Test equipment : Resistance load

7. Absolute Rating

7.1 Temperature

- Operating Temp. : -10 ~ 50℃ (optional guarantee – up to -40℃)
- Storage Temp. : -20 ~ 65℃ (optional guarantee – up to -40℃)

7.2 Humidity

- Operation humidity : 20 ~ 85% non-condensate
- Storage humidity : 5 ~ 95% non-condensate

8. Reliability Test and Guarantee

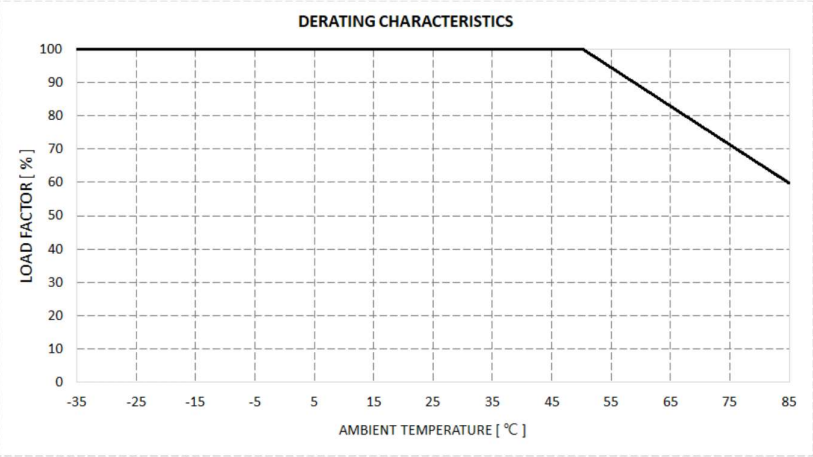
8.1 Environment Test

<table>
<tr><th>Adopted Test</th><th>Test method</th></tr>
<tr><td>Intermittent Operating Stability Test</td><td>The power supply unit should be On&Off for 25,000 hours at an interval of 10 seconds at maximum load, after its electrical characteristics are satisfied.</td></tr>
<tr><td>Low Temp. Operating Test</td><td>The power supply unit is left in operation at a minimum temperature (-30℃) for 200 hours. This should be satisfied without applying the electrical characteristics.</td></tr>
<tr><td>High Temp. & High Humidity Operating Test</td><td>The power supply unit is left at an operating temperature (85℃) in 85% humidity for 200 hours. This should be satisfied without applying the electrical characteristics.</td></tr>
<tr><td>Low Temp. Storage Test</td><td>The power supply unit should be left at minimum temperature (-35℃) for 96 hours or more. Then the switching regulator is left at room temperature and humidity for an hour or more and then the electrical characteristics should be satisfied</td></tr>
<tr><td>Heat cycle Operating Test</td><td>The power supply unit is left at at room temperature and humidity for an hour or more after 10 consecutive temperature cycles are performed while heated. Afterwards, the electrical characteristics should be satisfied.
<table>
<tr><th>Consecutive Cycle</th><th>Temperature</th></tr>
<tr><td>10 minutes</td><td>25℃</td></tr>
<tr><td>30 minutes</td><td>25℃ → -35℃</td></tr>
<tr><td>240 minutes</td><td>Minimum temperature(-35℃)</td></tr>
<tr><td>30 minutes</td><td>-35℃ → 25℃</td></tr>
<tr><td>10 minutes</td><td>25℃</td></tr>
<tr><td>30 minutes</td><td>25℃ → 85℃</td></tr>
<tr><td>240 minutes</td><td>Maximum temperature (85℃)</td></tr>
<tr><td>30 minutes</td><td>85℃ → 25℃</td></tr>
</table>
</td></tr>
<tr><td>Vibration Test</td><td>The power supply unit is left at below environment condition for 2 hours or more ;
-. Vibration amplitude: 1.5mm, Frequency: 10-5-10Hz,
-. Sweep Time: 1Min, each of each X, Y, and Z for 2 hours or more.
There should be no damage to its appearance and structure.</td></tr>
<tr><td>Appearance Test</td><td>There should be no contaminant or dirt on the switching regulator that may cause damage (adverse effect) on the electrical characteristics. There should be no excessive unevenness or scratches on the plated or painted surface.</td></tr>
</table>

8.2 Mean Time Between Failure (MTBF)

The product has been designed by 60,000 MTBF with 90% reliability index under below conditions.

- Input voltage : 12V DC
- Duty cycle : 6hours ON, 2hours OFF
- Ambient Temp : 25 ± 2℃
- Humidity : prevailing condition



It measured by Lambda Predict Program, “Reliasoft” made. And it calculates by the Telcordia SR-332 Issue 3

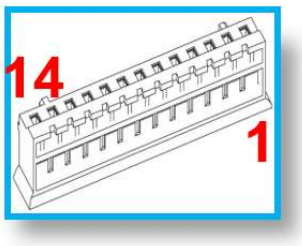
The MTBF : **281,830** hours
(refer to the calculation data can be provided by users’ request additionally)

9. Power Input Cable (Optional Accessory)

9.1 Interconnection Cable

(between this LED Driver and user's SMPS & user's Driving Board)

PN : CBL501-MULTI-OPEN-STD



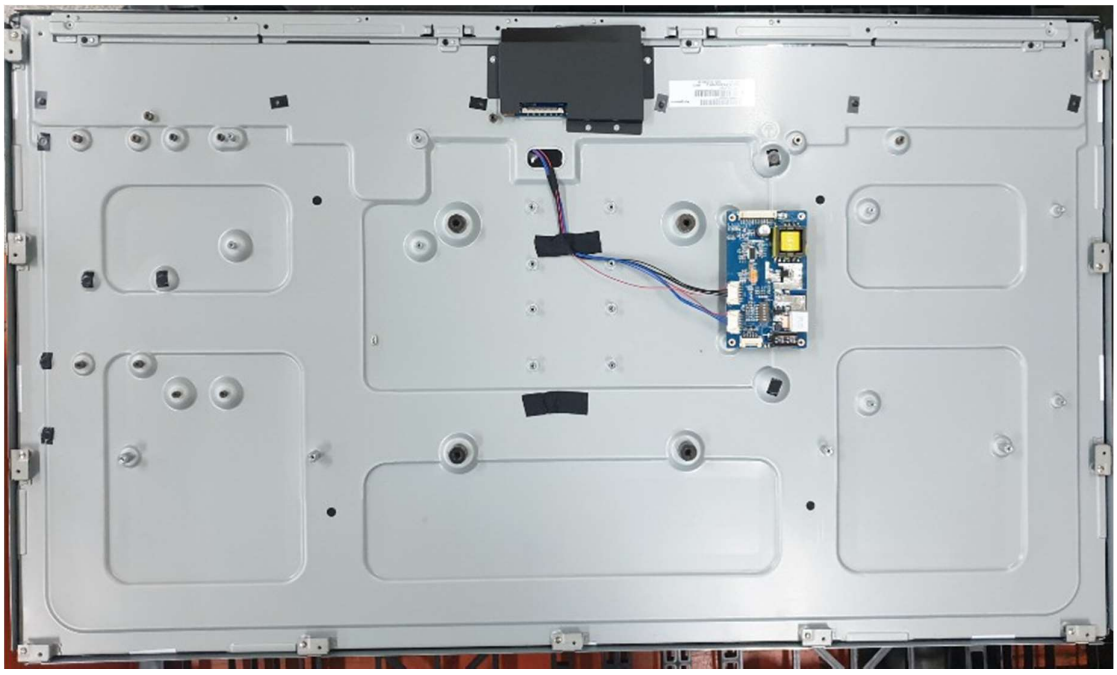
500mm

LED Driver / GH688A / CN1				
WAFER : 20022WR-14AML(YEONHO)				
HOUSING : 20022HS-14(YEONHO)				
FLYING LEAD	WHT	24V	1	
FLYING LEAD	WHT	24V	2	
FLYING LEAD	WHT	24V	3	
FLYING LEAD	WHT	24V	4	
FLYING LEAD	WHT	24V	5	
FLYING LEAD	WHT	GND	6	
FLYING LEAD	WHT	GND	7	
FLYING LEAD	WHT	GND	8	
FLYING LEAD	WHT	GND	9	
FLYING LEAD	WHT	GND	10	
-	-	NC	11	NC
FLYING LEAD	WHT	ON/OFF	12	
-	-	NC	13	NC
FLYING LEAD	WHT	DIM	14	

Flying Leads
: Open End Wire

10. Installation Guide

In case of AUO 43”, P430HVN01.3, user can fir up this LED Driver on the rear surface of LCD module through the reserved mounting holes as below pictures.



11 Ordering Information

Order Code	Description	Status
CVT345-xxx…xxx	“xxx…xxx” means the target LCD Model No.	