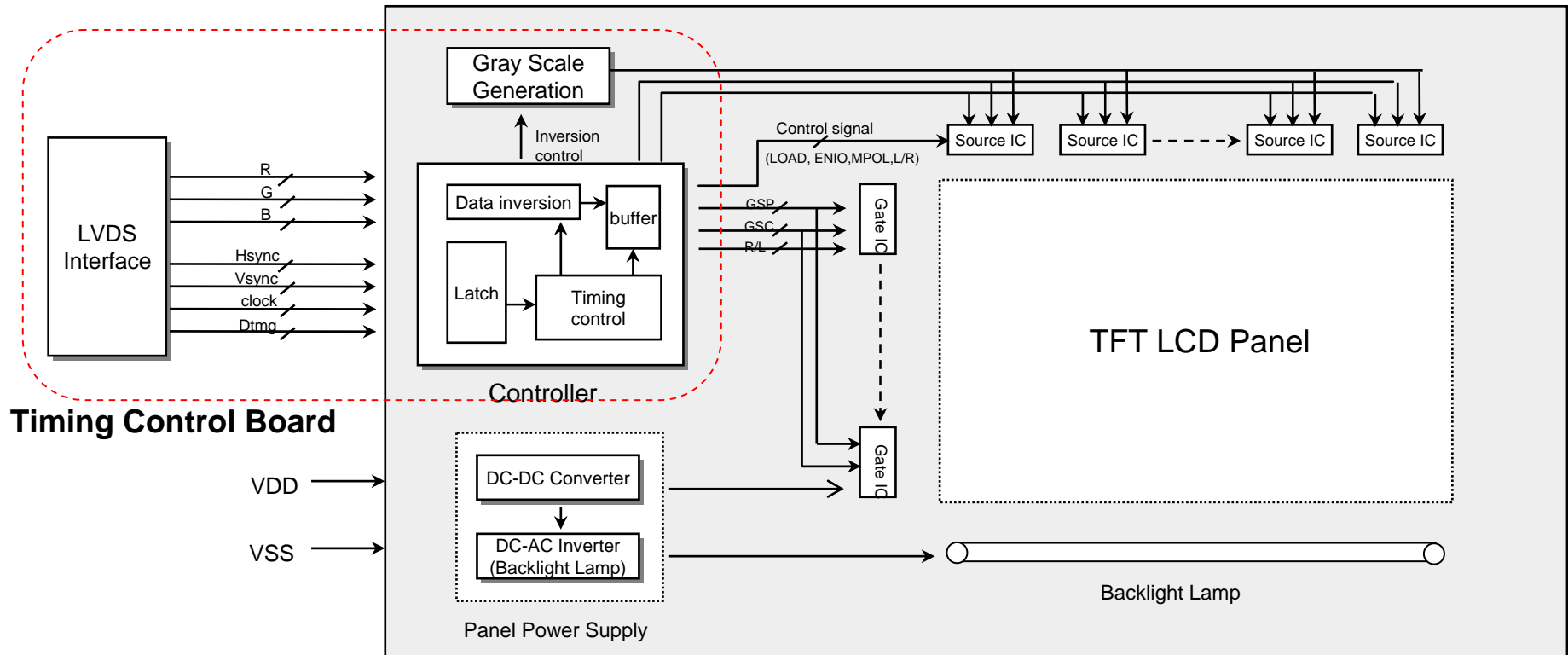


LCD Module Board Repair Manual

(Inverter & T-Con Board Repair)



LCD Module Block Diagram



■ Function of Timing Control Board

- **Control logic signal of gate and source for driving TFT-LCD.**
- **Receives power and video signal through link cable from mainboard of set.**

Inverter & Lamp Characteristics

■ Function of Inverter

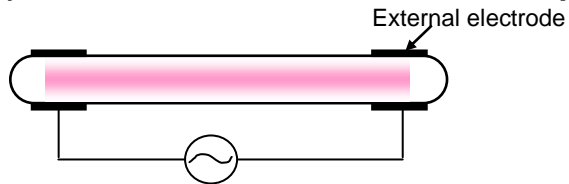
The inverter converts from DC 12V or 24V to AC 1000~1500Vrms and operates back-light lamps in the module.

■ Fluorescent Lamp Characteristics

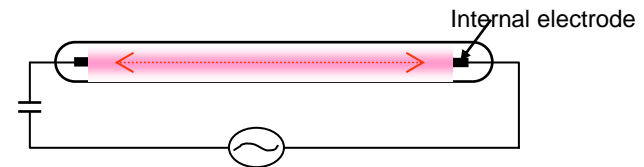
The structure of inverter differs depending on lamp characteristics.

CCFL vs EEFL Driving Mechanism

■ EEFL (External Electrode Fluorescent Lamp)

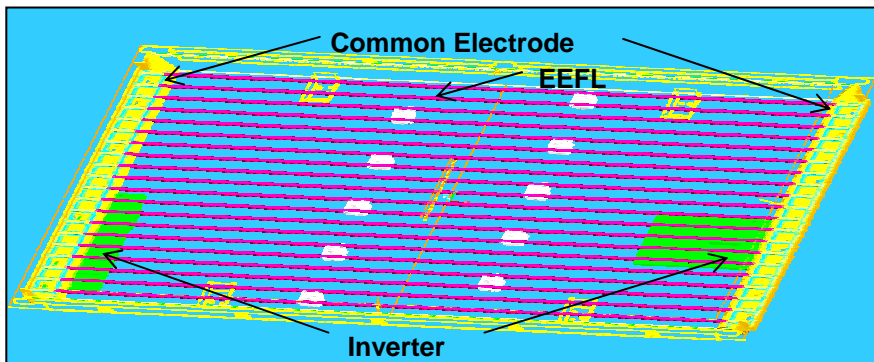


■ CCFL (Cold Cathode Fluorescent Lamp)



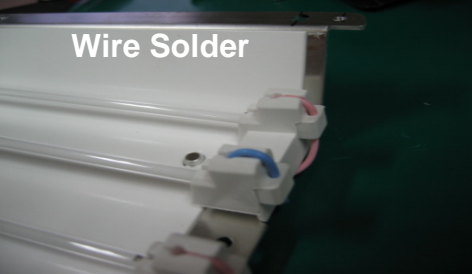
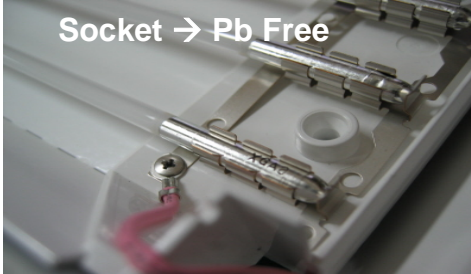
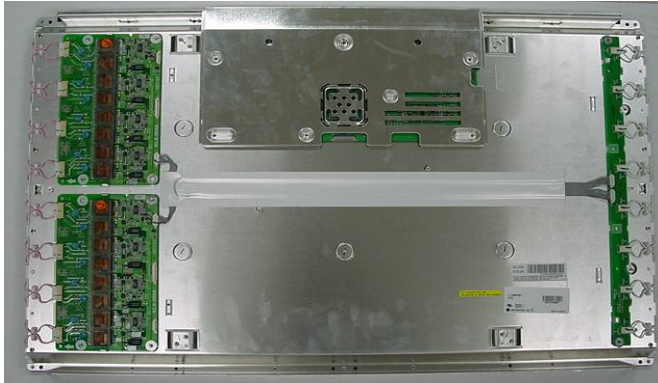
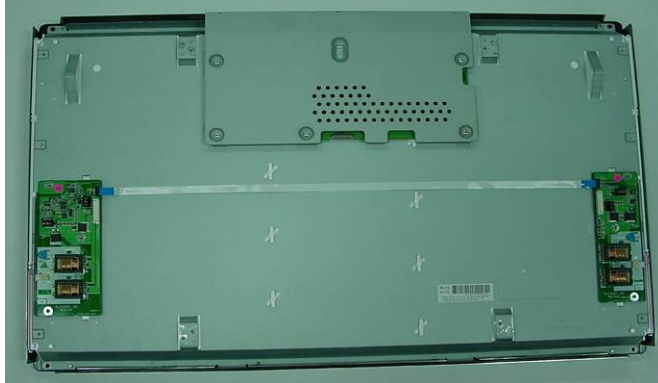
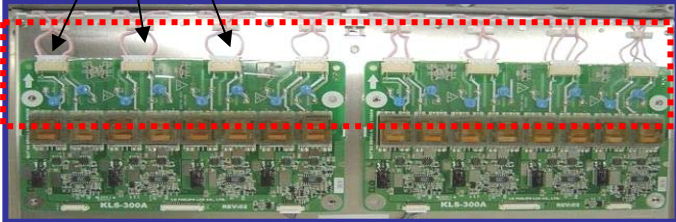
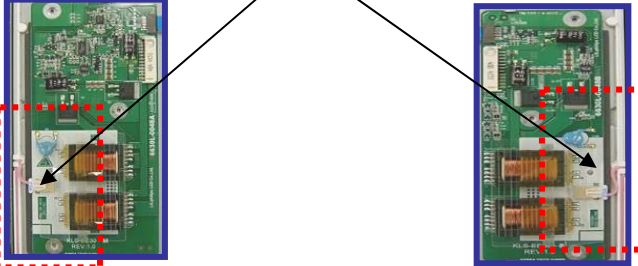
EEFL Advantage

- Multi EEFL lamps driving is available by 1 inverter



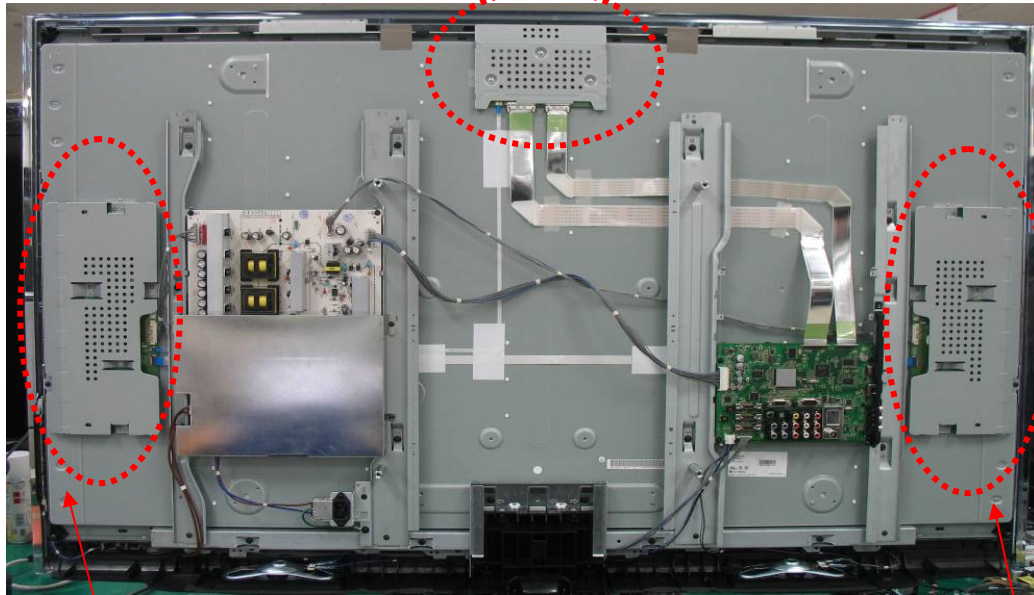
- 1) Simple Mechanical structure
 - Using 1 inverter (Master & Slave type 1set)
- 2) Green Environment
 - Pb Free B/L (Non soldering Lamp)
- 3) Low Power Consumption
 - 15~20% Down

Comparison of Structure

Item	CCFL Model	EEFL Model
Lamp Assembly Image	 <p>Wire Solder</p>	 <p>Socket → Pb Free</p>
LCM Image		
Inverter Image	<p>Lamp wires & connectors</p> 	<p>Lamp wires & connectors</p> 
<p style="text-align: center;">High voltage area Do not touch Lamp wire, connector and Trans at operating</p>		

The Structure of Set Applied EEFL Lamp

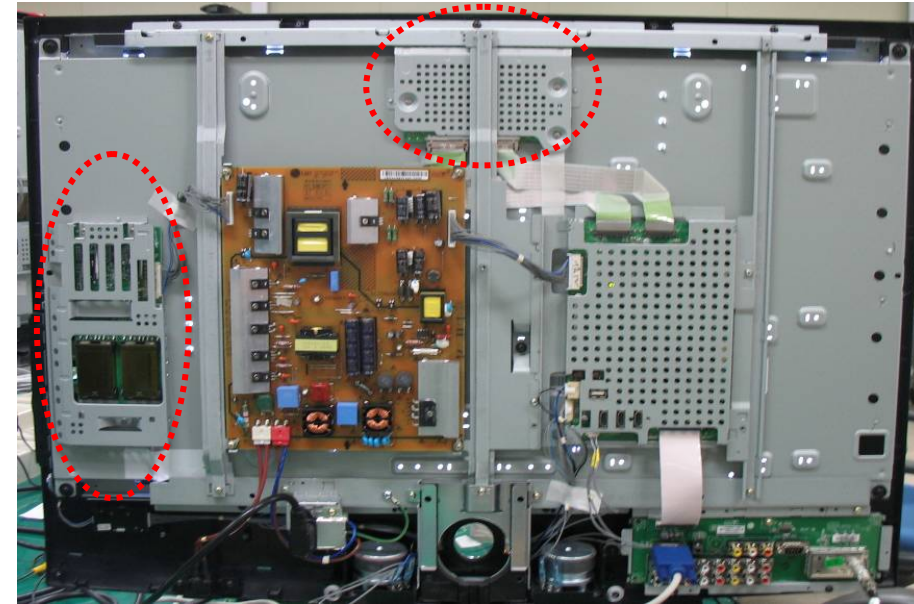
T-Con Board



Master Inverter

Slave Inverter

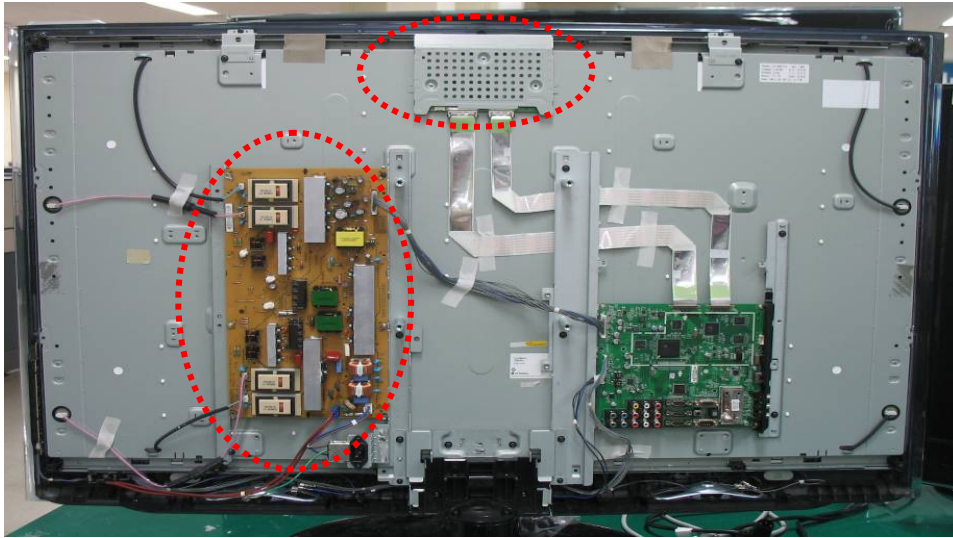
Master / Slave Type Inverter



Slave-less Type Inverter

Inverter less & LED Backlight structure

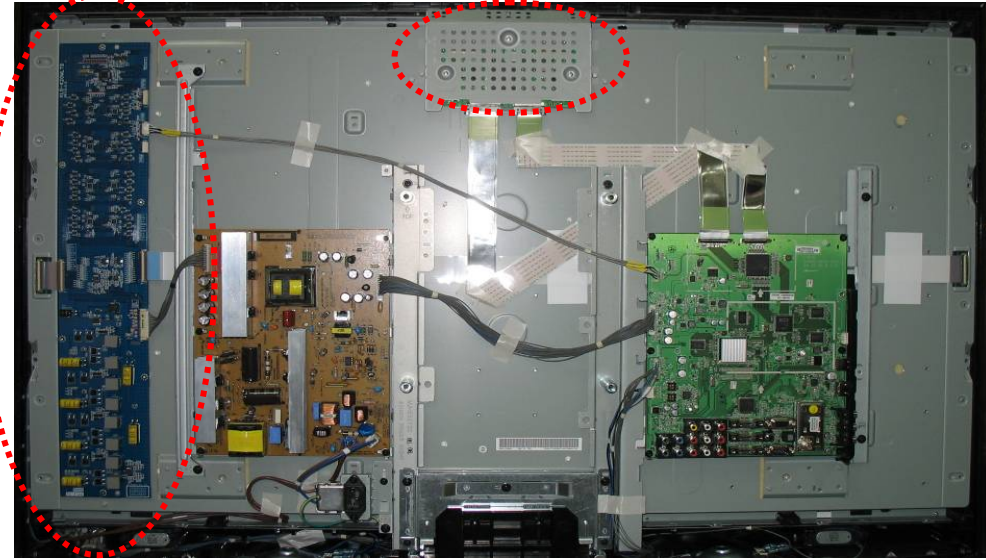
T-Con Board



LIPS (PSU+ Inverter)

< Inverter less Type Set >

T-Con Board



Inverter

< LED Backlight Type Set >

WARNING

- **Do not disconnect or connect the connector while the power is on.**
- **Backlight inverter uses high voltage for lamp. Do not touch circuit substrate and use caution to electric shock when handling the LCD Module Backlight inverter unit.**

CAUTION

- **LCD Module requires to be handled with special care. LCD Module is not to be touched with metal or hard materials. Must not be stressed by head or mechanical impact.**
- **When cleaning the panel is necessary, wipe it with a soft and moistened clothe a neutral detergent. Do not use chemicals such as thinner or benzene.**
- **Before disconnecting cable from the product, be sure to turn off the power. Be sure to hold the connector when disconnecting cables. Pulling a cable with excessive force may cause the core of the cable to be exposed or break the cable, and this can lead to fire or electric shock.**
- **Do not touch TCP area. It may cause Driver IC crack, film crack etc. TCP is the weakest point of LCD Module.**

-
- **Check connection of the Inverter & Backlight Connector or damage the inverter.**
 - **Incomplete connection which can cause burn in backlight connector or damage the Inverter**
 - **Do not operate for a long time under the same pattern.**
 - **Operating LCD Module for a long time under the same pattern can cause image persistence and can damage it.**
 - **Handle defect panel with care.**
 - **Defective LCD Module should be repaired.**
 - **Never connect/disconnect at power on.**
 - **LCD Module consists of CMOS which is known as weak component against EOS. It can damage the product.**
 - **Try to avoid swift Temperature & Humidity change.**
 - **Swift temperature and or humidity change can make dew condensation or ice which cause nonconformance such as malfunction.**

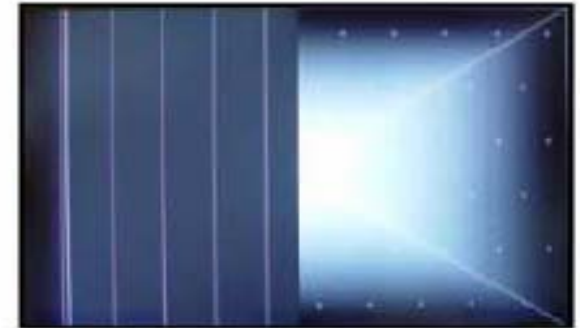
Exchange T-Con Board



Solder defect, CNT Broken



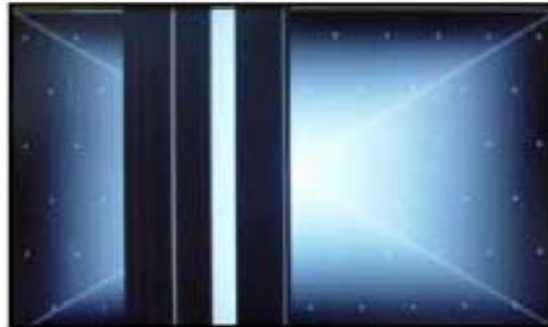
Solder defect, CNT Broken



Solder defect, CNT Broken



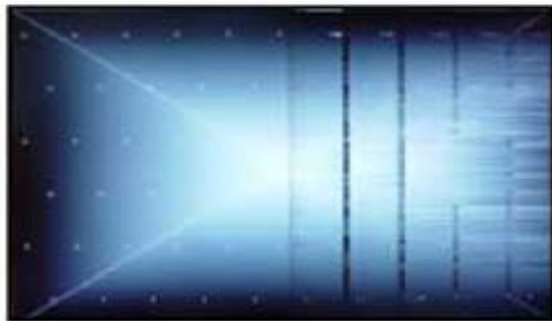
Solder defect, CNT Broken



Solder defect, CNT Broken



Abnormal Power Section



Solder defect, Short/Crack

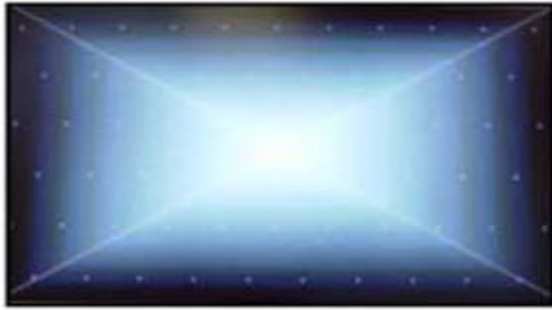


Abnormal Power Section



Solder defect, Short/Crack

Exchange T-Con Board



Abnormal Power Section



Abnormal Power Section



Solder defect, Short/Crack



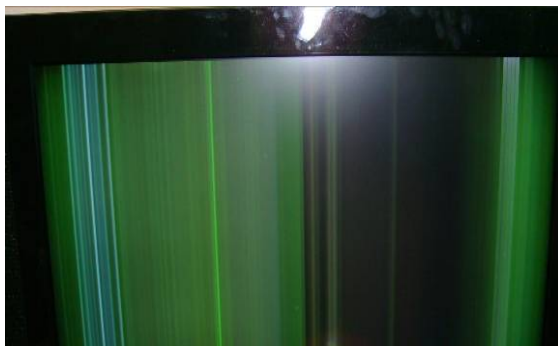
Solder defect, Short/Crack



Fuse Open, Abnormal power section



Abnormal Display



GRADATION



Noise



GRADATION

Exchange Inverter Board



No Light



Dim Light



Dim Light



Dim Light



No picture/Sound Ok

Un-repairable: Exchange the Module



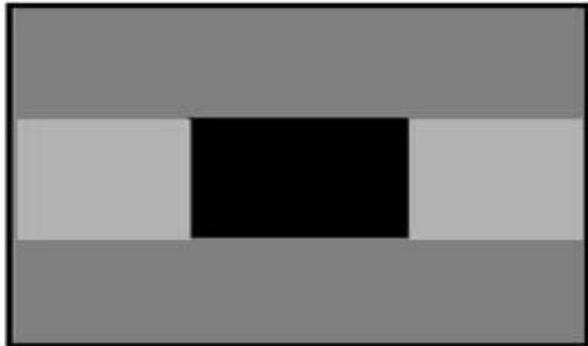
Panel Mura, Light leakage



Panel Mura, Light leakage



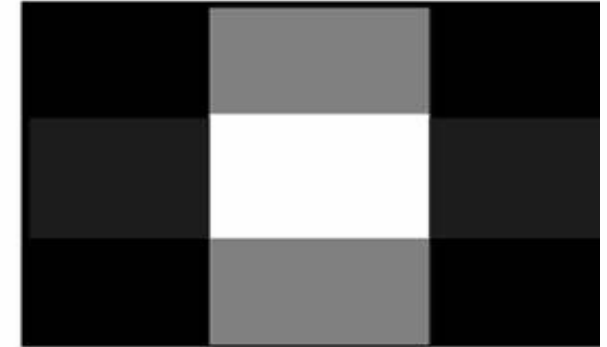
Press damage



Crosstalk



Press damage

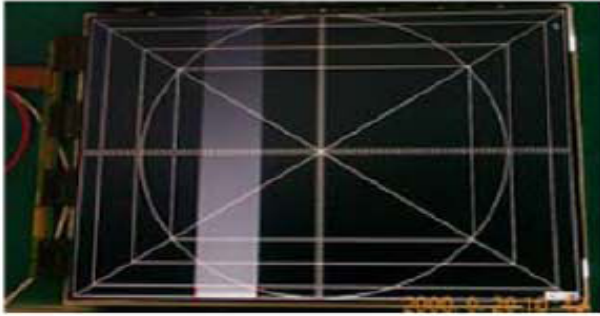


Crosstalk



Press damage

Un-repairable: Exchange the Module



**Vertical Block
Source TAB IC Defect**



**Vertical Line
Source TAB IC Defect**



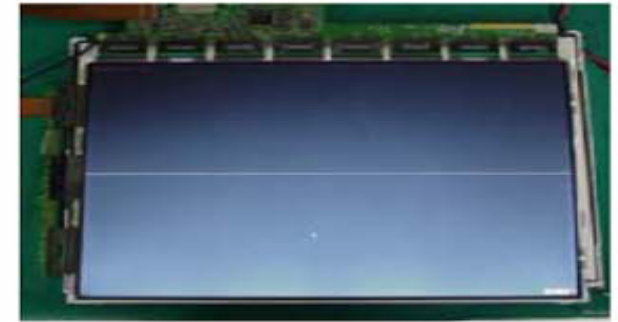
**Vertical Block
Source TAB IC Defect**



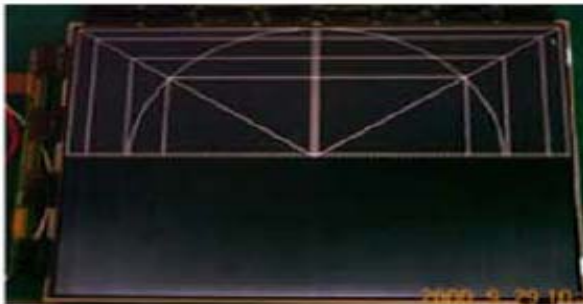
**Horizontal Block
Gate TAB IC Defect**



**Horizontal Block
Gate TAB IC Defect**



**Horizontal line
Gate TAB IC Defect**



**Horizontal Block
Gate TAB IC Defect**

Part Numbers

Use the new part numbers on when next ordering display parts.

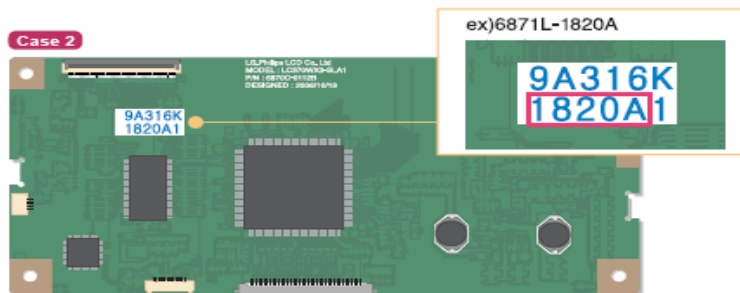
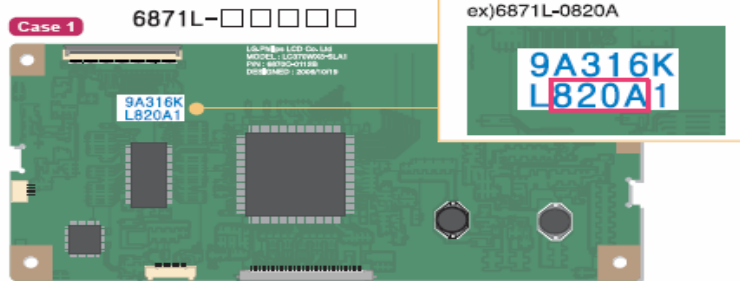
There are part substitutions for the T-Con Board, Inverter, and the LCD Panel. There is a part number that is used by LGD and one that is used by LGE.

LGE Part number can be used when ordering parts.

Check the T-Con Board & Inverter [Master/Slave] LGD P/N.

- ※ Number of order progress.
- ※ The Marking position could be different each model of T-Con or inverter P/N.
This picture is different from origin model.
Please Use it only as a reference.

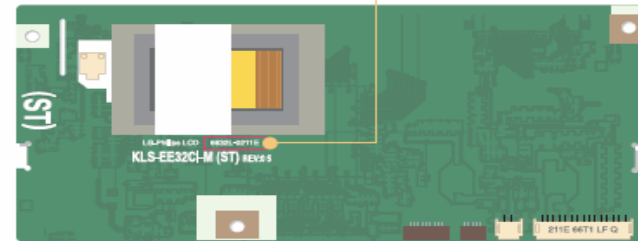
T-CON Board



Inverter

6632L-

(Master)

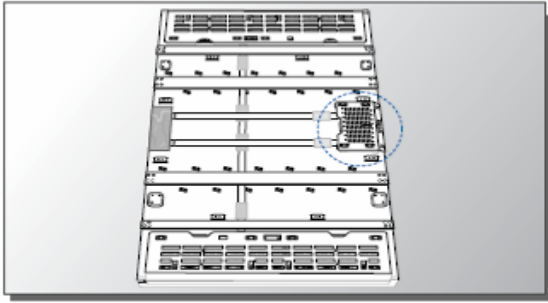


(Slave)

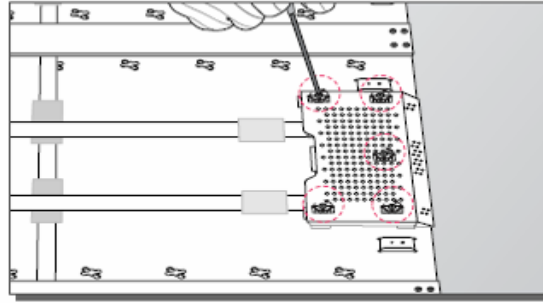


T-Con Board Replacement

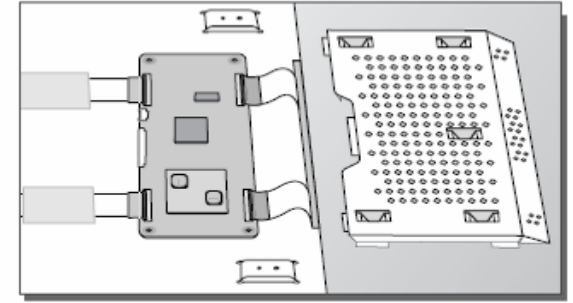
- Inverters and T-Con boards are available via spare parts.



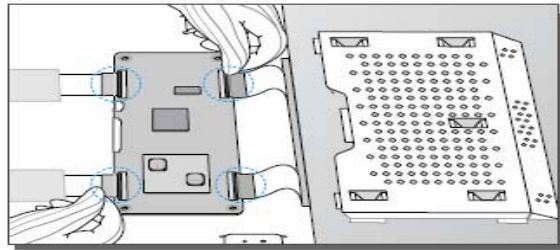
1 Prepare the LCM.



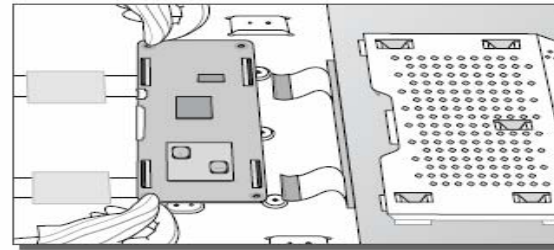
2 Separate the Screw(5EA).



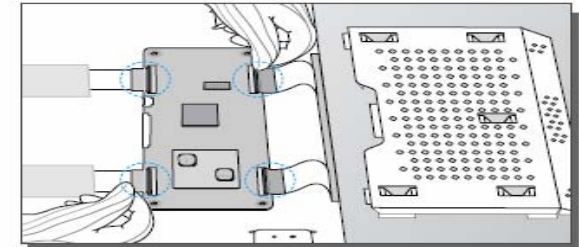
3 Separate the Cover Shield.



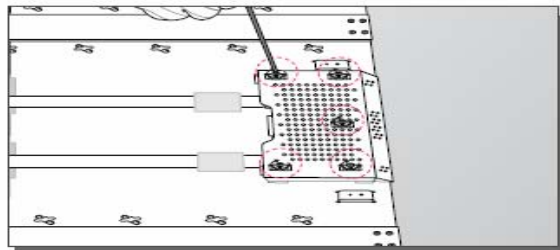
4 Separate the FFC(50pin).(4EA)



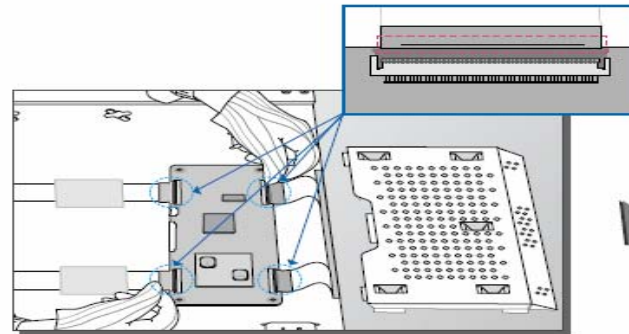
5 Separate the T-CON Board.



6 Replace of T-CON Board and Assemble the FFC(50pin).(4EA)



7 Attach the Cover Shield and Assemble the Screw(5EA).



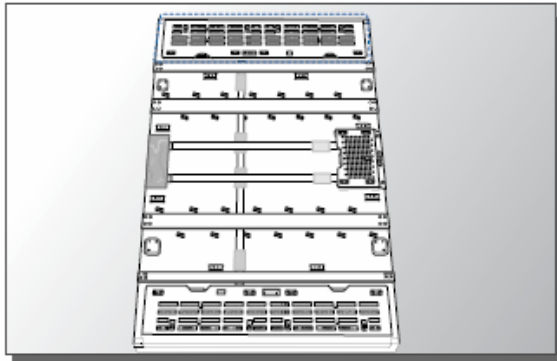
8 Check the FFC(50pin).



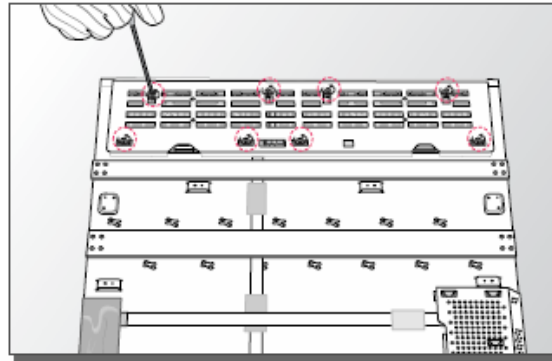
Inverter Replacement (CCFL Master/Slave)

- Inverters and T-Con boards are available via spare parts.
- When an inverter board is defective, always replace both Master and Slave inverter boards, as these boards must be matched.
- **Check a connection of the inverter & Backlight connector or damage the inverter.**
 - **Incomplete connection with can cause burnt in backlight connector or damage the inverter.**

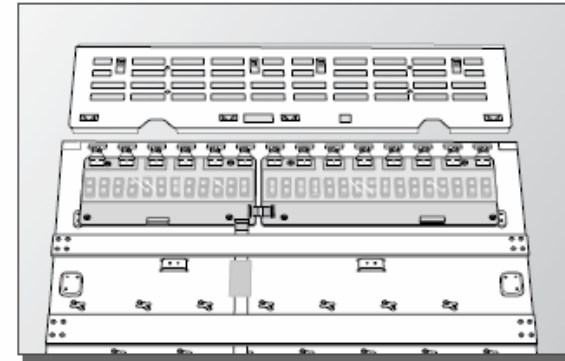
Replace of CCFL inverter



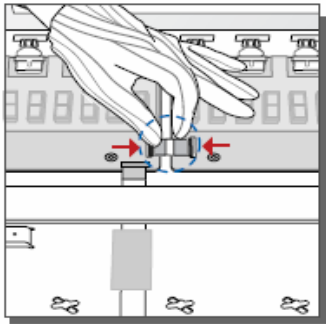
1 Prepare the LCM.



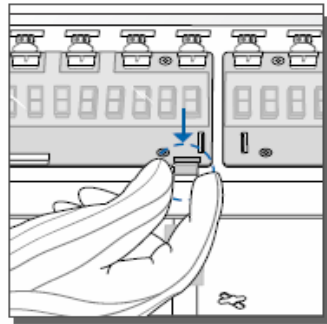
2 Separate the Screw(8EA).



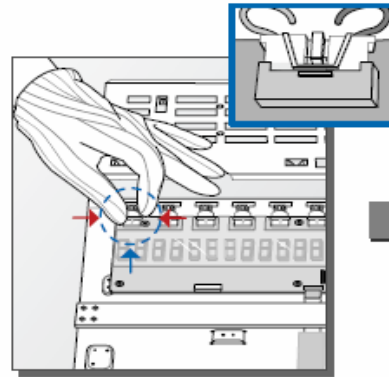
3 Separate the Cover Shield.



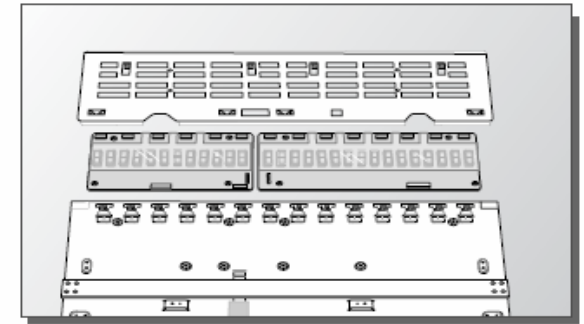
4 Separate the (11pin) FFC.



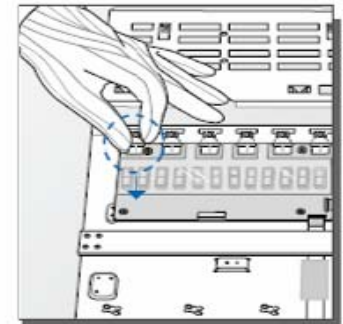
5 Separate the (15pin) FFC.



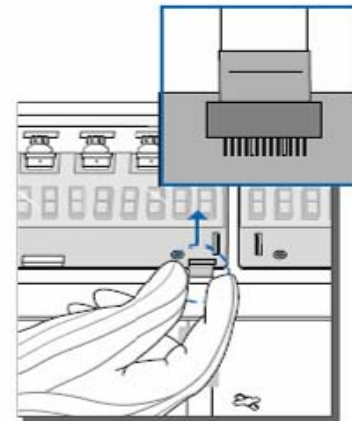
6 Unlock of Connector and separate the Wire Connector(2pin).



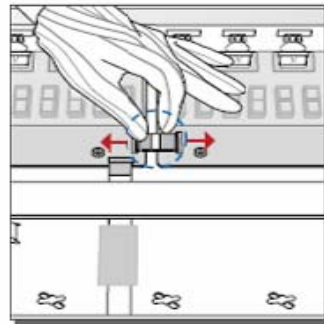
7 Separate the Inverter.



8 Replace of Inverter. Assemble the Wire Connector(2pin).



9 Assemble the FFC(15pin).



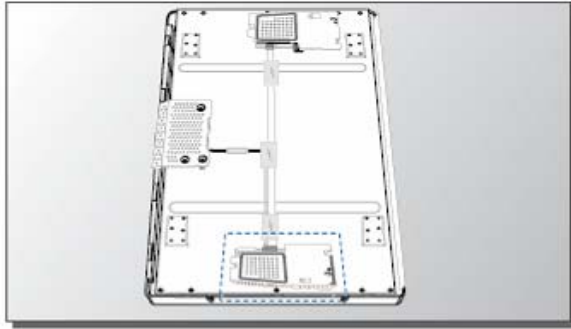
10 Assemble the FFC(11pin).



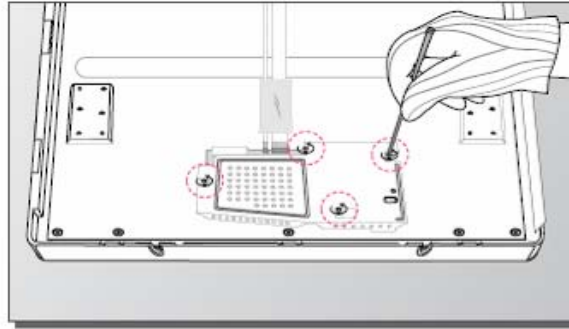
11 Attach the Cover Shield and Assemble the Screw(8EA).

Replace of Inverter (EEFL Master/Slave)

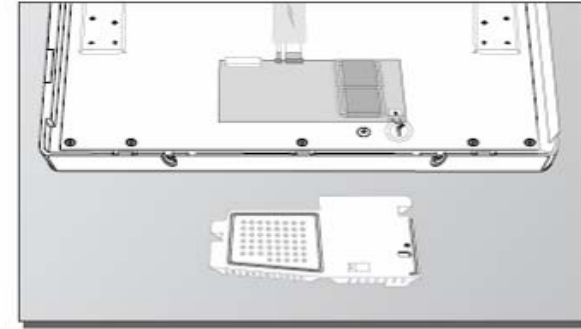
Replace of Master inverter



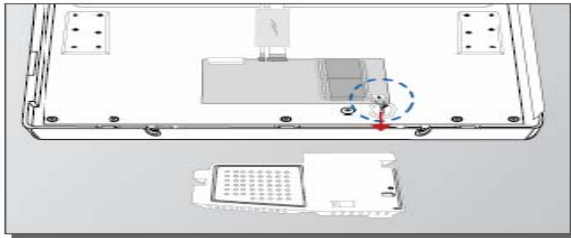
1 Prepare the LCM.



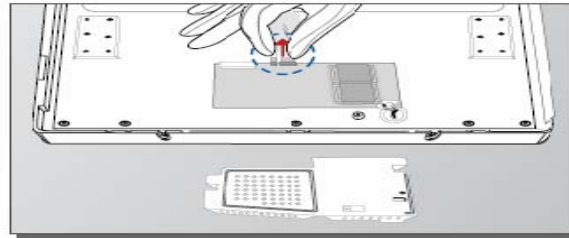
2 Separate the Screw(4EA).



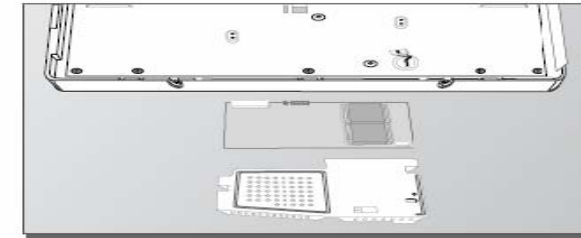
3 Separate the Cover Shield.



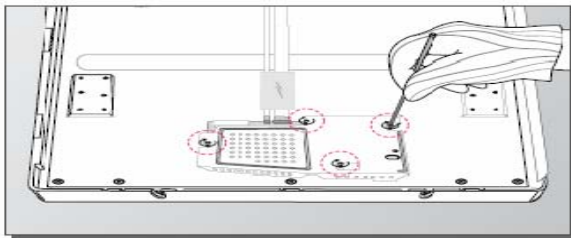
4 Unlock of Connector and sperate the Wire Connector(4pin).



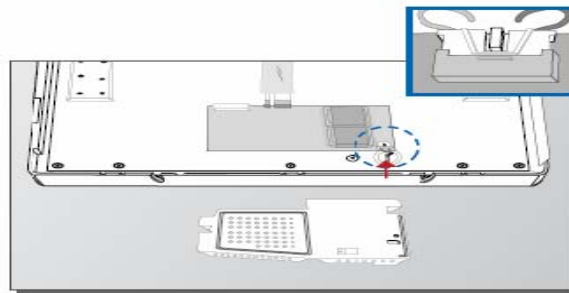
5 Separate the FFC(11pin).



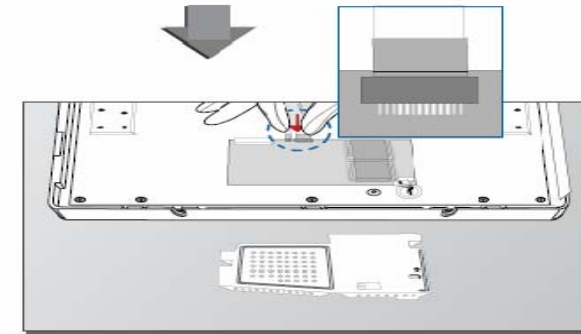
6 Separate the Inverter.



9 Attach the Cover Shield and Assemble the Screw(4EA).



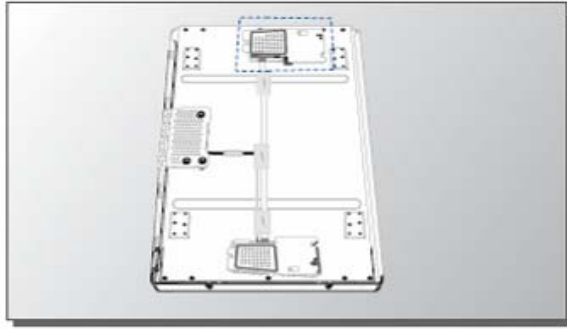
8 Assemble the Wire Connector(4pin).



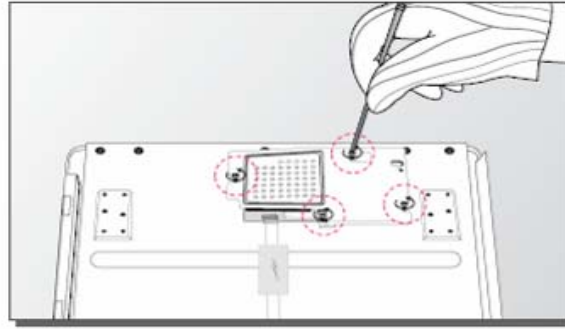
7 Replace of Inverter and Assemble the FFC(11pin).

Replace of Inverter (EEFL Master/Slave)

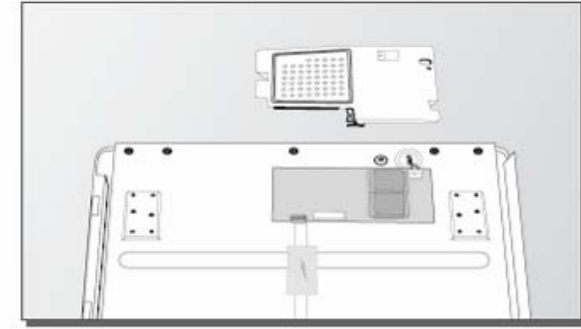
Replace of Slave inverter



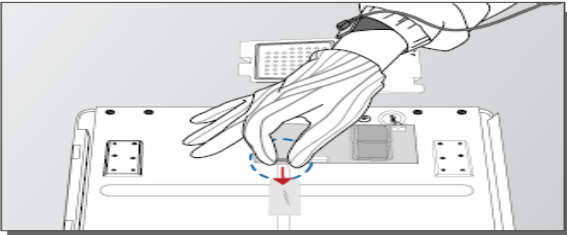
1 Prepare the LCM.



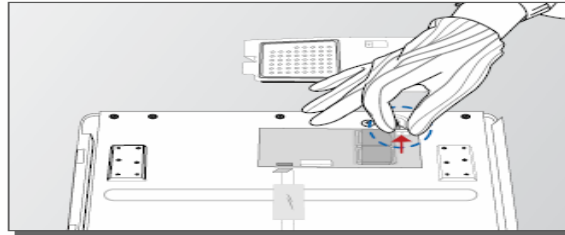
2 Separate the Screw(4EA).



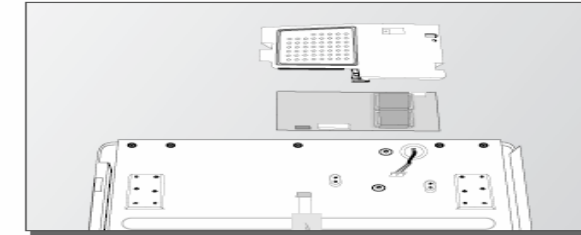
3 Separate the Cover Shield.



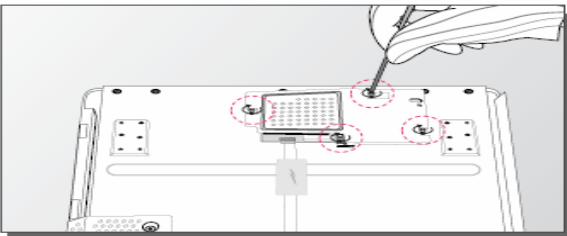
4 Unlock of Connector and sperate the Wire Connector(4pin).



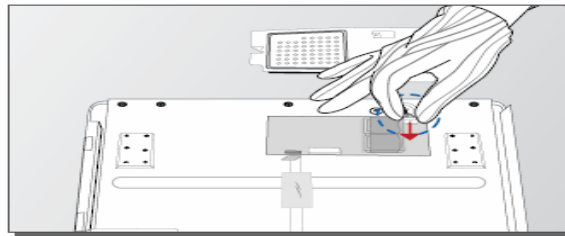
5 Separate the FFC(11pin).



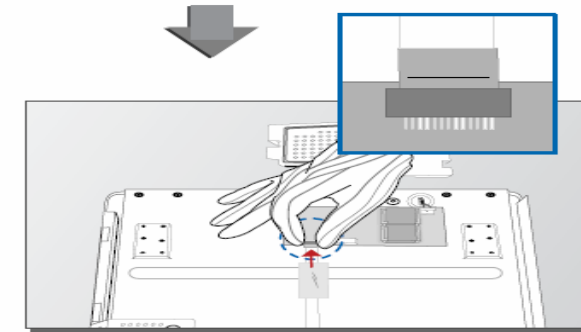
6 Separate the Inverter.



9 Attach the Cover Shield and Assemble the Screw(4EA).

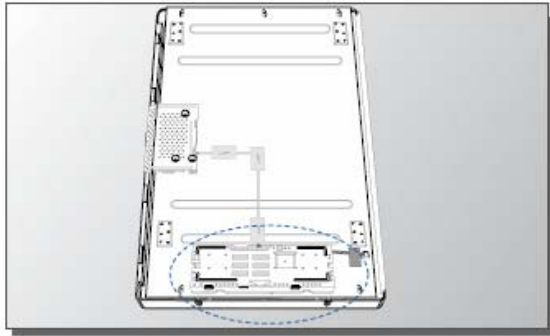


8 Assemble the Wire Connector(4pin).

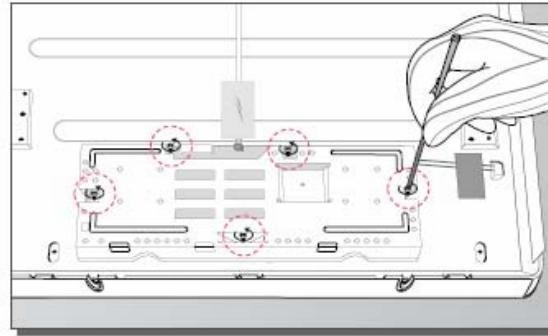


7 Replace of Inverter and Assemble the FFC(11pin).

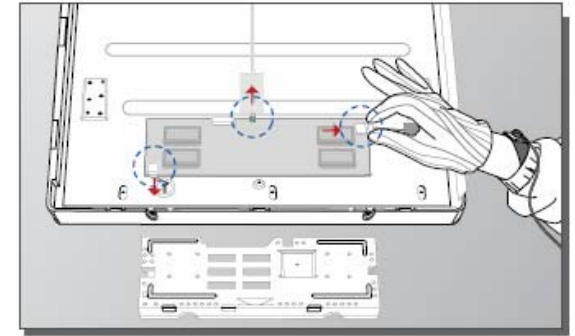
Replace of Slave-less



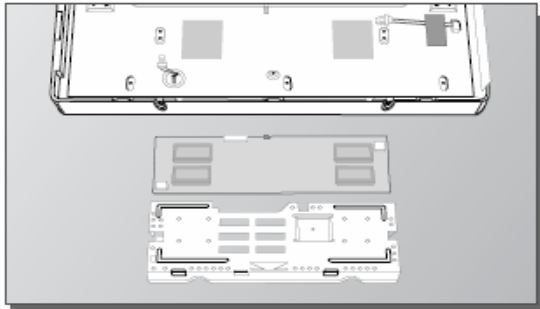
1 Prepare the LCM.



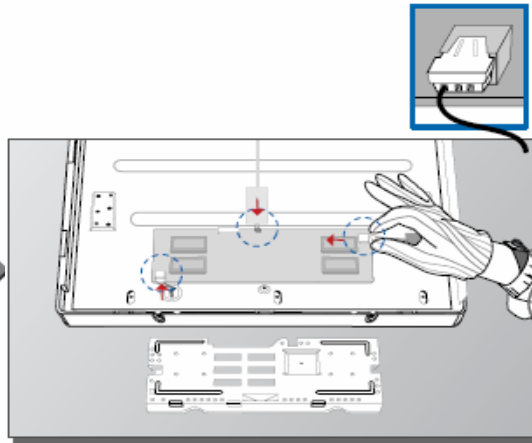
2 Separate the Screw(5EA).



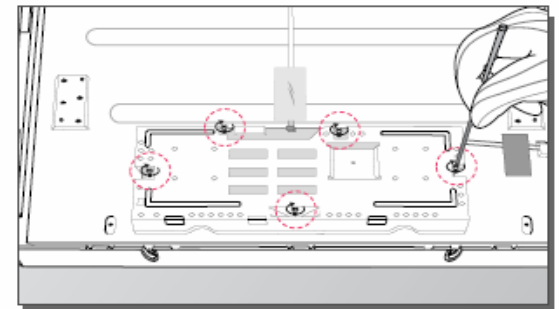
3 Unlock of Connector and separate the Wire Connector(2pin & 4pin).



4 Separate the Inverter.



5 Assemble the Wire Connector(2pin & 4pin).



6 Attach the Cover Shield and Assemble the Screw(5EA).