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***TFT LCD MONITOR
SPECIFICATION***

Model : BTLXX01/02

(Option : DVI & Audio)

RoHs
Compliant

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1. REVISION HISTORY

Revision	Description of Change	Date
1.0	First Release	Feb.2005
2.0	Support 5V out-put through D-Sub connector	Mar.2006
3.0	Protection circuit add	Oct.2007
4.0	Power input connector add	Mar.2008
5.0	Main (scaler) IC Change (New IC can display upto 1440x900 and1400x1050)	Jun.2009

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2. GENERAL DESCRIPTION

BESTECH TFT-LCD Monitor has been designed to drive up to 1440X1050 resolution @ 75H (Model: BTLXX01) or 1920 x 1200 resolution @ 75Hz (Model: BTLXX02)
DVI & Audio functions are optional on customer's requirement.

3. FEATURES

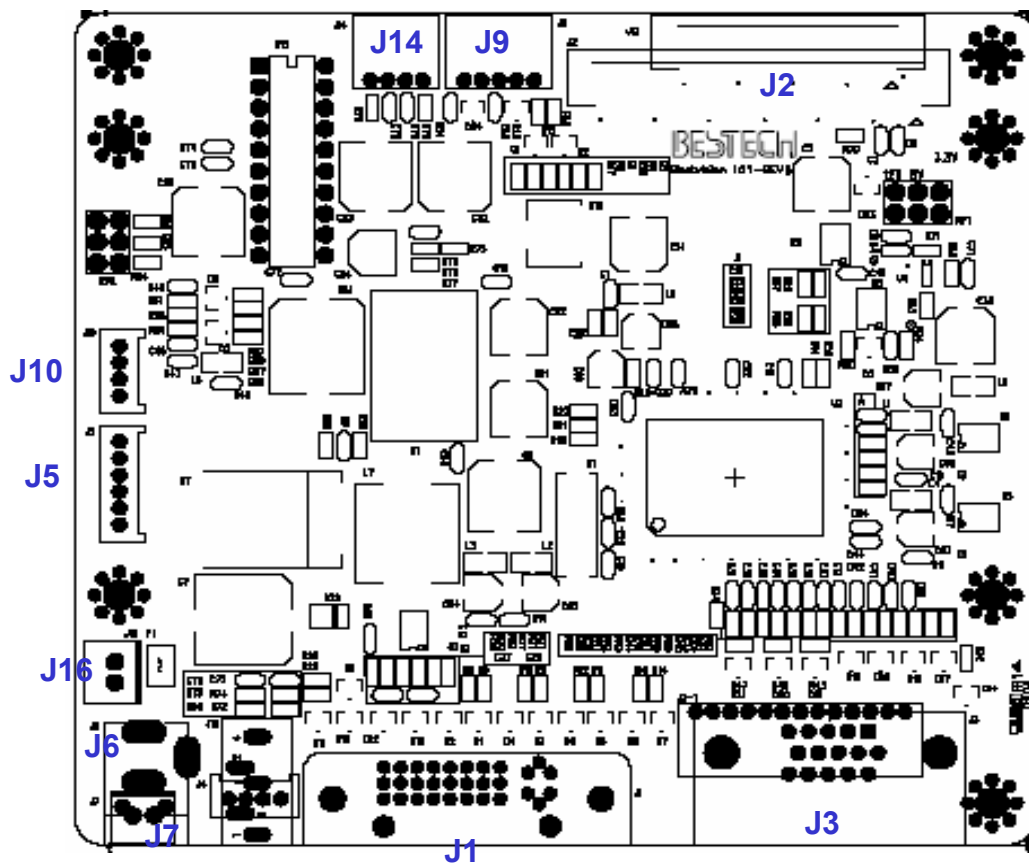
- State of the art high performance picture quality
 - Analog RGB & DVI
 - Multi-sync capability up to 1440 x 1050 resolution @ 75Hz for Model: BTLXX01
or 1920 x 1200 resolution @75Hz for Model: BTLXX02.
 - True color (16.78M) data processing and display driving
 - On-Screen-Display (OSD) user interface
 - Multi language support (into OSD menu)
 - Compatible with VESA DPMS power saving modes
 - VESA DDC1/2B compliant
 - operating temperature: 0 to 50°C
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4. Dimension & Connector Information

4-1 A/D Board DIMENSION & CONNECTORS

Dimension : 110mm(W) X 100mm(L) X 14mm(H)



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Connectors & Jumper

Ref	Item	Function	Part Number
J6	Jack	DC Input	
J4	Jack	Audio In	
J1	Connector	DVI	
J3	Connector	D-Sub 15pin (F)	
J5	Connector	Inverter	
J10	Connector	Power output	
J16	Connector	Power input	
J7	Connector	Power input	
J14	Connector	Audio Out	
J9	Connector	OSD	
J2	Connector	LVDS Output	
RP1	Jumper	Panel Vol. Adjust	

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J1 : DVI Input

Pin No.	Symbol	Description
1	TMDS Data 2-	TMDS Data Negative signal (R-)
2	TMDS Data 2+	TMDS Data Positive signal (R+)
6	DDC Clock	Clock for EDID
7	DDC Data	Data for EDID
9	TMDS Data 1-	TMDS Data Negative signal (G-)
10	TMDS Data 1+	TMDS Data Positive signal (G+)
14	+5V Signal	+5V for EDID
15		
16	+5V	
17	TMDS Data 0-	TMDS Data Negative signal (B-)
18	TMDS Data 0+	TMDS Data Positive signal (B+)
23	TMDS Clock+	TMDS Clock+
24	TMDS Clock-	TMDS Clock-
4,5,8,12,1 3,20,21,2 5,26,27,2 8,29	NC	No-Connection
3,11,19 22,30	GND	Ground

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J3 : Analog RGB Input

Pin No.	Symbol	Description
1	R	RED Analog Input
2	G	Green Analog Input
3	B	Blue Analog Input
5	Detector	Signal Detector
12	SDA	Serial Data
13	H Sync	Horizontal Sync
14	V Sync	Vertical Sync
15	CLK	Serial Clock
9	V out	5V Output
4,6,7,8, 10,11	GND	Ground

J5 : Inverter

Pin No.	Symbol	Description
1,2	+12V	+12V
3,4	GND	Ground
5	On/Off	Backlight On/Off
6	Adjust	Backlight Adjust (Dimming)

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J10 : Power Output

Pin No.	Symbol	Description
1,2	Pout	12 Power Output for a Touch board
3,4	GND	Ground

J14 : Audio Output

Pin No.	Symbol	Description
1	Audio Out	Audio out - Left
4	Audio Out	Audio out - Right
2,3	GND	Ground

J9 : OSD

Pin No.	Symbol	Description
1	LED	LED1
2	LED	LED2
3	GND	Ground
4	Key1	Menu, Select, Power
5	Key2	Down, Up

J7, J16 : Power Input

Pin No.	Symbol	Description
1	Pin	12 Power Input
2	GND	Ground

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J2 : LVDS Interface connector

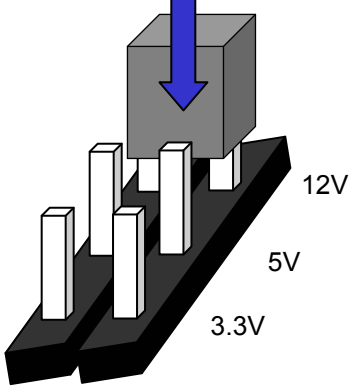
Pin No.	Symbol	Description
1	Vcc	Power In
2	Vcc	Power In
3	Vcc	Power In
4	N/C	No Connection
5	N/C	No Connection
6	N/C	No Connection
7	GND	Ground
8	RxE3+	LVDS Signal of Even Channel 3(+)
9	RxE3-	LVDS Signal of Even Channel 3(-)
10	RxEC+	LVDS Signal of Even Channel Clock(+)
11	RxEC-	LVDS Signal of Even Channel Clock(-)
12	RxE2+	LVDS Signal of Even Channel 2(+)
13	RxE2-	LVDS Signal of Even Channel 2(-)
14	GND	Ground
15	RxE1+	LVDS Signal of Even Channel 1(+)
16	RxE1-	LVDS Signal of Even Channel 1(-)
17	GND	Ground
18	RxE0+	LVDS Signal of Even Channel 0(+)
19	RxE0-	LVDS Signal of Even Channel 0(-)
20	RxO3+	LVDS Signal of Odd Channel 3(+)
21	RxO3-	LVDS Signal of Odd Channel 3(-)
22	RxOC+	LVDS Signal of Odd Channel Clock(+)
23	RxOC-	LVDS Signal of Odd Channel Clock(-)
24	GND	Ground
25	RxO2+	LVDS Signal of Odd Channel 2(+)
26	RxO2-	LVDS Signal of Odd Channel 2(-)
27	RxO1+	LVDS Signal of Odd Channel 1(+)
28	RxO1-	LVDS Signal of Odd Channel 1(-)
29	RxO0+	LVDS Signal of Odd Channel 0(+)
30	RxO0-	LVDS Signal of Odd Channel 0(-)

Second Pixel Data

First Pixel Data

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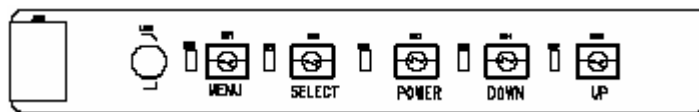
RP1 : Jumper - Panel Power adjust

Description	Jumper setting
<p data-bbox="197 577 421 611">3.3V / 5V / 12V</p> <p data-bbox="197 674 432 819">CAUTION : Incorrect setting can damage the panel</p>	 <p>The diagram shows a 3-pin jumper with three pins of increasing height from left to right. The pins are labeled with voltage settings: 3.3V for the shortest pin, 5V for the middle pin, and 12V for the tallest pin. A blue arrow points downwards to the top of the tallest pin, indicating the correct setting for 12V.</p>

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4-2. OSD Board

Dimension : 110mm(W) X 15mm(L) X 10mm



MENU	Activate OSD menu or save OSD setting and EXIT
SELECT	Select the menu icons
POWER	Turn on or off the main board
UP	Increase setting or right shift the menu
DOWN	Decrease setting or left shift the menu

Press the Menu button to display OSD menu.
Move to requirement OSD Menu and Press the SELECT button to enter the menu.
Move to requirement sub-menu and Press the SELECT button to adjust value
Press 'DOWN' or 'UP' button, you can adjust your image.
Press MENU button to save current setting and exit MENU.

LED : Status display

Green – Normal operation

RED - Power saving mode, Stand-by mode

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5. OSD USER Manual

SUMMARY OF OSD MAP

PICTURE	Brightness	
	Contrast	
	H Position	
	V Position	
	Phase	
	Clock	
	H Size	: Show CGA, EGA only
	V Size	: Show CGA, EGA only
COLOR	Color Temp	User
	Red	Reddish (6500)
	Green	Bluish (9300)
	Blue	
	Auto Color	
	Backlight	
OSD	OSD H Position	
	OSD V Position	
	OSD Timer	
	Transparence	
MISC	Language	English
	Recall	Korean
	Input Select	Espanol
	Audio	Francais
	Volume	Deutsch
	Auto Adjust	

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The OSD (On Screen Display) provides certain functions to have clear image and others. This board supports 5 buttons OSD operation as a standard. The control functions defined on OSD operation are as below

Functions on OSD Menu

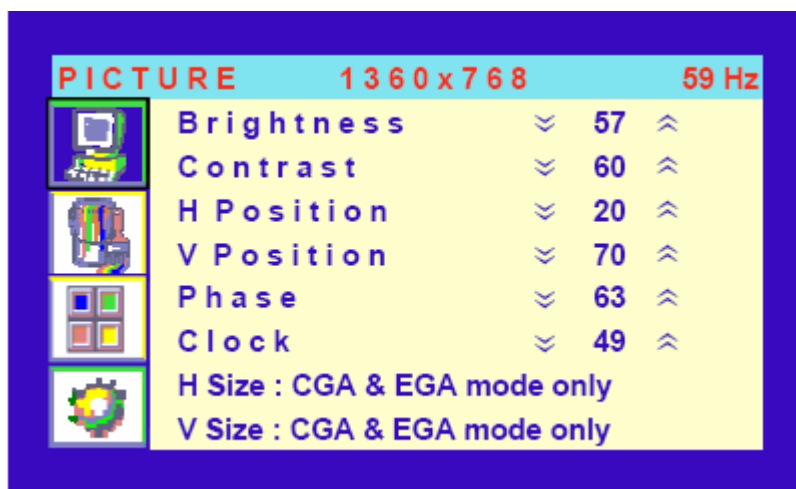
Brightness	Adjust the brightness of the screen
Contrast	Adjust the contrast of the screen
H POSITION	Adjust the horizontal position of the screen's image
V POSITION	Adjust the vertical position of the screen's image
PHASE	Adjust the focus of the screen's image
CLOCK	Adjust the horizontal size of the screen's image
H Size	Adjust the horizontal size : CGA & EGA
V Size	Adjust the vertical size : CGA & EGA
Color Temp	Color Temperature change
R, G, B Gain	Adjust the Gain of RED, Green and Blue
Auto Color	Automatically adjust the R,G,B offset.
Backlight	Adjust the inverter dimming
LANGUAGE	Select one of the Five language(English, Korean, Espanol, Deutsch, Francias) Default is ENGLISH
Input select	Select the input mode between Analog RGB and Digital (DVI-D)
RECALL	Initial EEPROM
Auto Adjust	Automatically adjust the Horizontal position, Vertical position, Horizontal size, and Phase.
Miscellaneous	OSD H,V position, Time, Transparence, Audio, Volume

Hotkey Function

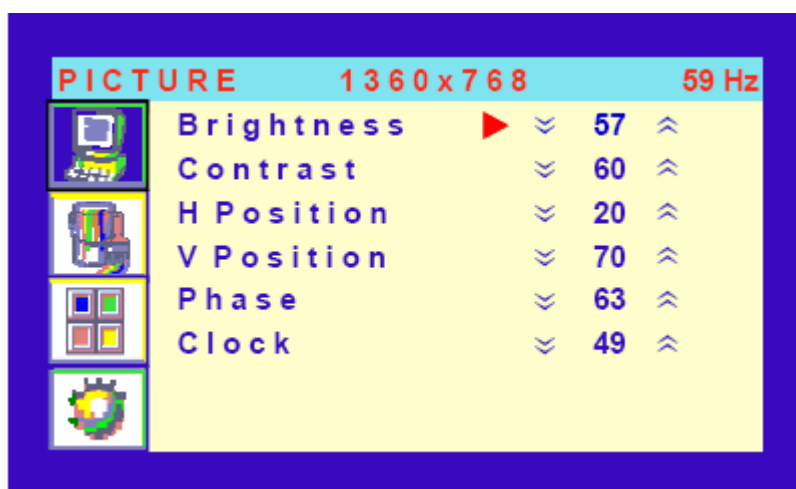
OSD Key	Function
SEL	Immediately Auto Adjustment
UP	Immediately V-Size Adjustment when CGA,EGA mode
Down	Immediately V-Size Adjustment when CGA,EGA mode

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[PICTURE]



Press the Menu button to display OSD menu and press the Select button to enter the PICTURE menu.



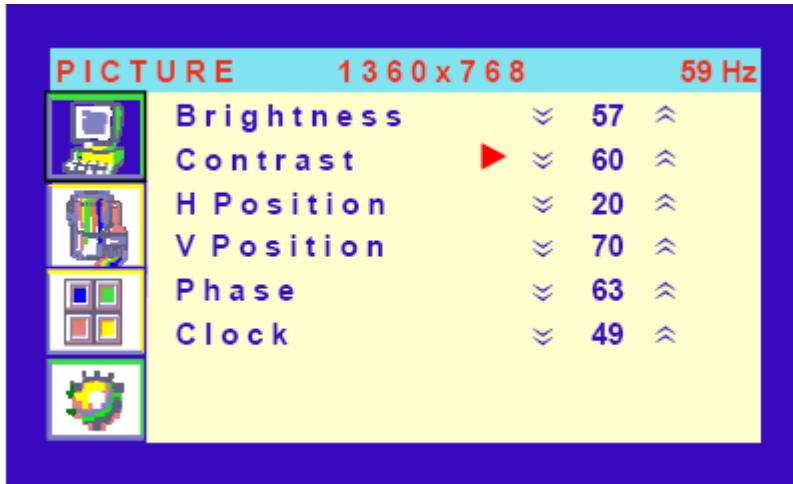
Move to your requirement sub-menu and press the Select button to adjust value.

Press down or up button, you can adjust your image.

Press Menu button to save current setting and exit the OSD.

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[PICTURE] – Adjust ex: Contrast adjust from 60 to 61



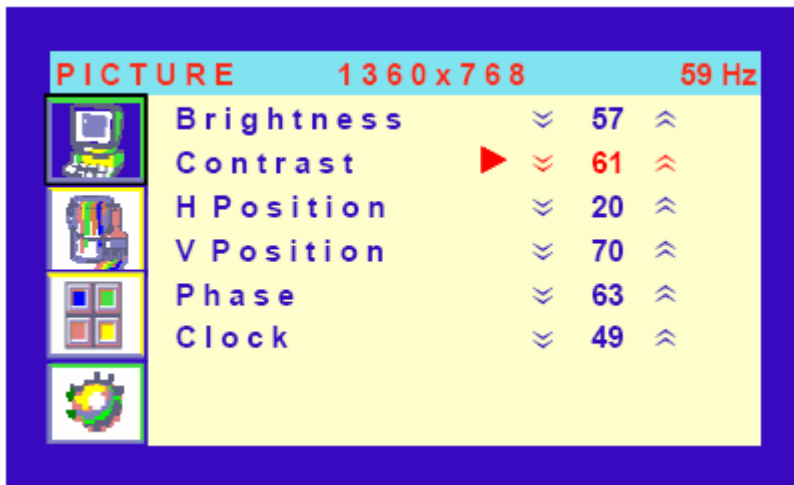
Move to Contrast sub-item by Up or Down button.



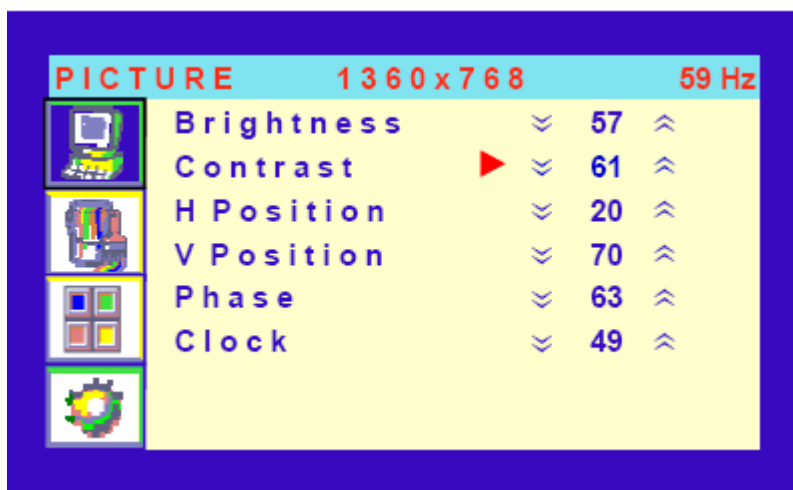
Press the select button then color will be change to RED.

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[PICTURE] – Adjust ex: Contrast adjust from 60 to 61



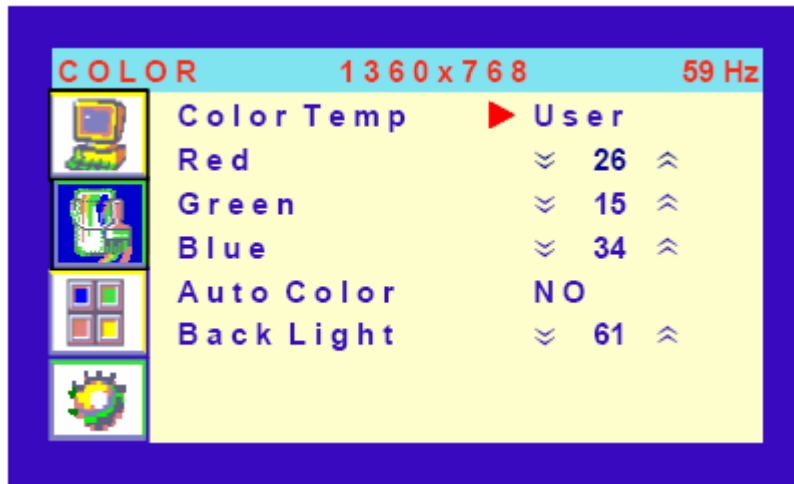
Press the Up button for value change to 61.



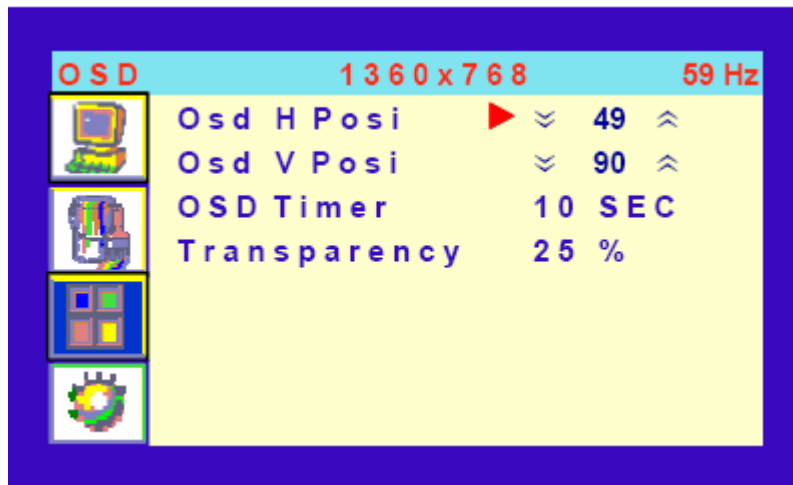
Press Menu button to save current setting and exit the Sub-item.

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[COLOR]



[OSD]



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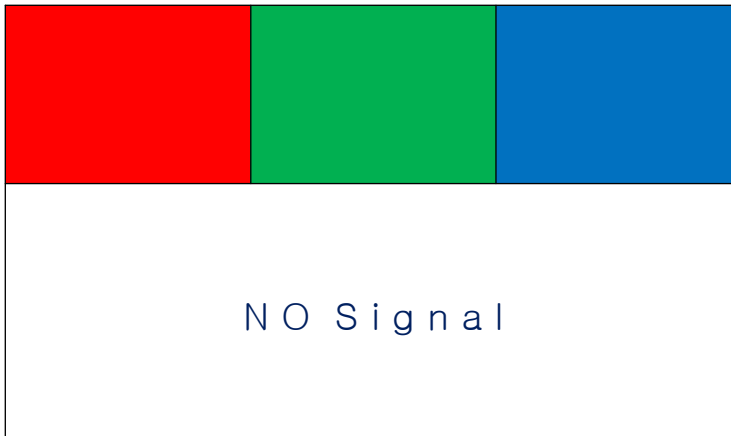
[MISCELLANOUS]



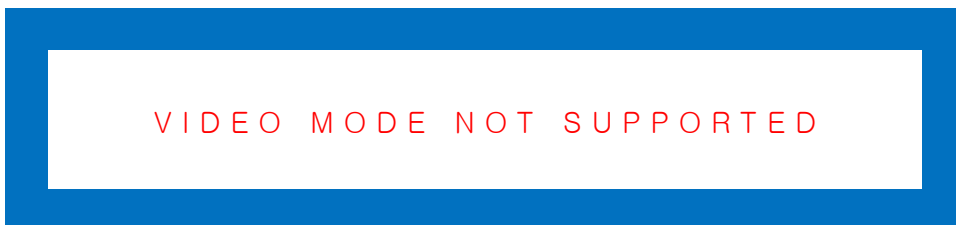
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[Warning Message]

1. CHECK SIGNAL CABLE



2. CHECK INPUT SIGNAL Resolution



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6. REFERENCE DATA

ELECTRICAL PARAMETERS

Symbol	Description	Min.	Typ.	Max.	Unit
V _{CC}	+12V DC	10.8	12.0	13.2	V
V _{i(sync)}		0.5	0.7	1.0	V _{pp}
F _s	Video sample rate			80	MHz
F _{HS}	H sync Frequency	15		85	KHz
F _{VS}	V sync Frequency	55	60	75	Hz
V _{IH}	Sync input high level	2.5			V
V _{IL}	Sync input Low level			0.8	V
I _L	Supply current (with out Panel)	300		550	mA

* Vertical rate (F_{vs}) is determined depend on Panel spec.

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7. Applicable Graphic Mode

Standard (VESA) Graphic Mode

No.	Mode	Resolution	H-freq' [KHz]	Refresh rate [Hz]	Remarks
1	VGA	640 X 350	31.5	70.0	BTLXX01 / XX02
2	VGA	720 X 400	31.5	70.0	BTLXX01 / XX02
3	VGA	640 X 480	31.5	59.9	BTLXX01 / XX02
4	VGA	640 X 480	35.0	66.7	BTLXX01 / XX02
5	VGA	640 X 480	35.0	70.0	BTLXX01 / XX02
6	VGA	640 X 480	37.8	72.0	BTLXX01 / XX02
7	VGA	640 X 480	37.5	75.0	BTLXX01 / XX02
8	SVGA	800 X 600	35.1	56.3	BTLXX01 / XX02
9	SVGA	800 X 600	37.9	60.3	BTLXX01 / XX02
10	SVGA	800 X 600	44.6	70.0	BTLXX01 / XX02
11	SVGA	800 X 600	48.0	72.2	BTLXX01 / XX02
12	SVGA	800 X 600	46.9	75.0	BTLXX01 / XX02
13	SVGA	832 X 624	49.7	74.6	BTLXX01 / XX02
14	XGA	1024 X 768	48.4	60.0	BTLXX01 / XX02
15	XGA	1024 X 768	56.4	70.0	BTLXX01 / XX02
16	XGA	1024 X 768	58.2	72.0	BTLXX01 / XX02
17	XGA	1024 X 768	60.0	75.0	BTLXX01 / XX02
18	XGA	1152 X 864	54.1	60.0	BTLXX01 / XX02
19	XGA	1152 X 864	63.1	70.0	BTLXX01 / XX02
20	XGA	1152 X 864	65.1	72.0	BTLXX01 / XX02
21	XGA	1152 X 864	67.5	76.0	BTLXX01 / XX02
22	WXGA	1280 X 720	44.9	60.0	BTLXX01 / XX02
23	WXGA	1280 X 720	52.5	70.0	BTLXX01 / XX02
24	WXGA	1280 X 720	54.1	72.0	BTLXX01 / XX02
25	WXGA	1280 X 720	56.4	75.0	BTLXX01 / XX02
26	WXGA	1280 X 768	47.5	60.0	BTLXX02
27	WXGA	1280 X 768	60.1	75.0	BTLXX02
28	SXGA	1280 X 1024	64.0	60.0	BTLXX01 / XX02
29	SXGA	1280 X 1024	75.0	70.0	BTLXX01 / XX02
30	SXGA	1280 X 1024	77.0	72.0	BTLXX01 / XX02
31	SXGA	1280 X 1024	80.0	75.0	BTLXX01 / XX02
32	WXGA	1360 X 768	49.0	60.0	BTLXX02
33	WXGA	1360 X 768	56.0	70.0	BTLXX02
34	WXGA	1360 X 768	56.7	72.0	BTLXX02
35	WXGA	1360 X 768	61.3	75.0	BTLXX02

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7. Applicable Graphic Mode

Industrial Graphic Mode (CGA & EGA)

No.	Mode	Resolution	H-freq' [KHz]	Refresh rate [Hz]	Remarks
1	CGA	680 X 224	15.5	58.9	BTLXX01 / XX02
2	CGA	720 X 254	15.6	55.3	BTLXX01 / XX02
3	CGA	600 X 290	15.7	51.2	BTLXX01 / XX02
4	CGA	600 X 259	15.7	51.2	BTLXX01 / XX02
5	CGA	758 X 230	16.1	50.4	BTLXX01 / XX02
6	CGA	690 X 240	16.8	59.8	BTLXX01 / XX02
7	CGA	680 X 224	16.8	59.8	BTLXX01 / XX02
8	EGA	720 X 385	23.7	54.2	BTLXX01 / XX02
9	EGA	720 X 400	24.4	57.4	BTLXX01 / XX02
10	EGA	768 X 480	24.6	49.7	BTLXX01 / XX02
11	EGA	720 X 422	25.7	60.2	BTLXX01 / XX02
12	EGA	720 X 411	26.5	55.9	BTLXX01 / XX02
13	VGA	640x480	32.1	63.1	BTLXX01 / XX02
14	VGA	640x480	35.0	66.7	BTLXX01 / XX02

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8. TFT LCD Panel Spec

TFT LCD panel				
Screen Size	15"	17"	19"	20.1"
Aspect Ratio	4 : 3	5 : 4	5 : 4	4 : 3
Resolution	1024x768	1280x1024	1280x1024	1600x1200
Pixel Pitch (mm)	0.297	0.264	0.294	0.255
Active Area (mm)	304.1x 228.1	337.9x270.3	376.3x301.1	408.0x306.0
Number of Colors	16.2M	16.2M	16.2M	16.7M
Contrast Ratio	700:1	700:1	700:1	800:1
Brightness	250cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²
Viewing Angle	150/135	150/135	150/135	160/160
Response Time	8ms	8ms	8ms	5ms
Wide Screen				
Screen Size	23"	26"	32"	42"
Aspect Ratio	16 : 9	16 : 9	16 : 9	16 : 9
Resolution	1366x768	1366x768	1366x768	1366x768
Pixel Pitch (mm)	0.372	0.421	0.511	0.681
Active Area (mm)	508.2x285.7	575.8x323.7	697.7x392.3	930.2x523.0
Number of Colors	16.7M	16.7M	16.7M	16.7M
Contrast Ratio	550:1	1200:1	1200:1	1200:1
Brightness	600cd/m ²	600cd/m ²	600cd/m ²	600cd/m ²
Viewing Angle	178/178	178/178	178/178	178/178
Response Time	8ms	8ms	8ms	8ms

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9. Power

Size	15"	17"	19"	20.1"
Input	AC/DC Adapter 100-240VAC 47/ 63Hz,			
	12VDC/3A	12VDC/3.75A	12VDC/3.75A	12VDC/4A
Consumption	32W max	42W max	45W max	50W max.
Size	23"	26"	32"	42"
Input	AC/DC Power Board 100-240VAC 47/63Hz			
Consumption	110W max.	130W max.	140W max.	200W max.

10. Signal Cable

Standard VGA cable w/15-pin D-sub, CGA/EGA optional

11. Metal Frame

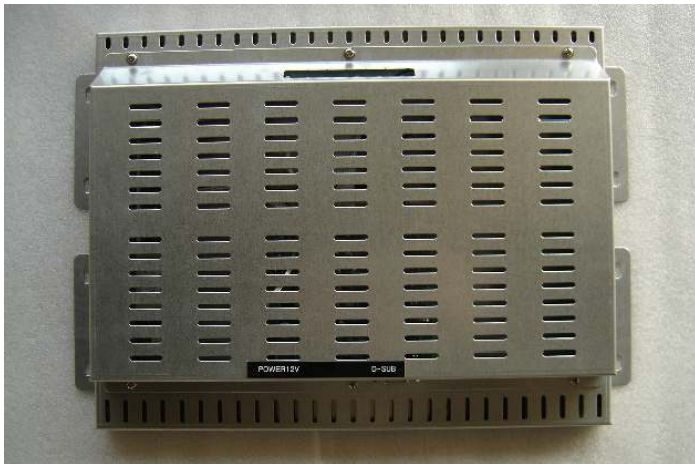
Size	15"	17"	19"	20.1"
Outline Dimension L x W x H (mm)	258 x 367 x 45	320 x 400 x 50	330 x 437 x 50	
Size	23"	26"	32"	42"
Outline Dimension L x W x H (mm)	374 x 563 x 99		490.5x764 x115	651.5x1001 x120

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12. Front View / Real View



Front View



Rear View



Side View

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