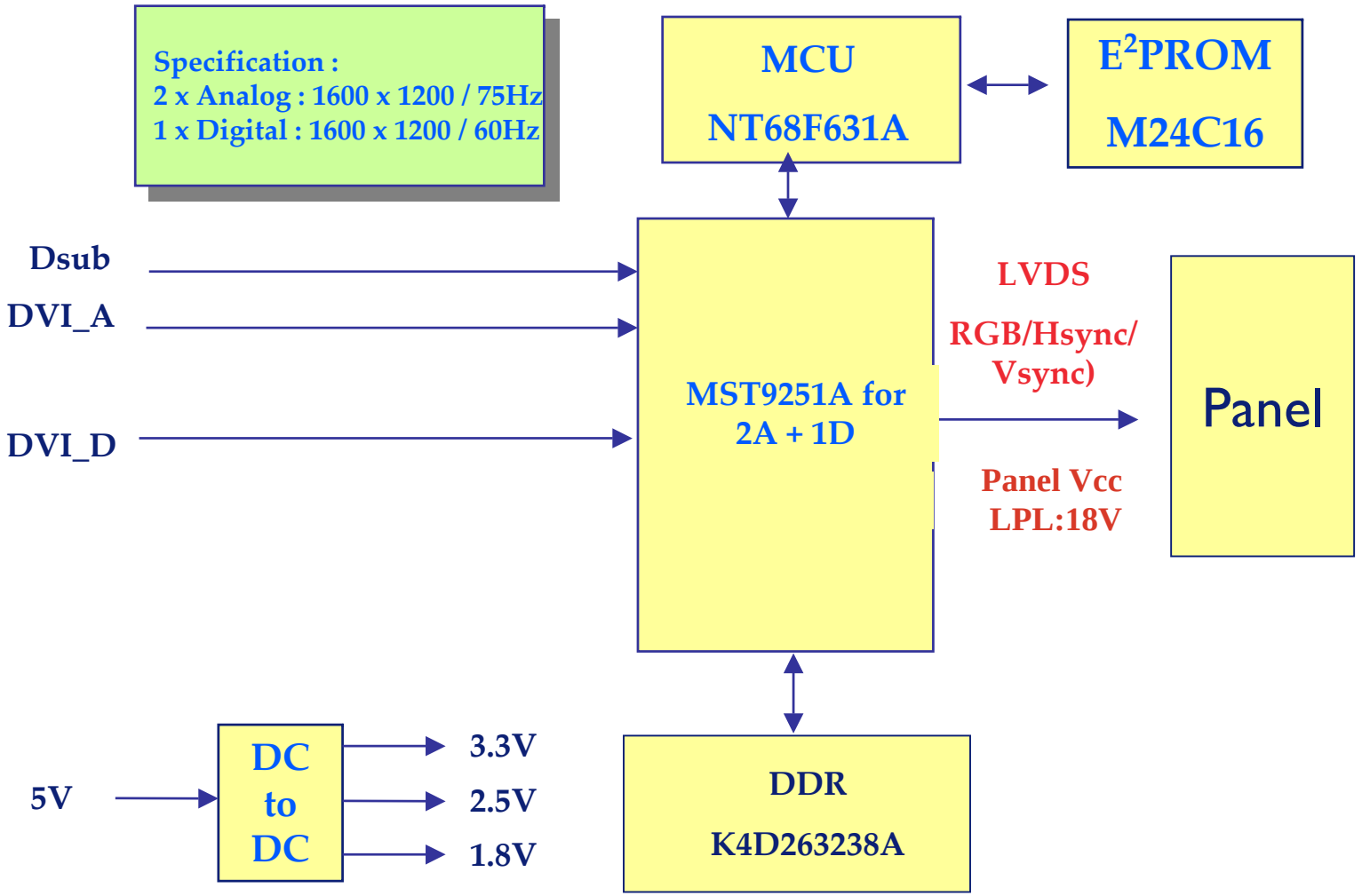
PHILIPS

230WP7 Scalar Board Block Diagram

- To use M-star Scalar



Circuit Description

General

230WP7NS is the 7th generation of Hudson series Flat Panel Display Monitor. It designed with LVDS interface feature. The monitor featured with DVI-I and analog signal input interface, and modularized as a display unit with embedded universal AC power supplies inside monitor main body. The monitor comes with super ergo base (SEB), the base is featured with tilt, swivel, height adjustment and portrait functionality. The power button and display control buttons (tact switch type) are on the front of the monitor. The monitor will be TCO03/TCO99 and Energy Star compliant and incorporate energy saving features described further in this document. The monitor shall support an internal scalar to automatically enable the monitor to display lower resolution video modes into 1600x1200 full screen display. The monitor shall communicate display data to the host computer using DDC2B and shall support EDID structure 1.3 for analog and digital signal input.

1. Power supply

Main Voltage:	AC 90 - 135 Vrms and 170 – 264 Vrms, 50/60±2 Hz
Power consumption:	Operating < 90W, Standby < 2W.
	DC power switch off < 2W.
Power cord length:	1.8M
Power cord type:	3 lead with earth plug
Power indicator:	LED (ON: blue, Standby: amber)
Auto power saving:	EPA, Nutek, VESA, DPMS, E2000

3. Input signal

Horizontal scan:	30 - 94 KHz
Vertical scan:	56 -85 Hz

Input signals 1).VESA Analog

Input signal : Video, Hsync., Vsync
Video : 0.7 Vp-p, input impedance, 75 ohm @DC
Sync. : Separate sync TTL level , input impedance 5k ohms
Hor. sync Positive/Negative
Ver. sync Positive/Negative

2).Intel DVI Digital
Input signal : Four channel TMDS signals

4. OSD (On Screen Display) function

Software control function via OSD/ Control as below:

Analog Signal Input

1st LEVEL	2nd LEVEL	3rd LEVEL
MONITOR SETUP		
Exit		
Brightness & Contrast	Brightness Contrast	
Color	Original Color, 9300K,6500K, sRGB, User Define	
Position & Size	Horizontal Vertical Size	Full Screen Native Mode Fill with Aspect
Input Selection	Analog(D-Sub), Analog(DVI-A), Digital(DVI-D)	
More Settings	Language	English, Espanol, Frencais, Deutsch, Italiano, Simplified Chinese
	Phase/ Clock	Phase Clock
	OSD Settings	Horizontal Vertical
Reset	No Yes	
Serial No.:		
(Serial No.)		
Timing Mode		

Up/Down to Move, ok to Confirm		

Digital Signal Input

1st LEVEL	2nd LEVEL	3rd LEVEL
MONITOR SETUP		
Exit		
Brightness & Contrast	Brightness Contrast	
Color	Original Color, 9300K,6500K, sRGB, User Define	
Size	Size	Full Screen Native Mode Fill with Aspect
Input Selection	Analog(D-Sub), Analog(DVI-A), Digital(DVI-D)	
More Settings	Language	English, Espanol, Frencais, Deutsch, Italiano, Simplified Chinese
	Phase/ Clock(Grey out)	
	OSD Settings	Horizontal Vertical
Reset	No Yes	
Serial No.:		
(Serial No.)		
Timing Mode		
Up/Down to Move, ok to Confirm		

5. LCD panel

Type NR.	: LM230WU3-SLB1
Outside dimensions	: 523.4(H)∗335.6(V)∗41.0(D) (Typ) mm
Pixel Pitch (mm)	: 0.258 mm x 0258mm
Color pixel arrangement	: RGB vertical stripes
Display surface	: low reflection, antiglare with hard coating
Color depth	: 16.7M colors (8 bits)
Backlight	: Six CCFL‘s
Active area(WxH)	: 495.36x309.60mm (23” diagonal)
View angle	: Horizontal & Vertical 178 degree (CR>=10)
Contrast ratio	: 700 :1 (typ)
White luminance	: Panel original color >250nits (min), 300 nits (Typ)

6. Function block

6.1 Scaler board

Scaling MST9251A 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 NT68F631A

- 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 Power Board

The AC power input from 90 VAC to 264 VAC, can generate 5Vand 18 VDC power to supply to inverter function and scaler board.