

**Application Note:** Create custom panel timings  
on SVX-4096



**Version:** 1.00

**Date:** 9 Jan 2017

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# **Application Note**

## **Create custom panel timings for SVX-4096 Series**

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## Revision History

Date	Rev No.	Page	Summary
9 Jan 2017	1.00	All	First issued

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## (1) Setup:

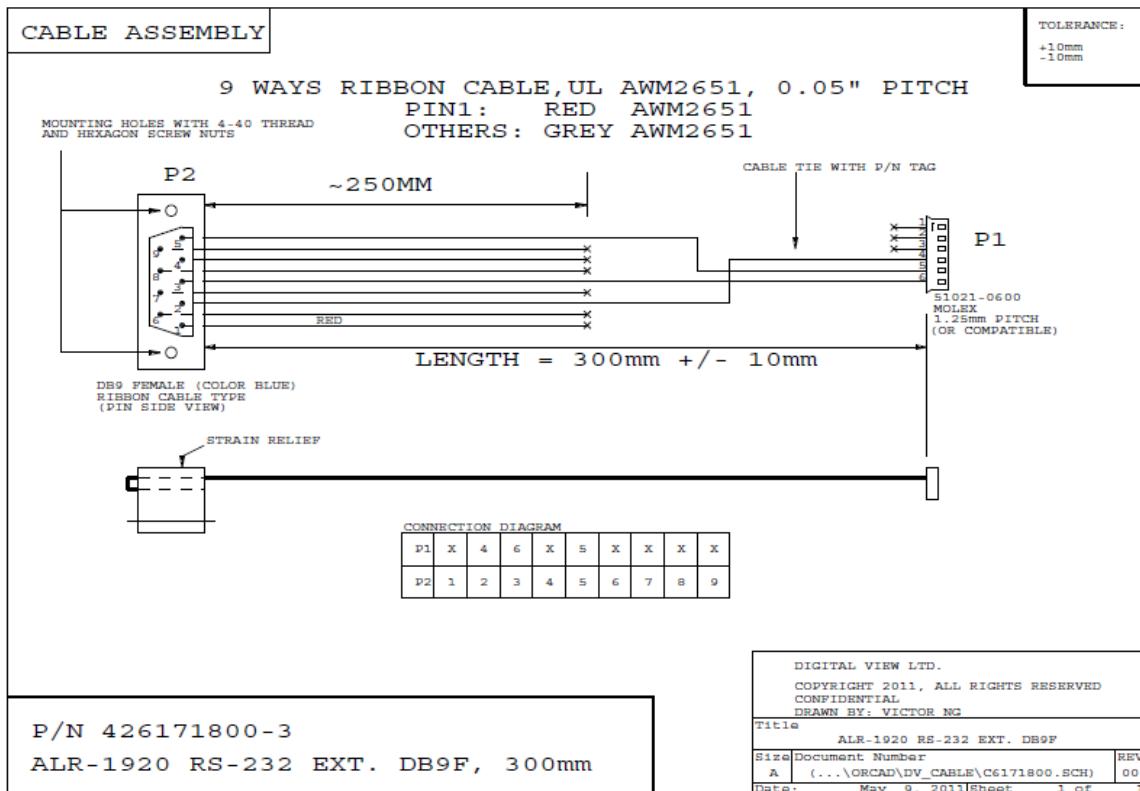
This application note will show how to create a custom panel timing for the SVX-4096 controller.

Please make sure you have the following materials before starting:

- 1) Target panel specification
- 2) The target controller:
  - Use firmware version V1.05.00 or up for SVX-4096.
- 3) Controller Utility V1.23 program
- 4) PC with RS-232 port
- 5) PC with Microsoft Windows XP or later.
- 6) RS-232 programming cable (e.g P/N **426171800-3**)

Use RS-232 programming cable (suggest to use P/N **426171800-3** for SVX-4096). DB9 connector connect to serial port, and Molex 51021-0600 or compatible connect to CN8 on the controller board.

For SVX-4096 RS-232 cable drawing P/N **426171800-3** :



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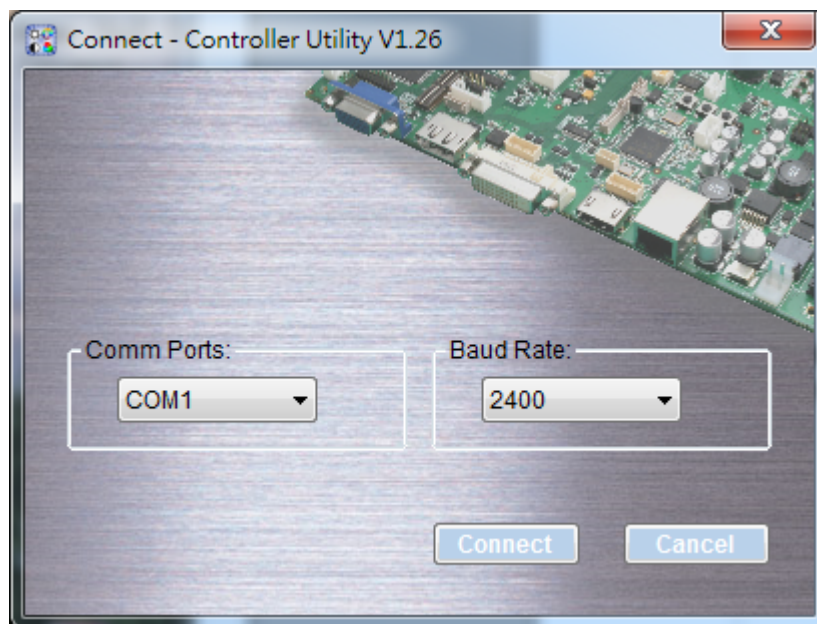
**(2) Install the Controller Utility Program**

**Step 1:** Open the Controller Utility program (Version 1.23 or later). (Please uninstall any earlier versions before installing the latest version)

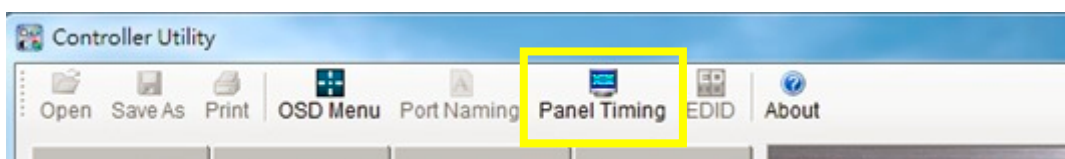


Note: This software tool requires the Microsoft .NET Framework to execute. If your computer does not have the Microsoft .NET Framework installed, please go to <http://www.microsoft.com> to download and install the latest .NET Framework.

**Step 2:** Choose the communication port and select corresponding "Baud Rate" (2400) matching with the controller. Then Click **Connect**.



**Step 3:** Choose "Panel Timing" function in the main window of the Controller Utility Program.

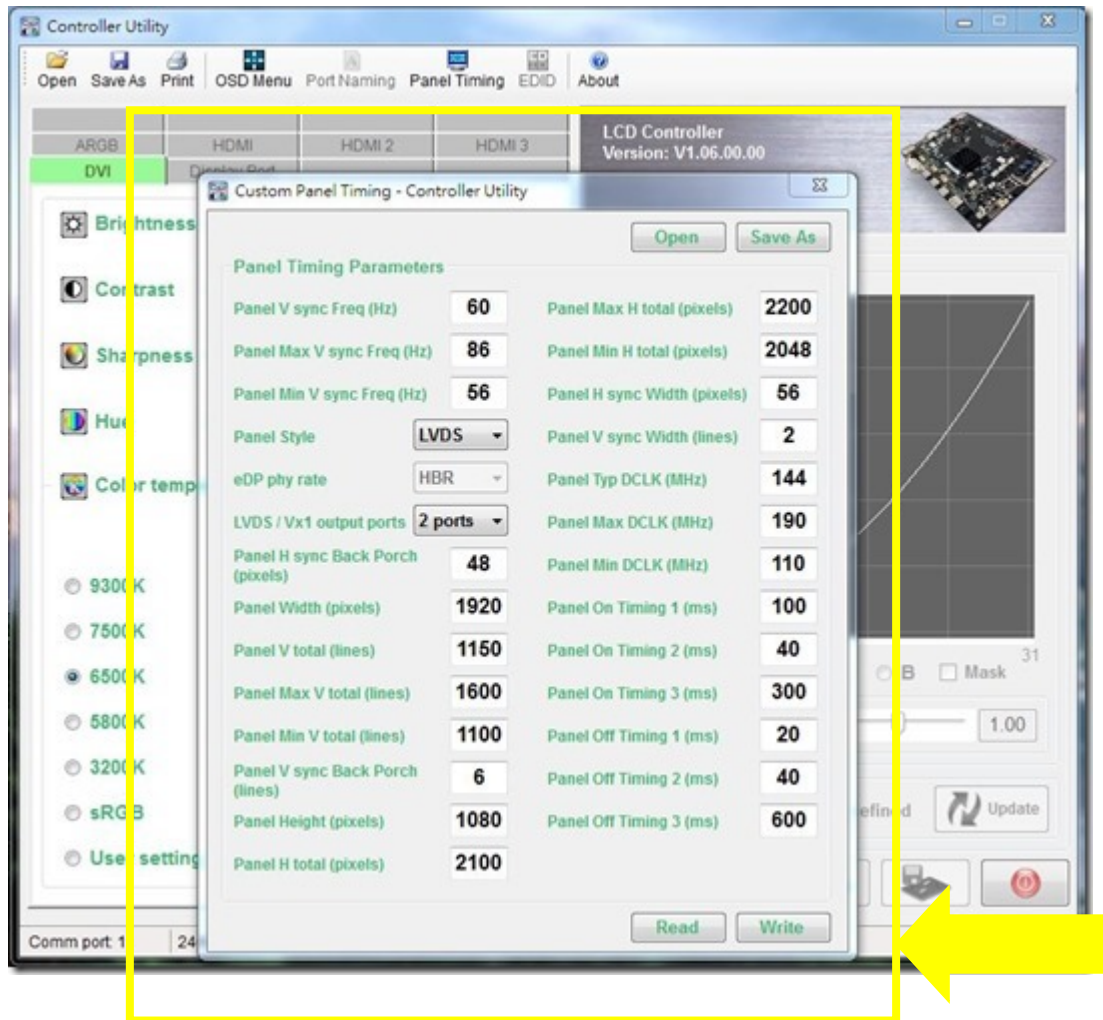


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**Step 4:** Custom panel timings entry page will be shown for entering the panel timing data.

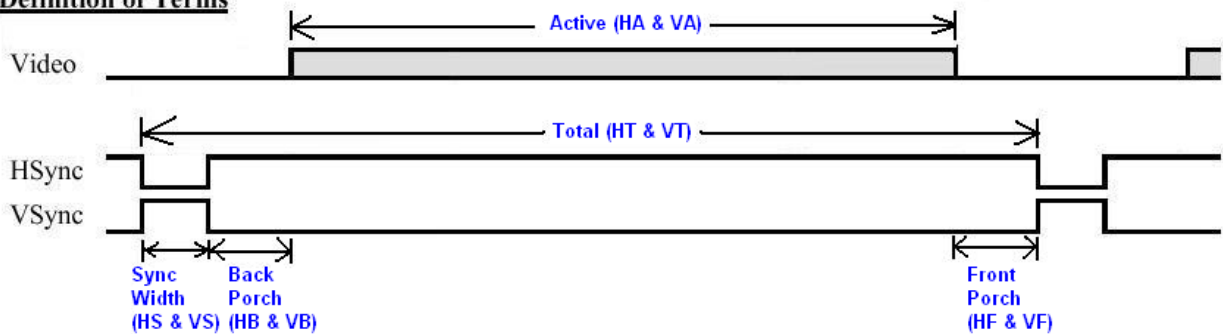


### (3) Custom panel timings input

The panel timing consists of two five parameter groups in Horizontal and Vertical. These five parameters are:

- a) Active: The portion that has the valid display content (HA and VA)
- b) Sync width: (HS and VS)
- c) Front Porch: Duration between end of valid display and the beginning of Sync (HF and VF) - Not necessary to input.
- d) Back Porch: Duration between end of Sync and beginning of valid display (HB and VB)
- e) Total: equal a) + b) + c) + d) (HT and VT)

#### Definition of Terms



### The panel timings parameters

The .inf file has total 13 parameters. 6 parameters specify the horizontal (HT, HTmax, HTmin, HA, HS, HB) and 7 parameters specify the vertical (Vsync, VT, VTmax, VTmin, VA, VS & VB)

You need to observe two rules here:

$$HT > HA + HS + HB \dots\dots \text{rule 1}$$

$$VT > VA + VS + VB \dots\dots \text{rule 2}$$

You can always find HT, HTmax, HTmin, HA, VSync, VT, VTmax, VTmin and VA in the panel specifications. You can find HS and VS in most panel specifications as well. HB and VB are less common.

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In case you cannot find all these parameters, the rule of thumb is:

**HS=HB and VS=VB ..... rule 3**

**HS= 1/4 x (HT-HA) and VS = 1/4 x (VT-VA) ..... rule 4**

round to the closest integer number



**(4) Examples**

Shown below are some examples of the timing information in panel specifications:

4.1) LG LP101WX1-SLN1 (resolution 1280x800)

ITEM	Symbol	Min	Typ	Max	Unit	Note	
DCLK	Frequency	f <sub>CLK</sub>	67.5	71.0	74.5	MHz	
Hsync	Period	T <sub>HP</sub>	1366	1440	1488	tCLK	HS
	Width	t <sub>WH</sub>	16	32	48	tCLK	
	Width-Active	t <sub>WHA</sub>	1280	1280	1280	tCLK	HA
Vsync	Period	t <sub>VP</sub>	811	823	847	tHP	VTmax
	Width	t <sub>WV</sub>	3	6	9	tHP	VS
	Width-Active	t <sub>WVA</sub>	800	800	800	tHP	VA
Data Enable	Horizontal back porch	t <sub>HBP</sub>	54	80	98	tCLK	
	Horizontal front porch	t <sub>HFP</sub>	16	48	62	tCLK	
	Vertical back porch	t <sub>VBP</sub>	7	15	35	tHP	
	Vertical front porch	t <sub>VFP</sub>	1	2	3	tHP	

Panel V Sync Freq (Hz) =  $V_{sync} = 1 / [(1 / 71M) \times HT \times VT] = 1 / [(1/71M) \times 1440 \times 823] = 60Hz$

Panel H sync Back Porch (pixels) = **HB = 80**

Panel Width (pixels) = **HA = 1280**

Panel V total (lines) = **VT = 823**

Panel Max V total (lines) = **VTmax = 847**

Panel Min V total (lines) = **VTmin = 811**

Panel V sync Back Porch (lines) = **VB = 15**

Panel Height (pixels) = **VA = 800**

Panel H total (pixels) = **HT = 1440**

Panel Max H total (pixels) = **HTmax = 1488**

Panel Min H total (pixels) = **HTmin = 1366**

Panel H sync Width (pixels) = **HS = 32**

Panel V sync Width (lines) = **VS = 6**

Rule 1 & 2 are observed here.

4.2) AUO B101EW05 V0 (resolution 1280x800)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Frame Rate	---	---	60	---	Hz
Clock frequency	$1/T_{\text{Clock}}$	64	68.93	85	MHz
Vertical Section	Period	$T_V$	816	1023	$T_{\text{Line}}$
	Active	$T_{VD}$	800		
	Blanking	$T_{VB}$	8	223	
Horizontal Section	Period	$T_H$	1408	2047	$T_{\text{Clock}}$
	Active	$T_{HD}$	1280		
	Blanking	$T_{HB}$	40	767	

- Panel V Sync Freq (Hz) =  $V_{\text{sync}} = 60$
- Panel H sync Back Porch (pixels) =  $HB = 1/4(HT-HA)^* = 32$
- Panel Width (pixels) =  $HA = 1280$
- Panel V total (lines) =  $VT = 816$
- Panel Max V total (lines) =  $VT_{\text{max}} = 1023$
- Panel Min V total (lines) =  $VT_{\text{min}} = 808$
- Panel V sync Back Porch (lines) =  $VB = 1/4(VT-VA)^* = 4$
- Panel Height (pixels) =  $VA = 800$
- Panel H total (pixels) =  $HT = 1408$
- Panel Max H total (pixels) =  $HT_{\text{max}} = 2047$
- Panel Min H total (pixels) =  $HT_{\text{min}} = 1310$
- Panel H sync Width (pixels) =  $HS = 1/4 \times (HT-HA)^* = 32$
- Panel V sync Width (lines) =  $VS = 1/4 \times (VT-VA)^* = 4$

\* Rule 3 & 4 are observed here.

4.3) Kyocera T-55787GD104J-LW-ALN (resolution 800x600)

Item	Symbol	Min.	Typ.	Max.	Unit	Note	
Clock (CK)	Frequency	1/Tc	30	40	48	MHz	
Enable signal (DE)	Horizontal Period	Th	860	1056	1395	Tc	
	Horizontal display period	Thd	24.0	26.4	-	$\mu$ s	1)
	Vertical Period	Tv	610	628	1024	Tc	
	Vertical display period	Tvd	-	600	-	Th	
Refresh rate	fv	50	60	70	Hz	2)	

- Panel V Sync Freq (Hz) = **Vsync = 60**
- Panel H sync Back Porch (pixels) = **HB = 1/4(HT-HA)\* = 64**
- Panel Width (pixels) = **HA = 800**
- Panel V total (lines) = **VT = 628**
- Panel Max V total (lines) = **VTmax = 1024**
- Panel Min V total (lines) = **VTmin = 610**
- Panel V sync Back Porch (lines) = **VB = 1/4(VT-VA)\* = 7**
- Panel Height (pixels) = **VA = 600**
- Panel H total (pixels) = **HT = 1056**
- Panel Max H total (pixels) = **HTmax = 1395**
- Panel Min H total (pixels) = **HTmin = 860**
- Panel H sync Width (pixels) = **HS = 1/4 x (HT-HA)\* = 64**
- Panel V sync Width (lines) = **VS = 1/4 x (VT-VA)\* = 7**

\* Use Rule 3 & 4 are observed here.

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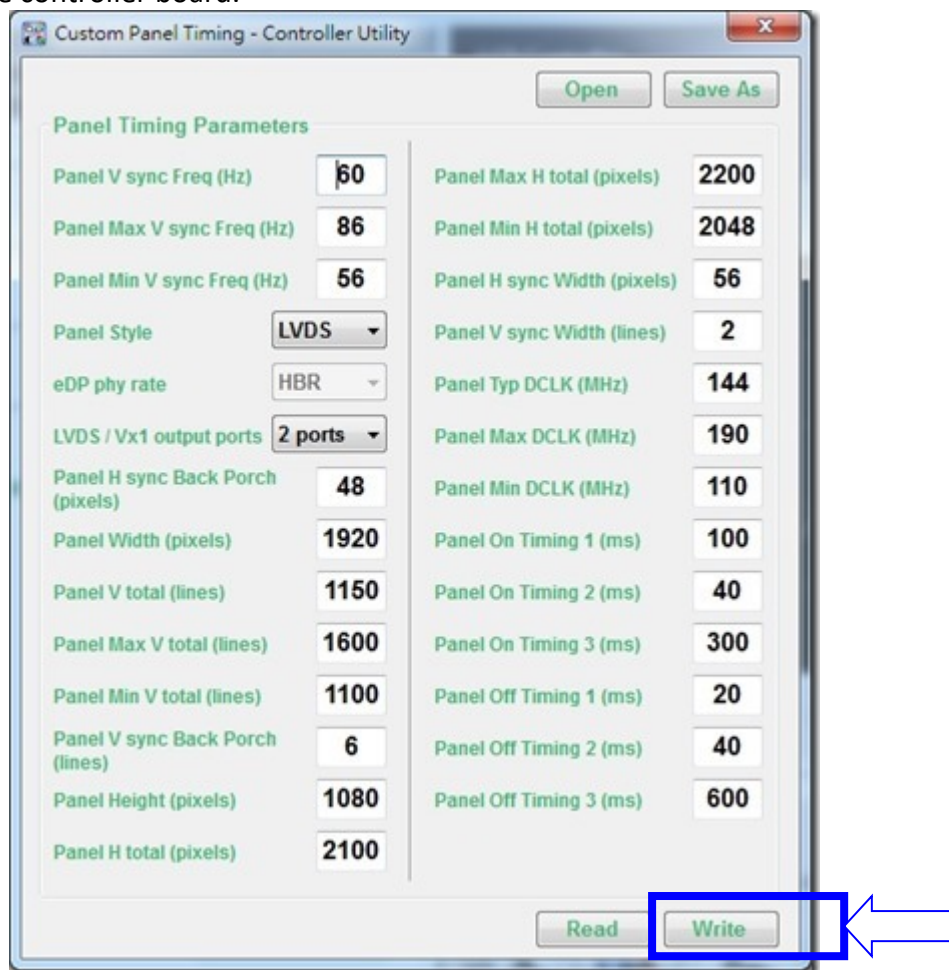
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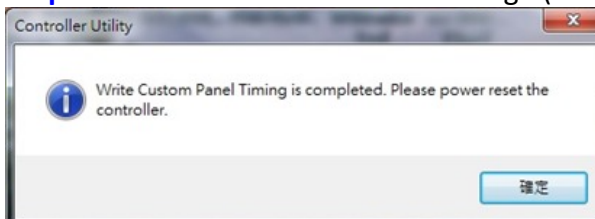
## 5) Download the new panel timings to controller board

**Step 1:** Set SW1 position 1 – 8 to ON on the controller for using the custom panel timings.

**Step 2:** Once you have entered the custom panel timing data in the panel timings page then power on the controller, click the "WRITE" function to download the new panel timings to the controller board.



**Step 3:** It will show the success message (see below) after completion.



**Step 4:** Power off and then on the controller.

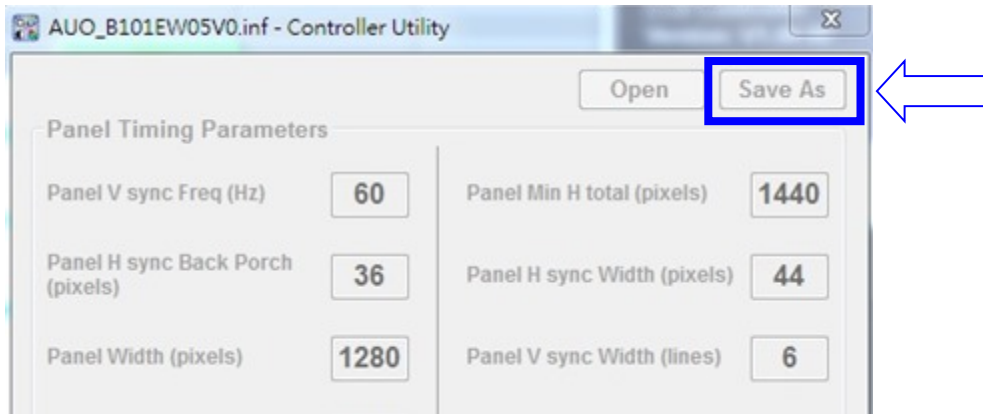
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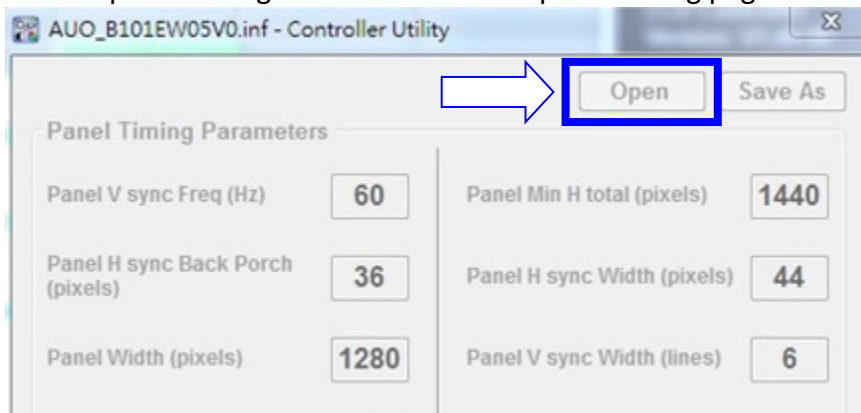
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**6) Save and Open the panel timing file:**

The Controller Utility program enables Save of the panel timings as an ".inf" file to record the panel timings data and it can be used for Digital View to add this specific panel in the firmware.



The Controller Utility program also enables Open of the saved '.inf' file to load the custom panel timing data on the custom panel timing page.



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## 7) CONTACT DETAILS

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Specifications subject to change without notice

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