PHILIPS 150B6 Functional Block Diagram

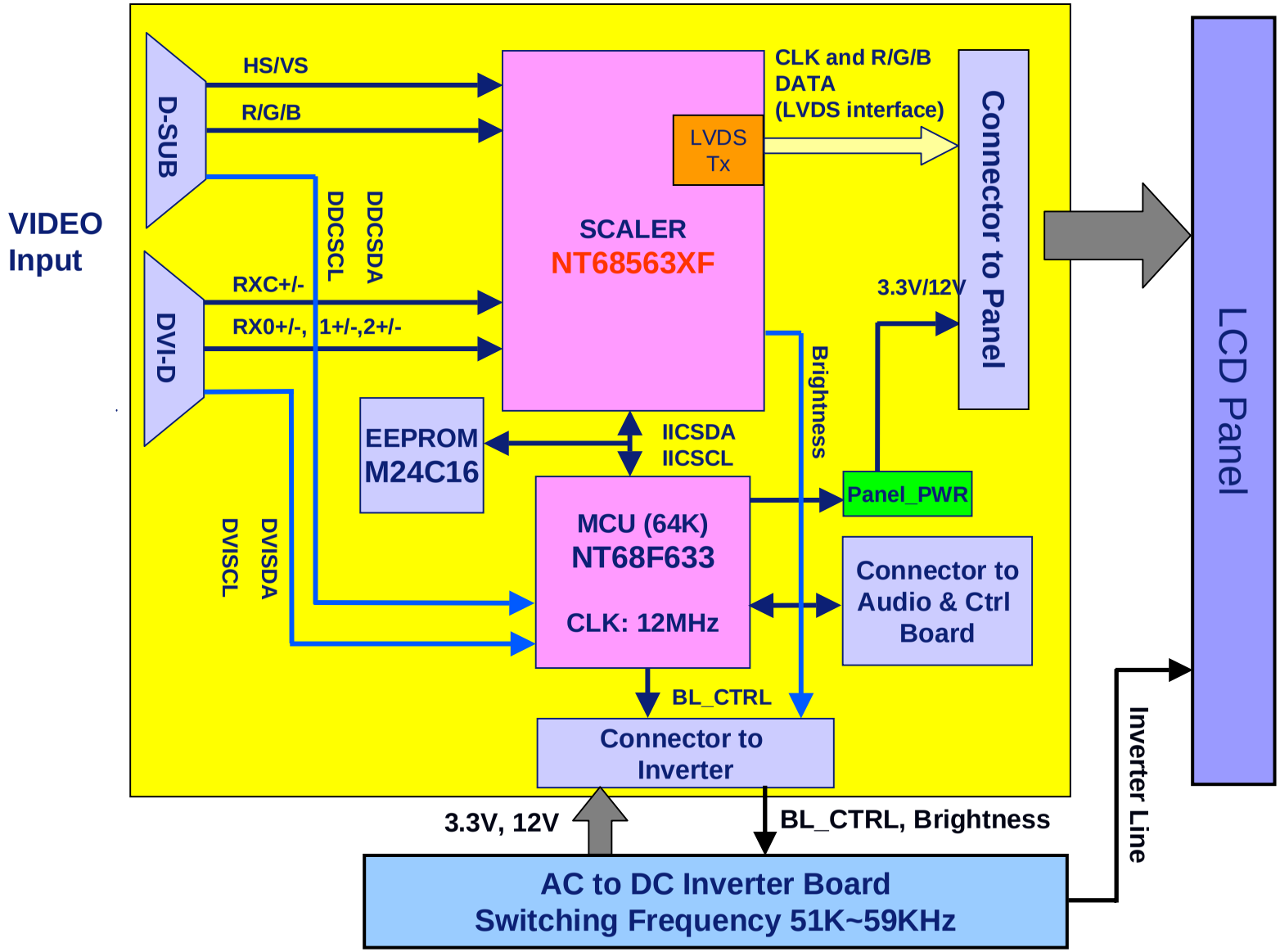

Exhibit 4

Circuit Description

1. General

150B6 is the 6th generation of Hudson series Flat Panel Display Monitor with lead free monitor policy. It designed with PSWG panel standard, LVDS interface. The monitor featured with both DVI-D and analog signal input interface, and modularized as a display unit with embedded universal AC power supplies inside monitor main body. The monitor is with COMPACT base and features with tilt, swivel, good stability with adjustable traveling height. The power button and display control buttons (tact switch type) are on the front of the monitor. The monitor shall support an internal scaler to automatically enable the monitor to display lower resolution video modes into 1024 x 768 full screen display. Horizontal scan range is 30 – 63 KHz and the refresh range is 56 - 76 Hz. The image can be adjusted through new styling OSD control board. These adjustments can be stored on a board memory including 34 pre-set modes.

2. Power supply

Main Voltage:	AC 90 - 135 Vrms and 170 – 264 Vrms, 50/60±2 Hz
Power consumption:	Operating < 23W (Typical. with audio), Standby < 1W.
	DC power switch off < 1W.
Power cord length:	1.5M
Power cord type:	3 lead with earth plug
Power indicator:	LED (ON: green, Standby: amber)
Auto power saving:	EPA, Nutek, VESA, DPMS, E2000

3. Input signal

Horizontal scan: 30 - 63 KHz

Vertical scan: 56 - 76 Hz

Input signals

1. Signal input level
   - Video : 0.7 Vp-p linear / 75 ohms
   - Sync : H/H+V, V TTL level, composite sync, sync on green
2. Impedance
   - Video : Terminated with 75 ohms
   - Sync : Terminated with 2K2 ohms

4. OSD (On Screen Display) function

Software control function via OSD/ Control as below:

Analog Signal Input

1. Main Menu	2.1 Sub Menu	2.2 Sub Menu 2
MONITOR SETUP		
Exit		
Brightness & Contrast	Brightness, Contrast	
Color	Original Color, 9300K,6500K, sRGB	
	User Define	Red, Green, Blue
Position	Horizontal, Vertical	
Input Selection	Analog, Digital	
More Settings	Language	English, Spanish, French, German, Italian, S. Chinese
	Phase/ Clock	Phase, Clock
	OSD Setting	Horizontal, Vertical
	Audio Option	Stand-alone (On, Off)
		Mute (On, Off)
Reset	No, Yes	
Serial No.:		
(Serial No.)		
(Timing Mode)		
Move Selection Then ok		

Digital Signal Input

1. Main Menu	2.1 Sub Menu	2.2 Sub Menu 2
MONITOR SETUP		
Exit		
Brightness & Contrast	Brightness, Contrast	
Color	Original Color, 9300K,6500K, sRGB	
	User Define	Red, Green, Blue
Position (Gray out)		
Input Selection	Analog, Digital	
More Settings	Language,	English, Spanish, French, German, Italian, S.Chinese
	Phase/ Clock (Gray out)	Phase, Clock (Gray out)
	OSD Setting	Horizontal, Vertical
	Audio Option	Stand-alone (On, Off)
		Mute (On, Off)
Reset	No, Yes	
Serial No.:		
(Serial No.)		
(Timing Mode)		
Move Selection Then ok		

Remark: Audio Selection - Stand-alone – On: Isolate video and audio control input
Stand-alone – Off: Integrate video and audio control input
Mute – On: Turn off Audio input
Mute – Off: Turn on Audio input

Reset - No: Exit.
Yes: Auto adjustment for displaying timing mode and recall factory preset

5. LCD panel

Type.	: 15” TFT-LCD flat panel
Dimensions.	: 1024 (H) x768 (V)
Pixel Pitch.	: 0.297 mm x 0.297 mm
Color pixel arrangement.	: RGB vertical stripes
Support Color.	: 16 M colors
Display Mode.	: Normally White
Backlight.	: CCFL edge light system
Active area. (WXH).	: 304.1 x 228.1mm (15” diagonal)
Contrast ratio.	: 450:1(Typ. LPL) / 500:1(Typ. QDI)
White luminance.	: 250nits (Typ.)

6. Function block

6.1 Scaler board

Scaling (NT68563 including ADC, Scaler, OSD, LVDS)

Analog

- Monitor the input horizontal and vertical sync signal to judge input video mode
- Sample the input video signal according to its pixel rate to form a digital data for panel.
- Auto-adjustment for sampling phase and frequency, picture alignment and color alignment.
- Send the parameters to format scaler IC according to the input mode.
- Process the control data listed in OSD section.

Digital

- Monitor DVI input with internal TMDS receiver to judge input video mode
- Sample the input video signal according to its pixel rate to form a digital data for panel.
- Send the parameters to format scaler IC according to the input mode.
- Process the control data listed in OSD section.

MCU NT68F633L

- Control Scaling and all I/Os port of monitor including audio.
- Store the source code into internal Flash ROM and capable of down loading program via ISP.

6.2 Front panel switch control board

- Used for OSD function and power on/off
  7 push buttons (left, ok, right, up, down, auto, power switch)
- Power on/off LED indicator

6.3 AC to DC Inverter Board board

The AC power input from 90 VAC to 264 VAC, can generate 12V and 3.3 VDC power to supply to inverter function and scaler board.