Handling Instruction

Light Panel

User Guide v1.0

Please read this user guide carefully before using the product.

Contents

Handling Instruction

A. Handling and Safety

1. Unpack packing box with care. Remove packing trays gently and carefully from packing box.

2. During unloading and handling, gloves are required to prevent finger cuts or possible shocks. Gloves are also required to avoid fingerprints being left on the glass, and to keep moisture from causing corrosion to the metal traces.

3. Handle panels with caution. Mechanical stress such as shocks and pressures on the panel surface (active area, encapsulation glass cavity area) must be avoided to prevent cracking of the glass, delamination, scratching of the film, and internal structure damage. Do not press or drop the panel.

4. During unloading and handling, panels should always be held from the side. Avoid direct contact with metal contact pads or connector traces.

5. Protect the panel surface from scratches. Avoid direct contact on panel surface and do not stack panels on top of each other.

6. Protect the corners and edges during handling, assembly or installation to prevent chipping or breakage of glass.

7. Avoid contact with chemicals such as solvents.

8. Contact with water must be avoided to prevent damage of films and corrosion of metal traces. Water drops must be wiped immediately.

9. To remove particle/foreign materials and surface stains, gently wipe the surface of the panel with non-abrasive cloth.

10. In case of breakage, avoid direct contact with bare hands. Do not swallow particles, chips, or materials.

11. For interconnections, spring contacts are recommended. Soldering and other interconnecting technologies which apply heat to the panel may cause damage, and are therefore not recommended.

12. Do not hold the panel on the surface. Hold the panel from the edge.

13. In case of connecting multiple panels, series connection is highly recommended. Panel to panel uniformity problem can occur by parallel connection.

Installation

B. Storage and Operation

1. Store and operate OLED panels within the ranges specified in the product specifications on page 11. Recommended temperature is at 25°C; Recommended relative humidity is below 70% (RH). (High temperature and humidity can cause film degradation, bubble generation, and film delamination)

Installation

A. Product Overview

SA Model

Emitting side

Back side

SB Model

Emitting side

Back side

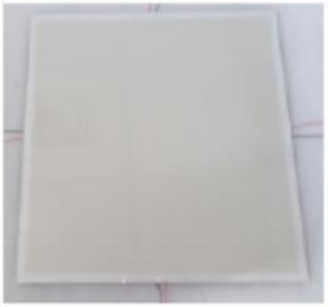
SC Model

Emitting side

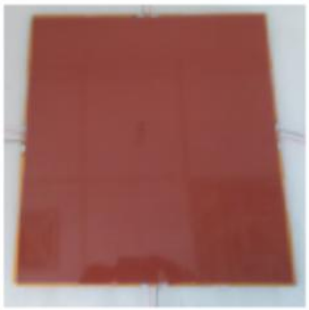
Back side

SD Model

Emitting side



Back side



OA Model

Emitting side

Back side

BA Model

Emitting side

Back side

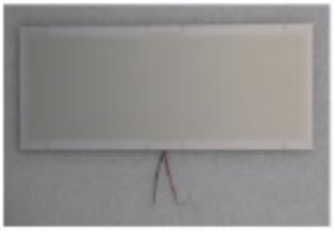
PBA Model (Flexible)

Emitting side

Back side

BB Model

Emitting side



Back side

BC Model

Emitting side

Back side

Installation

B. Preparing for use

Connector-Molex

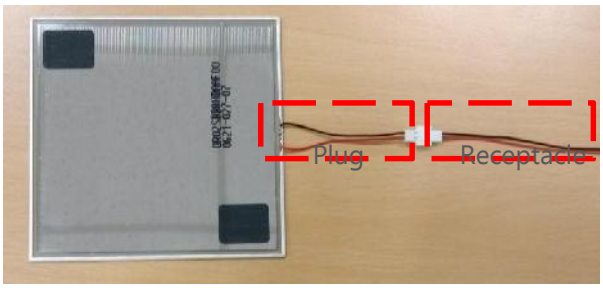


Fig. N6SA40-F (w/ molex connector)
* Maximum current per contact : 2A

Part #. 51006-0200
(Plug)

Part #. 51005-0200
(Receptacle)

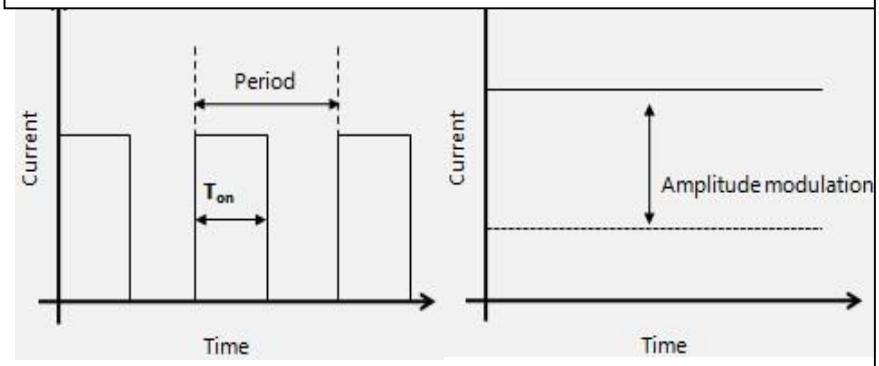
Power driver types

Pulse width modulation (PWM)

Fig 1. PWM Driver (Recom)

Amplitude modulation (AM)

Fig 2. AM Driver (LG)



The two main driver types are AM and PWM.
When using **AM drivers,** select 'constant current' as output.

When using **PWM drivers**, select driver with current levels below 200% of panel's spec current.

* AM drivers produce a steady current, so they have less of an affect on OLED panel lifetime.
PWM drivers deliver a 'peak' of current for each pulse, therefore, may have some affect on lifetime

Additional Check Points

1. **Connect panels in series. (Parallel connection may cause** uneven brightness among panels)
2. Do not apply reverse bias. (Reverse bias may cause failure of the panels)

Installation

C. Installation guide: Driver Connection

Procedure - Rigid Type

※ This example is provided as a guideline to connecting OLED panels to drivers.
Please note that the Recom power driver may not be suitable for all panels or applications.

. Compare Electric Levels

A. **See page 8** for each **OLED** model's electric characteristics (ex. N6SA30)

B. Check **Driver**'s maximum output levels
(ex. Recom)

		A. OLED	B. Driver
Model		N6SA30	Recom
ⓐ	Voltage [V]	8.5V	34VDC
ⓑ	Current [mA]	150mA	350mA

2. Select the Power Driver

Check Point ⓑ : Driver Current **>** OLED Current (ex. 350mA > 150mA)

→ If you wish to achieve brightness above spec levels, the Driver's Maximum Current must be higher than the OLED Specification Current. (Brightness is controlled by current input)

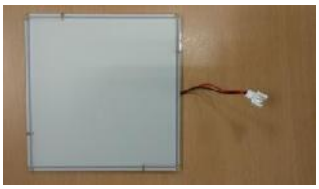
3. Determine the maximum number of OLED Panels per Driver

Check Point ⓐ : No. of panels x OLED Voltage **<** Driver Voltage

Ex) 8.5V x **3 panels** = 25.5V **<** 34VDC vs. 8.5V x 4 panels = 34V **≥** 34VDC

→ Therefore, a Recom driver can drive up to three N6SA30 panels

4. Connect the OLED Panel (with Plug) to Receptacle (ex. N6SA30)



OLED panel with plug connector

+

Receptacle connector

Plug and receptacle connected

5. Connect Receptacle to the Driver * See Schematic Diagram on page 9

1 panel

3 panels

→To achieve exact brightness at spec levels, a dimmer must be used to control (reduce) the Driver's current levels

Installation

C. Installation guide: Driver Connection

Procedure – Flexible Type

※ This example is provided as a guideline to connecting OLED panels to drivers.
Please note that the Recom power driver may not be suitable for all panels or applications.

1. Compare Electric Levels

A. **See page 8** for each **OLED** model's electric characteristics (ex. F6BA30)

B. Check **Driver**'s maximum output levels
(ex. Recom)

		A. OLED	B. Driver
Model		F6BA30	Recom
ⓐ	Voltage [V]	8.6V	34VDC
ⓑ	Current [mA]	260mA	350mA

2. Select the Power Driver

Check Point ⓑ : Driver Current **>** OLED Current (ex. 350mA > 260mA)

→ If you wish to achieve brightness above spec levels, the Driver's Maximum Current must be higher than the OLED Specification Current. (Brightness is controlled by current input)

3. Determine the maximum number of OLED Panels per Driver

Check Point ⓐ : No. of panels x OLED Voltage **<** Driver Voltage

Ex) 8.6V x **3 panels** = 25.8V **<** 34VDC vs. 8.6V x 4 panels = 34.4V **>** 34VDC
→ Therefore, a Recom driver can drive up to three F6BA30 panels

4. Connect the Bendable OLED Panel to Driver * See Schematic Diagram on page 9

Bendable OLED panel (with electrode pad)

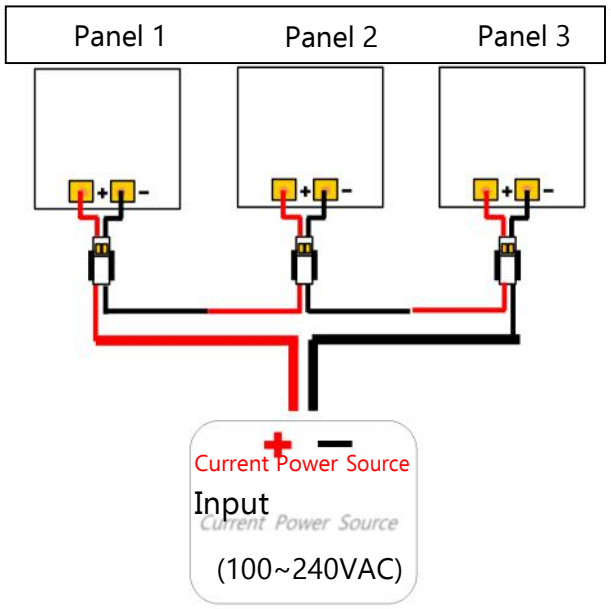
1 panel

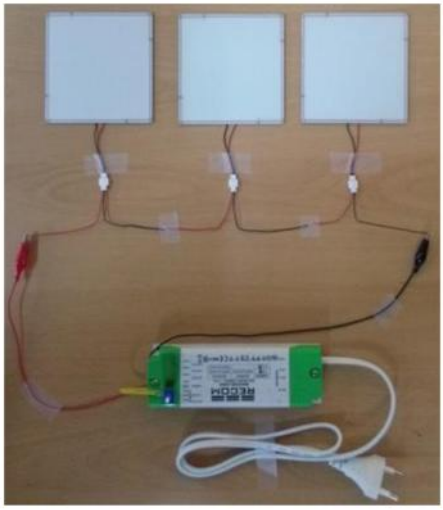
3 panels

→To achieve exact brightness at spec levels, a dimmer must be used to control (reduce) the Driver's current levels

C. Installation guide: Connection Method

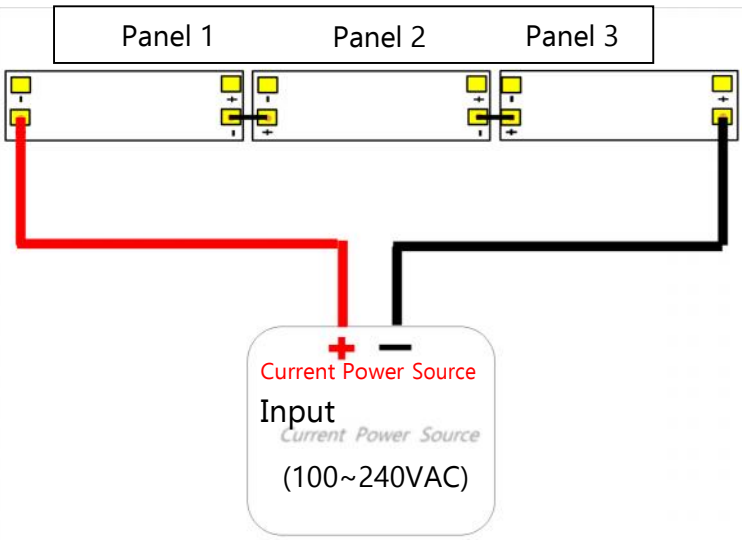
Schematic Diagram - Rigid Type

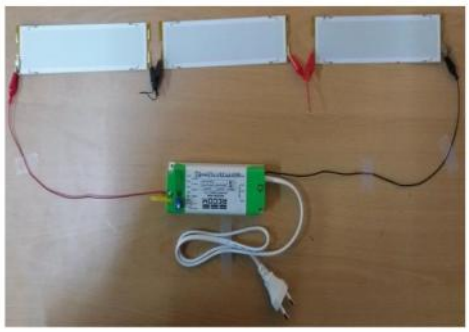




Connection Method

Schematic Diagram – bandable type





Installation
C.Installation guide

Electric Characteristics

Type		Rigid							
Model		N6SA40	N6SA30	N6SB40	N6SB30	N6SC40	N6SC30	N6BA40	N6BA30
ⓐ	Voltage [V]	6.0	8.5	6.0	8.5	6.0	8.5	6.0	8.5
ⓑ	Current [mA]	230	150	60	40	480	300	230	150
ⓒ	Power [W]	1.38	1.28	0.36	0.34	2.88	2.55	1.38	1.28

Type		Rigid								Flexible	
Model		N6OA40	N6OA30	N6BB40	N6BB30	N6BC40	N6BC30	N6SD40	N6SD30	P6BA40	P6BA30
ⓐ	Voltage [V]	6.0	8.5	6.0	8.5	6.0	8.5	6.0	8.5	6.0	8.6
ⓑ	Current [mA]	230	150	800	500	570	370	2500	1600	230	150
ⓒ	Power [W]	1.38	1.28	4.8	4.25	3.42	3.15	15	13.6	1.38	1.29

■ Recommended Power Supply
- Input : 100 ~ 240 VAC
- Max. Output : Voltage > Panel # x (ⓐ), Current > (ⓑ), Power > Panel # x (ⓒ)

C. Installation guide

Driver list

■ Driver list-up (UL)

Product name	Company	Input		Output		Note
		Voltage	Frequency	Voltage	Current	
ALC12-36-R35	TDK*Lambda	Universal		3-36 V	0.35 A	12 W, No dimming
BPWXL 6-50U-012	BIAS	Universal		3-50 V	0.12 A	6W, No dimming
BPWXL 6-21U-035	BIAS	Universal		3-21 V	0.35 A	6W, No dimming
AC-5C500ABV	AceLEDs	Universal		6-10 V	0.5 A	5W, No dimming
L03E-350	MAGTECH	Universal		4-12 V	0.35 A	3W, No dimming
TC1 120 0350-6C	Fulham	120 VAC	50-60 Hz	3-18 V	0.35 A	6W No dimming

■ Driver list-up (CE)

Product name	Company	Input		Output		Note
		Voltage	Frequency	Voltage	Current	
ALC12-36-R35	TDK*Lambda	Universal		3-36 V	0.35 A	12 W, No dimming
LPLC-18-350	MeanWell	90 ~ 132 VAC	47~63 Hz	6-48 V	0.35 A	18 W, No dimming
L03E-350	MAGTECH	Universal		4-12 V	0.35 A	3W, No dimming
PCC35012	POWERLED	220-240 VAC	50~60 Hz	2-34 V	0.35 A	12W, No dimming
PCC50016	POWERLED	220-240 VAC	50~60 Hz	2-34 V	0.50 A	16W, No dimming
LPVC11A1C	HEP	220-240 VAC	50~60 Hz	3-30 V	0.35 A	10W, Dimming (O)
LPVC24H1C UNI	HEP	100-240 VAC	50~60 Hz	6-30 V	0.8 A	24W, Dimming (O)

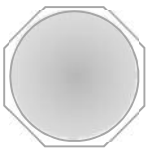
Technical Information

A. Product Portfolio

Type	Rigid					
Shape						
Size (mm)	100 × 100		200 × 50		53 × 55	
Model	N6SA40	N6SA30	N6BA40	N6BA30	N6SB40	N6SB30
CCT (K)	4,000	3,000	4,000	3,000	4,000	3,000
Thickness* (mm)	2.0	2.0	2.0	2.0	2.0	2.0
Seal type	UV seal					
Efficacy (lm/W)	55	60	55	60	55	60
CRI (Ra)	> 90					
Flux (lm)	75	75	75	75	20	20
LT70 (hr)	30,000	40,000	30,000	40,000	30,000	40,000

Technical Information

A. Product Portfolio

Type	Rigid						Bendable	
Shape								
Size (mm)	140 × 140		110 × 110		320 × 110		210 × 50	
Model	N6SC40	N6SAC30	N60A40	N6OA30	N6BB40	N6BB30	F6BA40	F6BA30
CCT (K)	4,000	3,000	4,000	3,000	4,000	3,000	4,000	3,000
Thickness (mm)*	1.0	1.0	1.0	1.0	1.0	1.0	0.45	0.45
Seal type	MFE**							
Efficacy (lm/W)	50	60	55	60	50	60	55	55
CRI (Ra)	> 90							
Flux (lm)	150	150	75	75	250	250	75	120
LT70 (hr)	30,000	40,000	30,000	40,000	30,000	40,000	30,000	10,000

Technical Information

A. Product Portfolio

Type	Rigid			
Shape				
Size (mm)	213 × 113		320 × 320	
Model	N6BC40	N6BC30	N6SD40	N6SD30
CCT (K)	4,000	3,000	4,000	3,000
Thickness* (mm)	0.88	0.88	0.88	0.88
Seal type	MFE Type**			
Efficacy (lm/W)	55	60	55	60
CRI (Ra)	90			
Flux (lm)	185	185	800	800
LT70 (hr)	30,000	40,000	30,000	40,000

Technical Information

A. Product Portfolio

- The specification of each OLED panel is set at a standard brightness level of 3,000cd/m2
- Higher/lower light output can be achieved by controlling the current levels.

(Please note that there is a tradeoff between brightness levels and lifetime)

DC forward current & Luminous flux by Luminance

Model	Luminance (cd/m^2)	3,000	4,000	5,000
N6SA40, F6BA40, N6OA40,N6BA40	Current(mA)	230	307	383
	Flux(lm)	75	100	125
N6SA30, N6OA30 N6BA30	Current(mA)	150	200	250
	Flux(lm)	75	100	125
N6SB40	Current(mA)	60	80	100
	Flux(lm)	20	27	33
N6SB30	Current(mA)	40	53	67
	Flux(lm)	20	27	33
N6SC40	Current(mA)	480	640	800
	Flux(lm)	150	200	250
N6SC30	Current(mA)	300	400	500
	Flux(lm)	150	200	250
F6BA30	Current(mA)	260	347	433
	Flux(lm)	120	160	200
N6BB40	Current(mA)	800	1,067	1,333
	Flux(lm)	250	333	417
N6BB30	Current(mA)	500	667	833
	Flux(lm)	250	333	417
N6BC40	Current(mA)	570	760	950
	Flux(lm)	185	247	308
N6BC30	Current(mA)	370	493	617
	Flux(lm)	185	247	308
N6SD40	Current(mA)	2500	3333	4167
	Flux(lm)	8000	1067	1333
N6SD30	Current(mA)	1600	2133	2667
	Flux(lm)	800	1067	1333