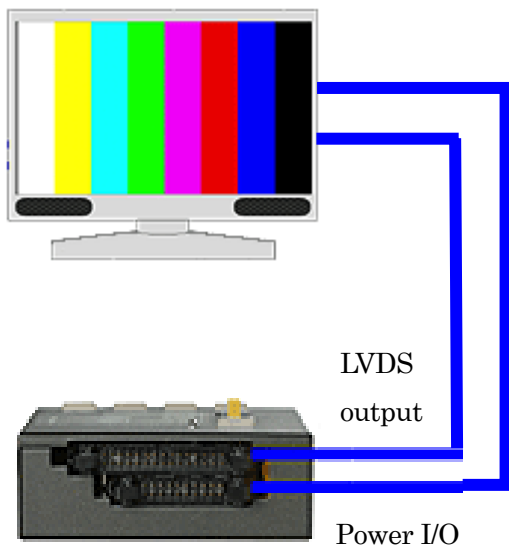
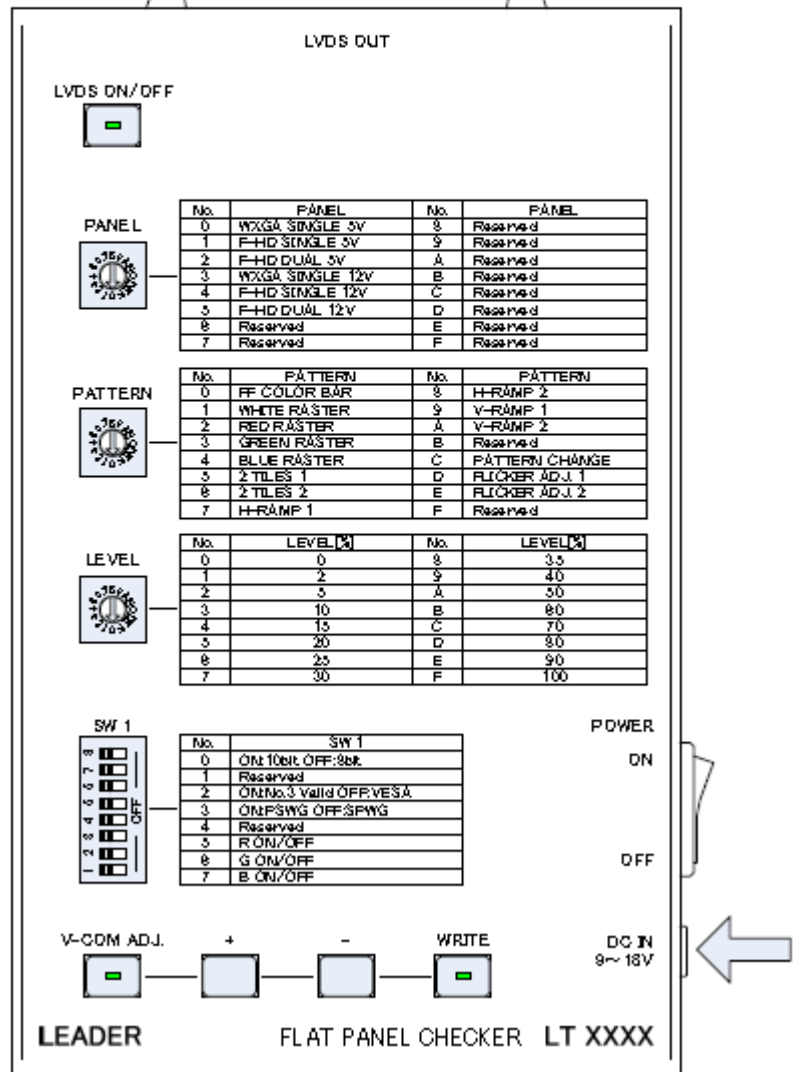


LT 60 Flat Panel Checker

TO FLAT PANEL T-CON



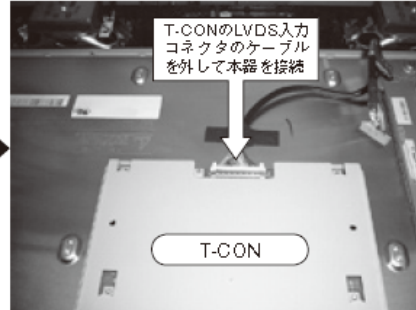
1. Description

LT60 is portable flat panel checker suitable for onsite service or repair of Flat panel. It helps to diagnose whether the flat panel or the mother board is bad.

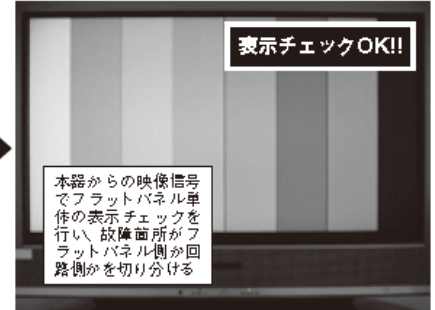
2. How to check the flat panel



Remove rear cover of the flat Panel.



Unplug the original LVDS cable from the T-CON connector. And connect the LVDS cable of the LT60 to the T-CON connector.



Check the flat panel using the LT60 test pattern. Problem between the flat panel or mother board can be judged.

3. Characteristic

- ◆ Light weight and portable, suitable for service
- ◆ VESA TV Panel Standard WXGA (1366x768) and Full HD (1920x1080) compliance
- ◆ 120Hz double driver speed panel is supported
- ◆ 8 bit and 10bit panel are supported. 10bit deep color is available
- ◆ VESA, SPWG, PSWG data mapping are supported
- ◆ 5V and 12V panel are supported
- ◆ Panel voltage LED warning is provided to prevent wrong voltage setting
- ◆ Panel short circuit LED warning is provided to prevent short circuit
- ◆ Panel current over drawn protection function is provided
- ◆ Flicker adjustment which is necessary after panel replacement is available by using V_COM adjustment
- ◆ Different types of cable may required depends on the connector type of the panels

4. Specifications

Output

LVDS standard	TIA/EIA-644 Electrical Characteristics of Low-Voltage Differential Signaling (LVDS) Interface Circuits
Transmitter	THC63LVD1023B (Thine Electronics)

Video data:

Items	Contents	Setting
Format	RGB 4:4:4	Fixed
Bit number	RGB 8bit or 10bit	Dip switch
Mapping	VESA/SPWG/PSWG	Dip switch

Compliance panel:

Selectable using rotary switch				
No.	Format	Link	Speed	Voltage (V)
0	WXGA (1366x768)	SINGLE	60Hz	5
1	F-HD (1920x1080)	SINGLE	60Hz	5
2	F-HD (1920x1080)	DUAL	60Hz	5
3	WXGA (1366x768)	SINGLE	60Hz	12
4	F-HD (1920x1080)	SINGLE	60Hz	12
5	F-HD (1920x1080)	DUAL	60Hz	12
6	F-HD (1920x1080)	DUAL	120Hz	5
7	F-HD (1920x1080)	DUAL	120Hz	12
8	Reserved	-		-
9	Reserved	-		-
A	Reserved	-		-
B	Reserved	-		-
C	Reserved	-		-
D	Reserved	-		-
E	Reserved	-		-
F	Reserved	-		-

Panel voltage: 5V/12V 3A

Wrong voltage setting

prevention function: Prevent from input 12V to 5V panel

When 12V output is ON, the LED warning will blink

Short circuit warning function: LED warning will blink if panel power to GND short circuit

Current over drawn protection function: Power supply for panel will be cut off if current over draw

Flicker adjustment: V-COM voltage adjustment using I2C

Output connector

Upper: HIF3BA-30PA-2.54WB (Hirose Electronics) or equivalent product

Lower: HIF3BA-20PA-2.54DS (Hirose Electronics) or equivalent product

Pin layout:

Upper					
Pin No.	Signal	Contents	Pin No.	Signal	Contents
1	GND	GND (LVDS)	16	GND	GND (LVDS)
2	GND	GND (LVDS)	17	CH2-TA-	LVDS output
3	CH1-TA-	LVDS output	18	CH2-TA+	LVDS output
4	CH1-TA+	LVDS output	19	CH2-TB-	LVDS output
5	CH1-TB-	LVDS output	20	CH2-TB+	LVDS output
6	CH1-TB+	LVDS output	21	CH2-TC-	LVDS output
7	CH1-TC-	LVDS output	22	CH2-TC+	LVDS output
8	CH1-TC+	LVDS output	23	CH2-CLK-	LVDS output
9	CH1-CLK-	LVDS output	24	CH2-CLK+	LVDS output
10	CH1-CLK+	LVDS output	25	CH2-TD-	LVDS output
11	CH1-TD-	LVDS output	26	CH2-TD+	LVDS output
12	CH1-TD+	LVDS output	27	CH2-TE-	LVDS output
13	CH1-TE-	LVDS output	28	CH2-TE+	LVDS output
14	CH1-TE+	LVDS output	29	GND	GND (LVDS)
15	GND	GND (LVDS)	30	GND	GND (LVDS)
Lower					
Pin No.	Signal	Contents	Pin No.	Signal	Contents
1	VDD	Panel voltage	11	GPIO 0	Reserved
2	VDD	Panel voltage	12	GPIO 1	Reserved
3	VDD	Panel voltage	13	GPIO 2	Reserved
4	VDD	Panel voltage	14	GPIO 3	Reserved
5	GND	GND	15	GND	GND
6	GND	GND	16	SCL	V-COM adjust clock
7	GND	GND	17	SEN	V-COM adjust enable
8	GND	GND	18	SDA	V-COM adjust data
9	NC	NC	19	SEL	Control signal
10	NC	NC	20	GND	

Patterns:

No.	Pattern name	Variable level	RGB ON/OFF	Contents
0	Full field color bar	○	○	Color bar
1	White raster	○	○	All white
2	Red raster	○	-	All red
3	Green raster	○	-	All green
4	Blue raster	○	-	All blue
5	2 Tiles 1	○	-	Top: white, bottom: black
6	2 Tiles 2	○	-	Top: black, bottom: white
7	H-RAMP 1	-	-	Horizontal ramp left: white->right: black
8	H-RAMP 2	-	-	Horizontal ramp left: black->right: white
9	V-RAMP 1	-	-	Vertical ramp top: white->bottom: black
A	V-RAMP 2	-	-	Vertical ramp top: black->bottom: white
B	Reserved	-	-	
C	Pattern change	-	-	0~A repeat display
D	Flicker ADJ 1	Fixed	-	V-COM adjust pattern 1
E	Flicker ADJ 2	Fixed	-	V-COM adjust pattern 2
F	Reserved	-	-	

Variable level:

Number is selectable using rotary switch			
No.	Level %	No.	Level %
0	0	8	35
1	2	9	40
2	5	A	50
3	10	B	60
4	15	C	70
5	20	D	80
6	25	E	90
7	30	F	100

RGB ON/OFF:

Item	Content	Setting
R	ON/OFF	Dip switch
G		Dip switch
B		Dip switch