
CH7036 User Guide

1.0 INTRODUCTION

Chrontel CH7036 are specifically designed for consumer electronics device and PC markets for which multiple high definition content display formats are required. With its advanced video encoder, flexible scaling engine and easy-to-configure audio interface, the CH7036 satisfy manufactures' products display requirements and reduces their cost of development and time-to-market.

This user guide focuses only on the software configuration guide of CH7036. Generally, to achieve the full functions of CH7036, CH9904 is necessary for software configuration consideration, which is the Boot ROM specially configured for Chrontel's display products.

In the following description, it may need the master/host of system to communication with CH7036 via IIC serial interface and the operation should follow the standard IIC communication protocol. The IIC slave address of CH7036 is 0x76h. And count in the flag bit of IIC operation, the address of CH7036 is 0xECh for write operation and 0xEDh for read operation.

For hardware configuration guide, please refer to the AN-B009 in detail and contact Chrontel Application Group if necessary.

2.0 BASIC FUNCTIONS DESCRIPTION

Generally, the basic functions of CH7036 can be achieved with the firmware executed successfully, which is carried by and auto-downloaded from CH9904 while the System Global Reset for CH7036 is achieved successfully. The following discussion will describe the basic functions and the requirements in detail.

2.1 Firmware Loading From CH9904

Firmware CH7036 executed can be auto-loaded from CH9904 via the special PROM_SC/PROM_SD serial memory bus of CH7036. The loading of the firmware will be achieved while the global reset signal from the system main processor is received.

While on the power-on stage, the power-on reset sequence should be followed. Please refer to the AN-B009 in detail.

2.2 Input Timing

Current supported input modes are listed as following. These sets of input timing from the list can be selected by hardware configuration of connecting PIN66 to 3.3V or GND. Please refer to the AN-B009 in detail for hardware configuration.

- 1) 1024 x 768 @60Hz Digital RGB888
- 2) 1366 x 768 @60Hz Digital RGB888

In the application, please make sure that the input timing, which is output from System LCD controller or Graphic controller, is compliant with the corresponding detail timing listed in Appendix A. For more detail, please contact Chrontel Application Group if necessary.

2.3 Output Timing

Basically, the following output timing are default supported. All the timing follow the relative timing specified in VESA Spec. For more detail information, please check the VESA timing Spec in detail.

- 1) 1024 x 768 @60Hz VGA
- 2) 1024 x 768 @60Hz DVI
- 3) 1024 x 768 @60Hz LVDS
- 4) 1280 x 720p @60Hz HDMI
- 5) 1366 x 768 @60Hz LVDS
- 6) 1920 x 1080p @60Hz DVI
- 7) 1920 x 1080p @60Hz HDMI

2.4 Basic Features Description

- 1) Input signal loss detection.
- 2) HDMI/DVI hot plug detection.
- 3) Input timing switch.
- 4) VGA connection detection.
- 5) Read EDID to determined which kind of output timing to be set automatically.
- 6) Power save mode when no panel connect. Shut down the output driver.

2.5 Basic Activities Description

CH7036's activities or capabilities are supported as following:

- 1) CH7036 will be initialized automatically while the firmware is downloaded successfully.
- 2) The firmware can do hot plug detection to identify if HDMI/DVI panel or VGA monitor is connected.
- 3) LVDS output is bypassed and the timing is the same as input.
- 4) If only VGA monitor is connected, then VGA encoder module is enabled and set the VGA output with 1024 x 768@60Hz timing.
- 5) If HDMI panel is connected, HDMI Output timing description:
 - If the panel support standard HDMI 1080P@60Hz, then set output to be the HDMI 1080P@60Hz.
 - If the panel only support up to 720P@60Hz, then set output to be the HDMI 720P@60Hz timing.
- 6) If the panel is 4:3 DVI only, DVI output timing description:
 - If the panel support standard DVI 1080p@60Hz, then set output to 1920 X 1080@60Hz.
 - Else set output to 1024 X 768@60Hz.
- 7) If both VGA and HDMI/DVI are connected, then HDMI/DVI has higher priority, only HDMI/DVI output is enabled and the VGA encoder module is power down.
- 8) The output modules will be power down if no cable is connected.
- 9) If the channel of VGA output from HDMI connector is utilized together with the direct VGA output channel, the first connected VGA channel is enabled and the other VGA channel will be disabled.
- 10) If lost input signal then turn off output to save power..

- 11) If the input signal lost and resume then the output will be resumed and re-check what panel is attaching then determine which timing to set.

2.6 Firmware Update

CH9904 Boot ROM is provided together with the firmware by Chrontel. The update of firmware is also provided by Chrontel. Please contact Chrontel FAE Group if necessary.

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3.0 APPENDIX A: DETAIL TIMING PARAMETERS

	Input Data mode	Detail Timing Parameters
3	Video Format: 1024X768 @ 60Hz Audio: I2S	Video: HOR Pixels: 1024 //Pixels VER Pixels: 768 //Pixels HOR Total: 1344 //Pixels VER Total: 806 //Pixels H Front Porch: 24 //Pixels V Front Porch: 3 //Pixels H Sync: 136 //Pixels V Sync: 3 //Pixels Pixels CLK: 65 MHz HSYNC Polarity: Negative VSYNC Polarity: Negative Data Enable: Positive Audio: I2S, standard, 16bit, I2SPO1 = high;
5	Video Format: 1366X768 @ 60Hz Audio: I2S	Video: HOR Pixels: 1366 //Pixels VER Pixels: 768 //Pixels HOR Total: 1560 //Pixels VER Total: 806 //Pixels H Front Porch: 32 //Pixels V Front Porch: 6 //Pixels H Sync: 64 //Pixels V Sync: 12 //Pixels Pixels CLK: 76 MHz HSYNC Polarity: Negative VSYNC Polarity: Negative Data Enable: Positive Audio: I2S, standard, 16bit, I2SPO1 = high;

Note: The detail timing maybe updated without notice. Please contact Chrontel Application Group for more detail if necessary.

4.0 REVISION HISTORY**Table 4: Revisions**

Rev. #	Date	Section	Description
1.0	10/17/2011	All	Initial release

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