» Kontron User's Guide «

KT-PCIe-DVI-HDMI-I

KT-PCIe-DVI-HDMI-I Users Guide

KTD-N0800-0

Document revision history.

Revision	Date	By	Comment
0	Mar. 1st 2010	JSE/MLA	Preliminary version

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- CPU Board
  1. Type.
  2. Part Number (find PN on label)
  3. Serial Number if available (find SN on label)
- Configuration
  1. CPU Type, Clock speed
  2. DRAM Type and Size.
  3. BIOS Revision (Find the Version Info in the BIOS Setup).
  4. BIOS Settings different than *Default* Settings (Refer to the BIOS Setup Section).
- System
  1. O/S Make and Version.
  2. Driver Version numbers (Graphics, Network, and Audio).
  3. Attached Hardware: Harddisks, CD-rom, LCD Panels etc.

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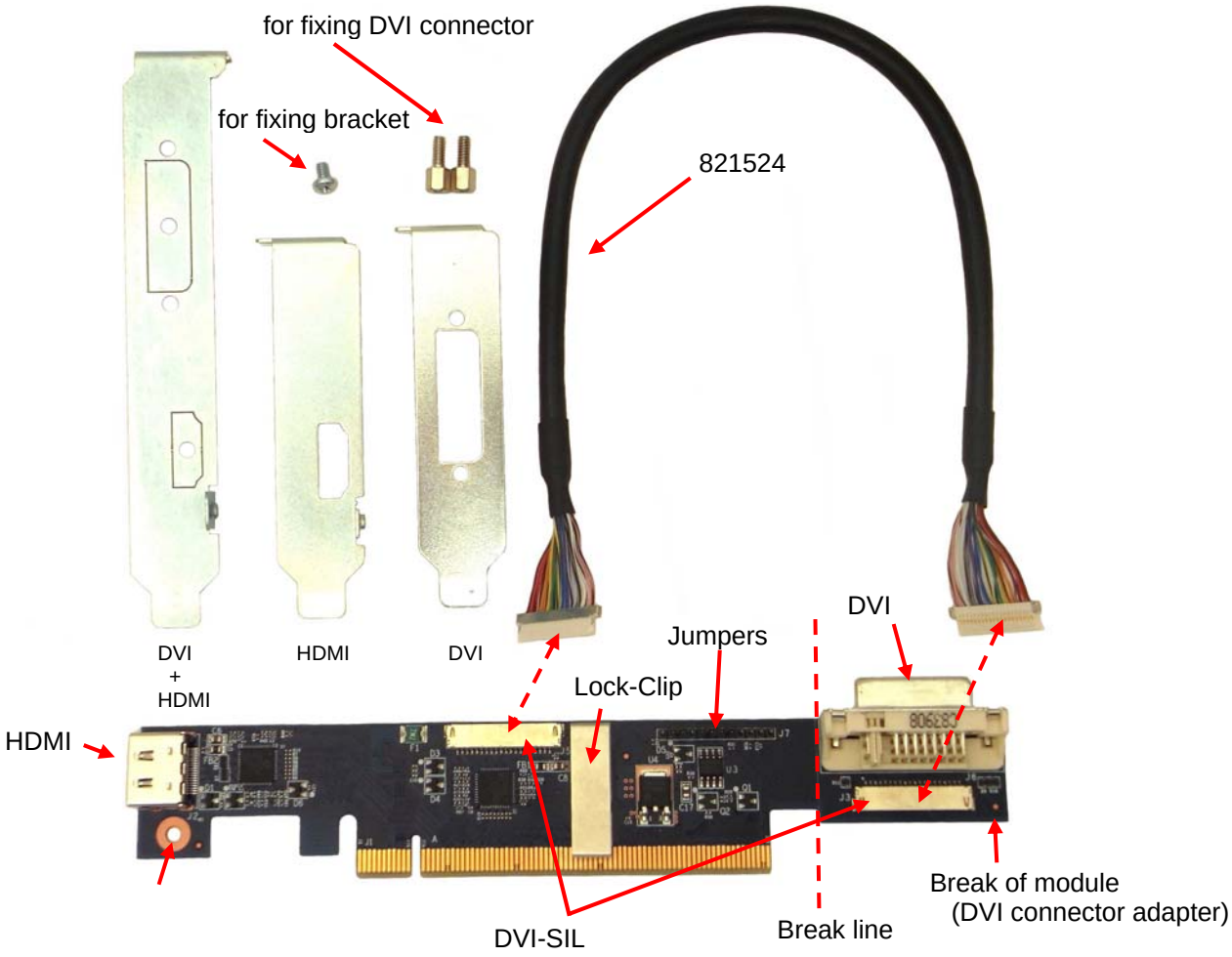
Introduction

When the KT-PCIe-DVI-HDMI-I card is plugged into the PCI-Expressx16 connector then the motherboard automatically detects the card and select TMDS output. The card operates at pixel rates of up to 165MHz per link, supporting 1920x1200 panels at a 60Hz refresh rate.

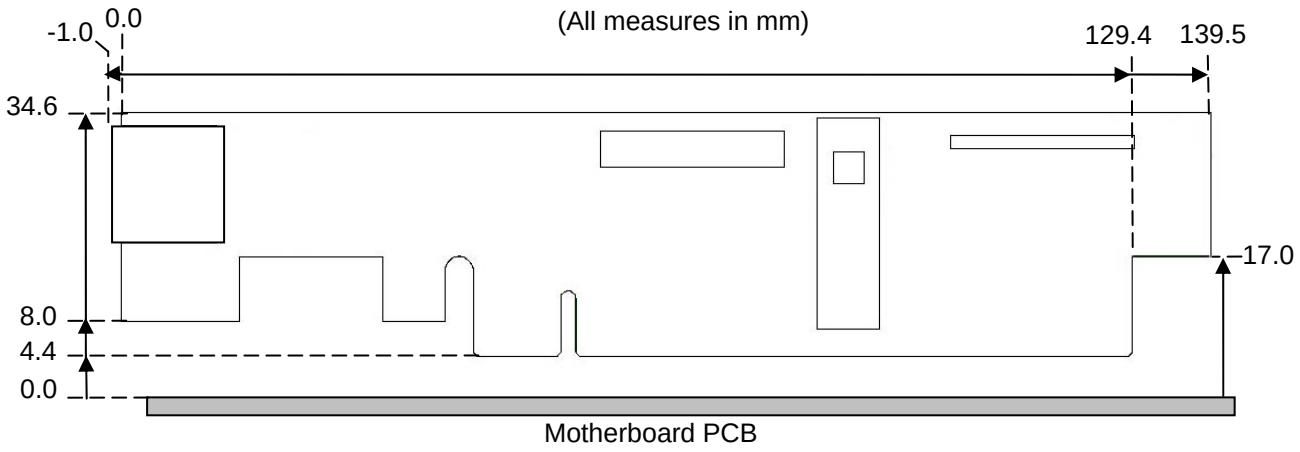
- Low profile DVI/HDMI module (< 35mm above MB PCB)
- High-speed TMDS.
- Panel resolution up to 1920x1200 or similar.
- Support independent DVI and HDMI dual display.
- Including Lock-Clip to fix the module to the PCIe socket.
- No tools required for mounting/dismounting the module.
- HDMI and DVI Interface, both manage up to 165Mpixels/s
- HDMI connector mounted on the IO panel side.
- DVI connector via SIL-20p and cable kit 821524.
- DVI 1.0 and HDMI compliant.
- Complete Windows and DOS support.
- Included Low Profile Brackets for HDMI
- Included Full Height ATX Bracket for HDMI, with “break-off-plate” for HDMI and for DMI.
- Included Low Profile Bracket for DVI (fit the 821524 kit)

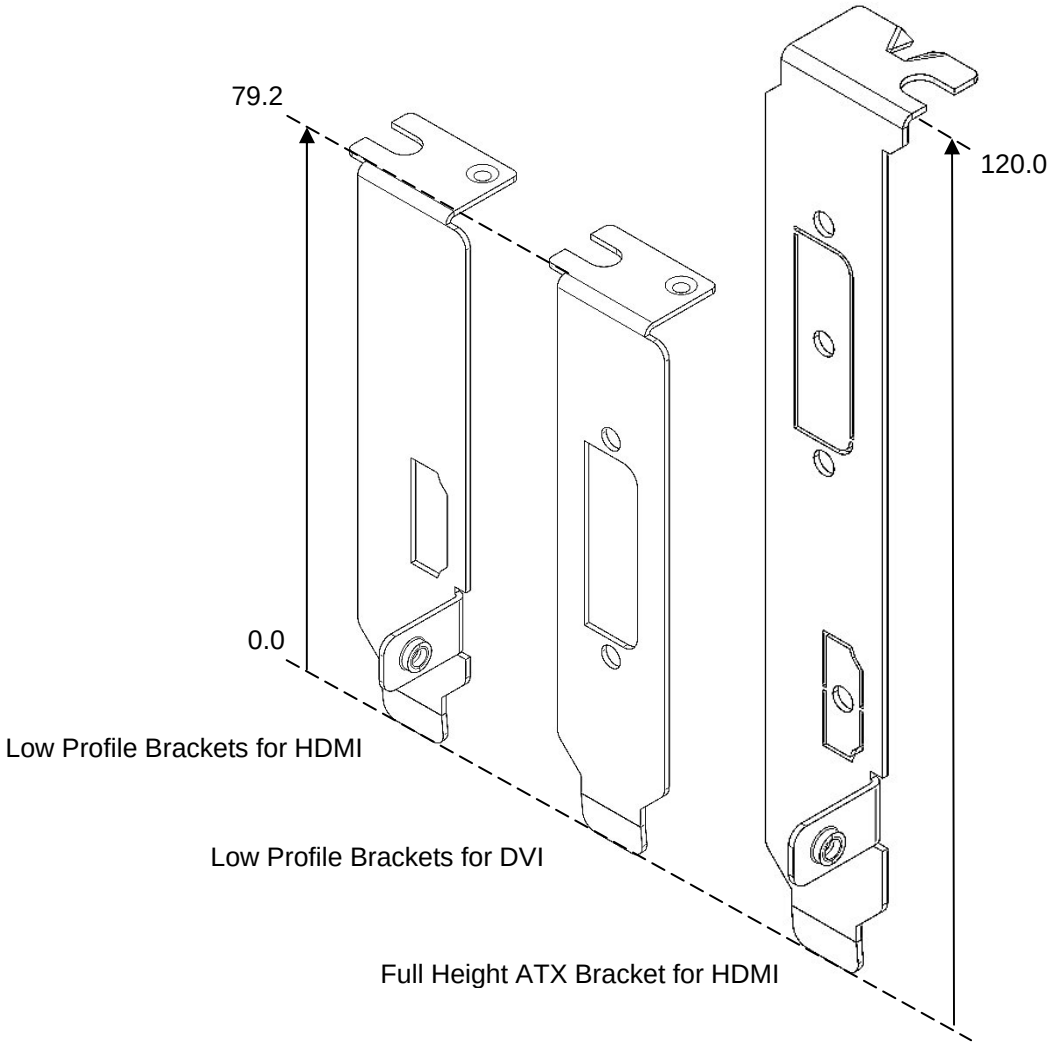
1



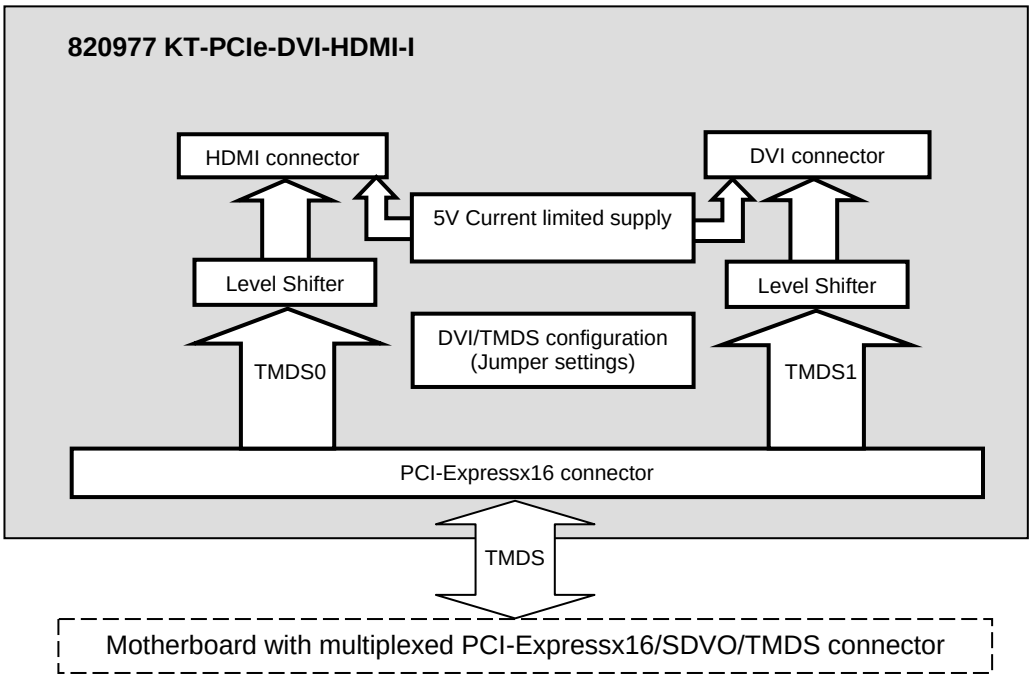
Part no.	820977
PCB no.	30103350
Assem. no.	69300000

Mechanical Drawings

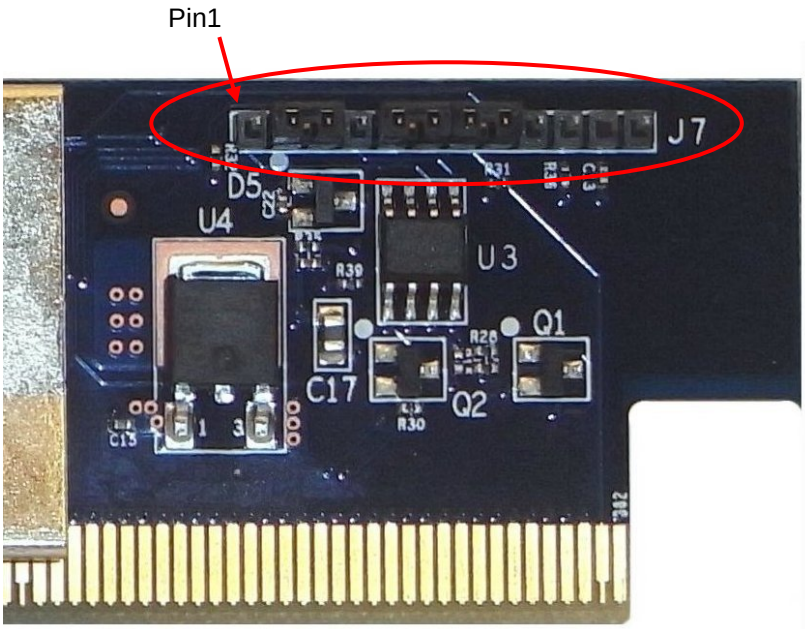




2 Functional Diagram

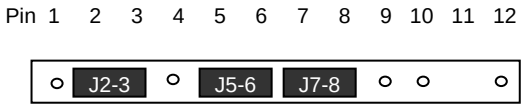


3 Jumpers



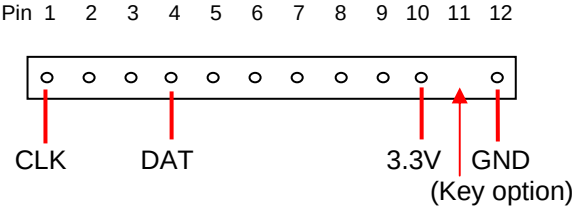
Jumper settings:

DVI-SIL configured for DVI (Default)



DVI-SIL configured for TMDS

How to interface EEPROM (Used to program EDID for TMDS)



4 Connectors

HDMI connector

The HDMI connector is of type Samtec HDMI-19-01-S-SM or similar.

PIN	Signal	Type	Pull U/D
1	TMDS Data 2+	LVDS OUT	
2	GND	PWR	
3	TMDS Data 2-	LVDS OUT	
4	TMDS Data 1+	LVDS OUT	
5	GND	PWR	
6	TMDS Data 1-	LVDS OUT	
7	TMDS Data 0+	LVDS OUT	
8	GND	PWR	
9	TMDS Data 0-	LVDS OUT	
10	TMDS Clock+	LVDS OUT	
11	GND	PWR	
12	TMDS Clock-	LVDS OUT	
13	CEC	NC	
14	NC	NC	
15	DDC Clock	IO	2K2
16	DDC Data	IO	2K2
17	GND	PWR	
18	+5V (55mA)	PWR	
19	Hot Plug Detect	I	
20-23	GND	PWR	

DVI-SIL

The “DVI” connector is a Hirose DF19G-20P-1H. Mating connector is Hirose DF19L-20P-1H or similar. (In order to implement real DVI connector the cable kit 821524 must be used).

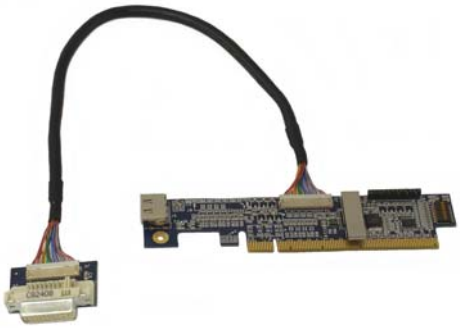
PIN	Signal	Type	Pull U/D
1	GND	PWR	
2	GND	PWR	
3	+5V (55mA)	PWR	
4	Hot Plug Detect	I	
5	GND	PWR	
6	DDC Data	IO	2K2
7	DDC Clock	IO	2K2
8	GND	PWR	
9	TMDS Clock-	LVDS OUT	
10	TMDS Clock+	LVDS OUT	
11	GND	PWR	
12	TMDS Data 0-	LVDS OUT	
13	TMDS Data 0+	LVDS OUT	
14	GND	PWR	
15	TMDS Data 1-	LVDS OUT	
16	TMDS Data 1+	LVDS OUT	
17	GND	PWR	
18	TMDS Data 2-	LVDS OUT	
19	TMDS Data 2+	LVDS OUT	
20	GND	PWR	
Shield	GND	PWR	

5 Cable Kit

DVI Converter PCB is attached as a brake off module to the KT-PCIe module.

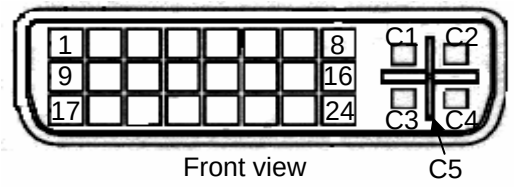
The converter contains two connectors to convert from DVI-SIL (Hirose DF19L-20P-1H) to DVI-I.

The KT-PCIe-modules includes DVI cable 300mm long (PN. 821524) in order to convert the SIL-DVI connector to a DVI-I connector.



The cable wiring is a one-to-one connection.

The **DVI-I** connector is a Molex 74320-1004 (or similar).
Only DVI Digital output is supported.
(Both DVI-I and DVI-D cables can be connected).



DVI-SIL PIN	DVI-I PIN	Signal
1	-	GND
2	-	GND
3	14	+5V (55mA)
4	16	Hot Plug Detect
5	15	GND
6	7	DDC Data
7	6	DDC Clock
8	-	GND
9	24	TMDS Clock-
10	23	TMDS Clock+
11	22	GND
12	17	TMDS Data 0-
13	18	TMDS Data 0+
14	19	GND
15	9	TMDS Data 1-
16	10	TMDS Data 1+
17	11	GND
18	1	TMDS Data 2-
19	2	TMDS Data 2+
20	3	GND

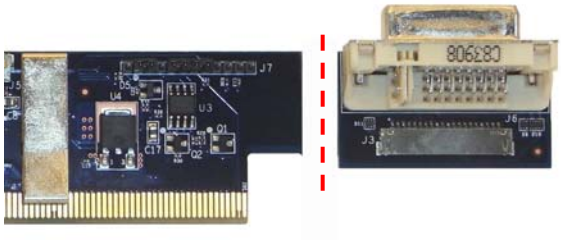
6 Installation Guide

These KT-PCIe cards fits into a standard PCIe connector like the Molex 877159308 PCIe edge connector which has no integrated PCIe card lock.

The 820977 kit contains:

1. Cable 821524
2. Two Hex Nuts for the DVI connector to fix on a bracket
3. The 820877 module
4. Low Profile Brackets for HDMI
5. Low Profile Brackets for DVI
6. Full Height ATX Bracket for HDMI and DVI
7. Screw for fixing bracket to module

Carefully brake of the DVI Connector adapter.



The cable 821524 can be used to interface the module and the DVI Connector adapter.

If DVI Bracket shall be used then fix the DVI connector to the bracket via the two Hex Nuts.

If HDMI Bracket shall be used then fix HDMI Bracket to the module by screw.

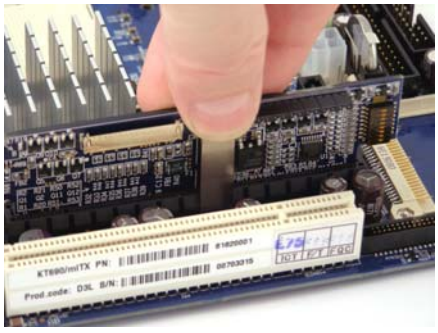
Insert the module to the Motherboard (KTGM45, KTQ45 or KTG41) via the PCIex16 slot nearest the CPU.

No special settings required in BIOS.

OS drivers include support for the module.

Boot into OS and use the Intel Graphics Media Accelerator Driver to select requested display configuration.

The Lock-Clip is use to fix the module into the PCIex16 slot. In order to release the Lock-Clip press by your thumb on the top part of the Lock-clip as indicated on the picture below.



7 Specifications

Cable length:

HDMI and DVI Cable length tested to 10 meters. Picture quality depends on display and cable, some combination might fail at high resolution (like 1600x1200) when cable length > 5 meters.

Power consumption:

The +5V available on both the HDMI and DVI can deliver minimum 0.5A even though only 55mA is required in according to DVI/HDMI standard. The +5V is protected by Resettable Fuse.

12V (via PCIe) 1.3W max. (0.55W externally and 0.75W onboard) for sourcing two times +5V/55mA.

3.3V (via PCIe) 0.4W max.

Operating temperature: 0-60ºC

Maximum height above MB PCB: 34.6 mm

Appendix EDID version 1.x.

Descriptor structure defined in the VESA

EDID code loaded in EEPROM, used for support of TMDS displays.

Byte	Description
1.	Low Byte of DClk in 10 KHz and in HEX
2.	High Byte of DClk in 10 KHz and in HEX
3.	Horizontal Active [pixel], LSByte
4.	Horizontal Blanking [pixel], LSByte
5-Bit 7-4:	Horizontal Active [pixel], 4 MSbit (All values shall be as if 1 pixel /clock)
5-Bit 3-0:	Horizontal Blanking [pixel], 4 MSBit (Blanking = Total- Active)
6.	Vertical Active [lines], LSB
7.	Vertical Blanking [lines], LSByte
8-Bit 7-4:	Vertical Active [lines], 4 MSbit
8-Bit 3-0:	Vertical Blanking [lines], 4 MSbit (Blanking = Total- Active)
9.	HSync Offset (from Horizontal Blanking) [pixel], LSByte (Front Porch)
10.	HSync Pulse Width [pixel], LSByte
11-Bit 7-4:	VSync Offset [lines], 4 LSbit (Front Porch)
11-Bit 3-0:	VSync Pulse Width [lines], 4 LSbit
12-Bit 7-6:	HSync Offset (from Horizontal Blanking) [pixel], 2 MSBit (Front Porch)
12-Bit 5-4:	HSync Pulse Width [pixel], 2 MSbit
12-Bit 3-2:	VSync Offset [lines], 2 MSbit (Front Porch)
12-Bit 1-0:	VSync Pulse Width [lines], 2 MSbit
13.	Horizontal Image Size [pixel], LSByte
14.	Vertical Image Size [lines], LSByte
15-Bit 7-4:	Horizontal Image Size [pixel], 4MSbit
15-Bit 3-0:	Vertical Image Size [lines], 4 MSbit
16:	Horizontal Border [pixel]
17:	Vertical Border [lines]
18-Bit 7:	0 = Non-interlaced, 1 = Interlaced
18-Bit 6-5:	00 = Reserved
18-Bit 4-3:	11 = Digital Separate
18-Bit 2:	Vertical Polarity (0 = Negative, 1 = Positive)
18-Bit 1:	Horizontal Polarity (0 = Negative, 1 = Positive)
18-Bit 0:	0 = Reserved