DIGITALVIEW®

RoHS

IMAGE ENHANCER ADD-ON BOARD
FOR 120Hz PANEL

Model: IE-2000

Part number : 41756002X-3 or up

INSTRUCTIONS

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It is essential that these instructions are read and understood before connecting or powering up the IE-2000

Introduction

The IE-2000 is a Digital View add-on board providing:

- 10 bit panel support and 120Hz panel support.

The IE-2000 is currently matching with Digital View SVX-4096 controller to provide support for:

- Displays up to 4096x2160, 10 bit, 120Hz.

HOW TO PROCEED

- As most panels require different connection settings and cables it is important to have the relevant Digital View Connection Diagram before assembly begins. This is obtainable from the Digital View website as follows:

Controller Solution Generator

A web based resource matching controllers & panels with **connection diagrams** for download. Visit : http://www.digitalview.com/controllers/csg.php

- Ensure all parts are on hand.
- Check controller and add-on board switch & jumper settings (errors may damage the panel)
- Prepare the source
- Connect the parts
- Understand the operation & functions

IMPORTANT USAGE NOTE

This equipment is for use by system manufacturers, developers and qualified integrators, the manufacturer accepts no liability for damage or injury caused by the use of this product. It is the responsibility of the developer, integrators or other user of this product to:

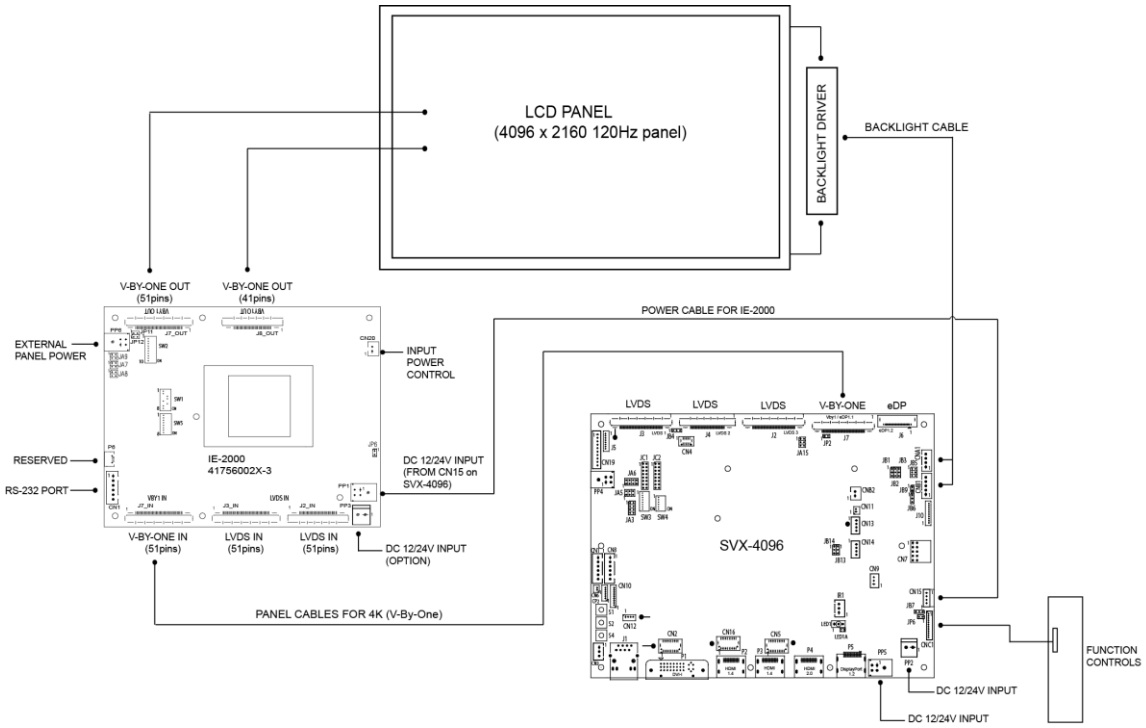
- Ensure that all necessary and appropriate safety measures are taken.
- Obtain suitable regulatory approvals as may be required.
- Check power settings to all component parts before connection.

DISCLAIMER

There is no implied or expressed warranty regarding this material.

SYSTEM DESIGN

A typical LCD based display system utilizing the IE-2000 is likely to comprise the following:



ASSEMBLY NOTES

The IE-2000 is designed for monitor and custom display projects using 4096x2160 resolution 10 bit 120Hz TFT panels with connection with compatible Digital View controllers. The following provides some guidelines for installation and preparation of a finished display solution.

Preparation: Before proceeding it is important to familiarize yourself with the parts making up the system and the various connectors, mounting holes and general layout of the IE-2000. As much as possible connectors have been labeled. Guides to connectors and mounting holes are shown in the following relevant sections.

1. **LCD Panel**: The IE-2000 is designed for driving 10 bits 120Hz up to 4096x2160 V-by-One panels. Due to the variation between manufacturers of panels signal timing and other panel characteristics it is important to use the correct Digital View Connection Diagram (which can be downloaded from the Digital View Controller Solution Generator at www.digitalview.com/controllers/csg.php) before connecting to a panel.

2. **Image Enhancer board, IE-2000** : With reference to the Connection Diagram ensure correct jumper and dip switches settings to match the target LCD panel. Caution: Handle with care as static charge may damage electronic components.

3. **LCD main controller, eg SVX-4096** : With reference to the Connection Diagram ensure correct jumper and dip switches settings to match the target LCD panel. Caution: Handle the controller with care as static charge may damage electronic components.

4. **Interconnect V-by-One cable** : This cable connects between the IE-2000 and DigitalView controllers for transmission of V-by-One signal and panel power to IE-2000 board. It is recommended to organize loose wires with cable ties. Care should be taken when placing the cables to avoid signal interference. Additionally it may be necessary in some systems to add ferrite cores to the cable to minimize signal noise.

5. **Panel power cable** : This cable connects between IE-2000 and DigitalView controllers for panel power.

6. **Panel cable for V-by-One panel :** In order to provide a clean signal it is recommended that LCD signal cables should not be longer than 61cm (24 inches). It is recommended to organize loose wires with cable ties. Care should be taken when placing the cables to avoid signal interference. Additionally it may be necessary in some systems to add ferrite cores to the cable to minimize signal noise.

7. **RS-232 port :** This port is relevant for firmware upgrade only.

8. **Power Input**: 12V/24VDC is required, this should be a regulated supply. The power rating depends on the panel and inverter used. Normally a power supply with at least 15W power output should adequate. Although the controller provides power regulation for the LCD power this does not relate to the power supplied to the backlight inverter. If an unregulated power supply is provided to an inverter any fluctuations in power may affect operation, performance and lifetime of the inverter and or backlight tubes.

9. **Power and inverter control cable :** Different inverter models require different cables and different pin assignments. Using the wrong cable may damage the inverter.

IMPORTANT NOTES

- **Power Safety: We strongly advise using appropriate insulation for all circuitry.**
- **EMI: Shielding will be required for passing certain regulatory emissions tests.**
- **Ground: The various PCB mounting holes are connected to the ground plane.**

- **Servicing: The board is not user serviceable or repairable. Warranty does not cover user error in connecting up to the IE-2000 and is invalidated by unauthorized modification or repairs.**

- **Board Mounting**: It is recommended that a clearance of at least 10mm is provided above and 5mm below the board when mounted. Additionally consideration should be given to:
    - Electrical insulation.
    - Grounding.
    - EMI shielding.
    - Cable management. Note: It is important to keep panel signal cables apart from the inverter & backlight cables to prevent signal interference.
    - Heat & Ventilation: Heat generated from other sources, for example the backlight of a very high brightness panel may generate significant heat which could adversely affect the IE-2000.
    - Other system design issues that may affect safety or performance.

IMPORTANT: Please read the Application Notes section for more information.

CONNECTION & OPERATION

CAUTION: Never connect or disconnect parts of the display system when the system is powered up as this may cause serious damage.

CONNECTION
Connection and usage is quite straight forward (it is useful to have the relevant connection diagram available at this time):

1. **Connect the LCD panel & IE-2000** : Use the appropriate panel cable as indicated in the relevant Digital View Connection Diagram.
2. **Connect the Digital View main controller & IE-2000**: Use V-by-One cables P/N 426162300-3, 400mm to carry V-by-One signal from SVX-4096 controller board to IE-2000.
3. **Connect a suitable OSD switch mount kit** : Digital View offer a number of ready made options.
4. **Check all Jumpers & Switches**: Refer to the relevant Digital View Connection Diagram or the jumpers and switches setting table (in the following section).
5. **Connect the Power supply** : Use Power cable P/N 426307100-3, 300mm, this carries power from SVX-4096 controller board (CN15) to IE-2000 (PP1).
6. **Power on** : Switch on the controller board and panel by using the OSD switch mount. The following is the power status on LED.

Power status on LED5A and LED5A1:

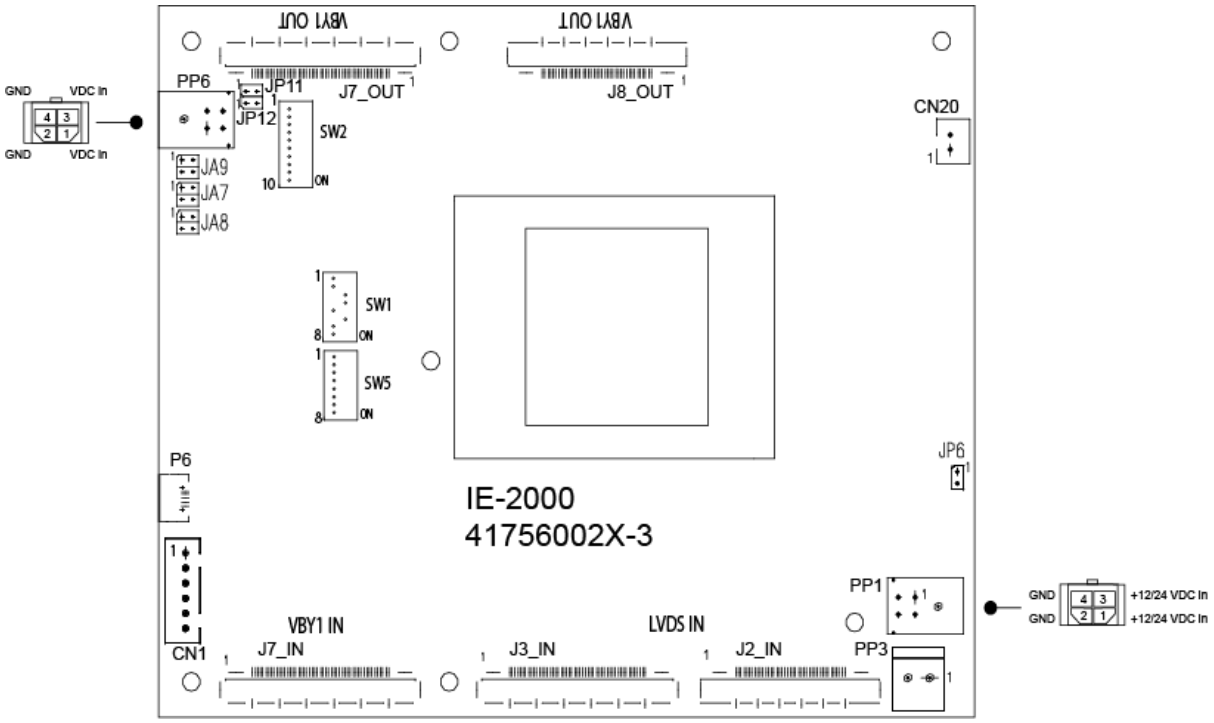
State	LED color
Power on state	Green
No signal state	Off

General:

- If you are using supplied cables & accessories, ensure they are correct for the model of panel and controller and IE-2000.
- If you are making your own cables & connectors refer carefully to both the panel & inverter specifications and the section in this manual, “Connectors, Pinouts & Jumpers” to ensure the correct pin to pin wiring.

CONNECTORS, PINOUTS & JUMPERS

The various connectors are:



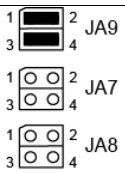
Summary: Connectors

Ref	Purpose	Description
J2_IN	LVDS signal input 1 (41)	JAE FI-RE41S-HF (Matching type : FI-RE41HL or compatible)
J3_IN	LVDS signal input 2 (51)	JAE FI-RE51S-HF (Matching type : FI-RE51HL or compatible)
J7_IN	V-by-One panel signal input (51)	JAE FI-RE51S-HF (Matching type : FI-RE51HL or compatible)
J7_OUT	V-by-One panel signal output (51)	JAE FI-RE51S-HF (Matching type : FI-RE51HL or compatible)
J8_OUT	V-by-One panel signal output (41)	JAE FI-RE41S-HF (Matching type : FI-RE41HL or compatible)
P6	Reserved	Mini USB
CN1	RS-232 port	JST 6-way, B6B-XH-A (Matching type : XHP-6)
CN20	Input power control	JST 2-way, B2B-PH-K (Matching type : PHR-2)
PP1	12V/24VDC power input	Molex 43045-0400 compatible (Matching connector type : Molex 43025-0400 compatible) (Matching power cable : P/N 426307100-3, 300mm)
PP3	Alternative power input	DC power Molex 2 pin 0.156” pitch
PP6	External panel power input	Molex 43045-0400 compatible (Matching connector type : Molex 43025-0400 compatible) (Matching power cable : P/N 426013710-3,1000mm)

Summary: Jumpers setting

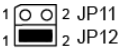
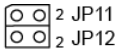
Ref	Purpose	Note
JP6	Input power control	Short = Power control by SVX-4096 Open = External power control through S2
JP11	Panel power voltage select **CAUTION**: Incorrect setting can damage panel	See panel voltage setting table 2
JP12	Panel power voltage select **CAUTION**: Incorrect setting can damage panel	See panel voltage setting table 2
JA9	Panel power voltage select **CAUTION**: Incorrect setting can damage panel	See panel voltage setting table 1
JA7	Panel power voltage select **CAUTION**: Incorrect setting can damage panel	See panel voltage setting table 1
JA8	Panel power voltage select **CAUTION**: Incorrect setting can damage panel	See panel voltage setting table 1
LED5A	Power LED	Green - normal Off - no power
LED5A1	Power LED	Green - normal Off - no power
SW1	Function selection	See table 3
SW2	Function selection	See table 5
SW5	Panel selection	See table 4

Table 1 : Panel voltage setting table (JA9, JA7 and JA8)

Input voltage via	JA9	JA7	JA8	Jumper on board
PP1	1-2 & 3-4 OPEN	1-2 & 3-4 OPEN	1-2 & 3-4 CLOSE	
J7_IN (V-by-One) or J3_IN (LVDS)	1-2 & 3-4 OPEN	1-2 & 3-4 CLOSE	1-2 & 3-4 OPEN	
PP6	1-2 & 3-4 CLOSE	1-2 & 3-4 OPEN	1-2 & 3-4 OPEN	

CAUTION: Incorrect setting can damage panel & controller

Table 2 : Panel voltage setting table (JP11 and JP12)

Output power pin selection on J7_OUT	JP11	JP12	Jumper on board
Pin-44 to Pin-51 (Pin-1 to Pin-8)*	1-2 CLOSE	1-2 CLOSE	
Pin-48 to Pin-51 (Pin-1 to Pin-4)*	1-2 CLOSE	1-2 OPEN	
Pin-44 to Pin-47 (Pin-5 to Pin-8)*	1-2 OPEN	1-2 CLOSE	
No power output on pins	1-2 OPEN	1-2 OPEN	

CAUTION: Incorrect setting can damage panel & controller

*Pin # read at panel side

Table 3 : DIP switch selection (output to panel) – SW1

Pos. #	Function	Description
1	Image flip (H)	OFF : Disable ON : Enable
2	Image flip (V)	OFF : Disable ON : Enable
3	Data mapping select	OFF : Mapping B ON : Mapping A
4	Lane count	OFF : 8-lane (for 60Hz panel) ON :16-lane (for 120Hz panel)

Byte length

Pos #5	*Pos #6*	*Description*
OFF	OFF	Byte length = 3
OFF	ON	Byte length = 4
ON	OFF	Reserved
ON	ON	Reserved

Tcon mode

Pos #7	*Pos #8*	*Description*
OFF	OFF	1 division
OFF	ON	2 divisions
ON	OFF	4 divisions
ON	ON	Reserved

Table 4 : DIP switch selection (input from controller) – SW5

Pos. #	Function	Description
1	Input signal selection	OFF : 4096x2160 (4K UHD) ON : 1920x1080 (FHD)
2	V-by-One / LVDS selection	OFF : V-by-One ON : LVDS
3	Port select	OFF* : V-by-One (8-lane) / LVDS (4-channel) ON : V-by-One (4-lane) / LVDS (2-channel)
4	Bit mode	OFF : 10 bits ON : 8 bits

Note :
* Set to OFF if using 4K UHD input

Data mapping select

Pos #5	*Pos #6*	*Description*	
OFF	OFF	Mapping A (V-by-One)	VESA (LVDS)
OFF	ON	Mapping B (V-by-One)	Reserved
ON	OFF	Reserved	JEIDA (LVDS)
ON	ON	Reserved	Reserved

Tcon mode

Pos #7	*Pos #8*	*Description*
OFF	OFF	1 division
OFF	ON	2 divisions
ON	OFF	4 divisions
ON	ON	Reserved

Note:
* Select 1 division when using input from LVDS

Table 5 : DIP switch selection – SW2*

Pos. #	*Function**	*Description*
1	Pin 37 on V-By-One (J1)	ON = "Low", OFF = 'High'
2	Pin 36 on V-By-One (J1)	ON = "Low", OFF = 'High'
3	Pin 35 on V-By-One (J1)	ON = "Low", OFF = 'High'
4	Pin 34 on V-By-One (J1)	ON = "Low", OFF = 'High'
5	Pin 33 on V-By-One (J1)	ON = "Low", OFF = 'High'
6	Pin 32 on V-By-One (J1)	ON = "Low", OFF = 'High'
7	Pin 31 on V-By-One (J1)	ON = "Low", OFF = 'High'
8	Pin 30 on V-By-One (J1)	ON = "Low", OFF = 'High'
9	Pin 29 on V-By-One (J1)	ON = "Low", OFF = 'High'
10	Pin 28 on V-By-One (J1)	ON = "Low", OFF = 'High'

IE-2000 side	*Panel side*
Pin 37	Pin 15
Pin 36	Pin 16
Pin 35	Pin 17
Pin 34	Pin 18
Pin 33	Pin 19
Pin 32	Pin 20
Pin 31	Pin 21
Pin 30	Pin 22
Pin 29	Pin 23
Pin 28	Pin 24

Note:
* The functions of pin are defined in the panel specification.

J2_IN – LVDS_1 input connector: JAE FI-RE41S-HF (Matching type : JAE FI-RE41HL)

PIN	SYMBOL	DESCRIPTION
1	NC	No connection
2	NC	No connection
3	NC	No connection
4	NC	No connection
5	NC	No connection
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground
11	GND	Ground
12	LVDS_OUT2_A4+	Positive differential LVDS data bit A4
13	LVDS_OUT2_A4-	Negative differential LVDS data bit A4
14	GND	Ground
15	LVDS_OUT2_A3+	Positive differential LVDS data bit A3
16	LVDS_OUT2_A3-	Negative differential LVDS data bit A3
17	GND	Ground
18	LVDS_OUT2_AC+	Positive LVDS clock for A channel
19	LVDS_OUT2_AC-	Negative LVDS clock for A channel
20	LVDS_OUT2_A2+	Positive differential LVDS data bit A2
21	LVDS_OUT2_A2-	Negative differential LVDS data bit A2
22	LVDS_OUT2_A1+	Positive differential LVDS data bit A1
23	LVDS_OUT2_A1-	Negative differential LVDS data bit A1
24	LVDS_OUT2_A0+	Positive differential LVDS data bit A0
25	LVDS_OUT2_A0-	Negative differential LVDS data bit A0
26	GND	Ground
27	LVDS_OUT2_B4+	Positive differential LVDS data bit B4
28	LVDS_OUT2_B4-	Negative differential LVDS data bit B4
29	GND	Ground
30	LVDS_OUT2_B3+	Positive differential LVDS data bit B3
31	LVDS_OUT2_B3-	Negative differential LVDS data bit B3
32	GND	Ground
33	LVDS_OUT2_BC+	Positive LVDS clock for B channel
34	LVDS_OUT2_BC-	Negative LVDS clock for B channel
35	LVDS_OUT2_B2+	Positive differential LVDS data bit B2
36	LVDS_OUT2_B2-	Negative differential LVDS data bit B2
37	LVDS_OUT2_B1+	Positive differential LVDS data bit B1
38	LVDS_OUT2_B1-	Negative differential LVDS data bit B1
39	LVDS_OUT2_B0+	Positive differential LVDS data bit B0
40	LVDS_OUT2_B0-	Negative differential LVDS data bit B0
41	GND	Ground

J3_IN – LVDS_2 input connector: JAE FI-RE51S-HF (Matching type : JAE FI-RE51HL)

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	LVDS_OUT1_B0-	Negative differential LVDS data bit B0
3	LVDS_OUT1_B0+	Positive differential LVDS data bit B0
4	LVDS_OUT1_B1-	Negative differential LVDS data bit B1
5	LVDS_OUT1_B1+	Positive differential LVDS data bit B1
6	LVDS_OUT1_B2-	Negative differential LVDS data bit B2
7	LVDS_OUT1_B2+	Positive differential LVDS data bit B2
8	GND	Ground
9	LVDS_OUT1_BC-	Negative LVDS clock for B channel
10	LVDS_OUT1_BC+	Positive LVDS clock for B channel
11	GND	Ground
12	LVDS_OUT1_B3-	Negative differential LVDS data bit B3
13	LVDS_OUT1_B3+	Positive differential LVDS data bit B3
14	LVDS_OUT1_B4-	Negative differential LVDS data bit B4
15	LVDS_OUT1_B4+	Positive differential LVDS data bit B4
16	GND	Ground
17	LVDS_OUT1_A0-	Negative differential LVDS data bit A0
18	LVDS_OUT1_A0+	Positive differential LVDS data bit A0
19	LVDS_OUT1_A1-	Negative differential LVDS data bit A1
20	LVDS_OUT1_A1+	Positive differential LVDS data bit A1
21	LVDS_OUT1_A2-	Negative differential LVDS data bit A2
22	LVDS_OUT1_A2+	Positive differential LVDS data bit A2
23	GND	Ground
24	LVDS_OUT1_AC-	Negative LVDS clock for A channel
25	LVDS_OUT1_AC+	Positive LVDS clock for A channel

26	GND	Ground
27	LVDS_OUT1_A3-	Negative differential LVDS data bit A3
28	LVDS_OUT1_A3+	Positive differential LVDS data bit A3
29	LVDS_OUT1_A4-	Negative differential LVDS data bit A4
30	LVDS_OUT1_A4+	Positive differential LVDS data bit A4
31	GND	Ground
32	GND	Ground
33	NC	No function
34	NC	No function
35	OP2	Reserved
36	OP1	Reserved
37	GND	Ground
38	GND	Ground
39	GND	Ground
40	GND	Ground
41	GND	Ground
42	VLCD_LV	No function
43	VLCD_LV	No function
44	VLCD_LV	No function
45	VLCD_LV	No function
46	VLCD_LV	No function
47	VLCD_HV	Panel power supply
48	VLCD_HV	Panel power supply
49	VLCD_HV	Panel power supply
50	VLCD_HV	Panel power supply
51	VLCD_HV	Panel power supply

J7_IN – V-by-One panel signal input connector: JAE FI-RE51S-HF (Matching type : JAE FI-RE51HL)

PIN		SYMBOL	DESCRIPTION
1	(51)	GND	Ground
2	(50)	VB1_TX7P	V-by-One HS Data Lane 7
3	(49)	VB1_TX7N	V-by-One HS Data Lane 7
4	(48)	GND	Ground
5	(47)	VB1_TX6P	V-by-One HS Data Lane 6
6	(46)	VB1_TX6N	V-by-One HS Data Lane 6
7	(45)	GND	Ground
8	(44)	VB1_TX5P	V-by-One HS Data Lane 5
9	(43)	VB1_TX5N	V-by-One HS Data Lane 5
10	(42)	GND	Ground
11	(41)	VB1_TX4P	V-by-One HS Data Lane 4
12	(40)	VB1_TX4N	V-by-One HS Data Lane 4
13	(39)	GND	Ground
14	(38)	VB1_TX3P	V-by-One HS Data Lane 3
15	(37)	VB1_TX3N	V-by-One HS Data Lane 3
16	(36)	GND	Ground
17	(35)	VB1_TX2P	V-by-One HS Data Lane 2
18	(34)	VB1_TX2N	V-by-One HS Data Lane 2
19	(33)	GND	Ground
20	(32)	VB1_TX1P	V-by-One HS Data Lane 1
21	(31)	VB1_TX1N	V-by-One HS Data Lane 1
22	(30)	GND	Ground
23	(29)	VB1_TX0P	V-by-One HS Data Lane 0
24	(28)	VB1_TX0N	V-by-One HS Data Lane 0
25	(27)	GND	Ground
26	(26)	LOCKN	V-by-One LOCK
27	(25)	HTPDN	V-by-One HTPDN
28	(24)	OP10	High/Low state control
29	(23)	OP9	High/Low state control
30	(22)	OP8	High/Low state control
31	(21)	OP7	High/Low state control
32	(20)	OP6	High/Low state control
33	(19)	OP5	High/Low state control
34	(18)	OP4	High/Low state control
35	(17)	OP3	High/Low state control
36	(16)	OP2	High/Low state control
37	(15)	OP1	High/Low state control
38	(14)	GND	Ground
39	(13)	GND	Ground
40	(12)	GND	Ground
41	(11)	GND	Ground
42	(10)	GND	Ground
43	(9)	NC	No Connection

44	(8)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
45	(7)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
46	(6)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
47	(5)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
48	(4)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
49	(3)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
50	(2)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
51	(1)	PVLCD_High	Panel power supply (selected by JP1 & JP2)

J7_OUT – V-by-One panel signal output connector: JAE FI-RE51S-HF (Matching type : JAE FI-RE51HL)

PIN		SYMBOL	DESCRIPTION
1	(51)	GND	Ground
2	(50)	VB1_TX7P	V-by-One HS Data Lane 7
3	(49)	VB1_TX7N	V-by-One HS Data Lane 7
4	(48)	GND	Ground
5	(47)	VB1_TX6P	V-by-One HS Data Lane 6
6	(46)	VB1_TX6N	V-by-One HS Data Lane 6
7	(45)	GND	Ground
8	(44)	VB1_TX5P	V-by-One HS Data Lane 5
9	(43)	VB1_TX5N	V-by-One HS Data Lane 5
10	(42)	GND	Ground
11	(41)	VB1_TX4P	V-by-One HS Data Lane 4
12	(40)	VB1_TX4N	V-by-One HS Data Lane 4
13	(39)	GND	Ground
14	(38)	VB1_TX3P	V-by-One HS Data Lane 3
15	(37)	VB1_TX3N	V-by-One HS Data Lane 3
16	(36)	GND	Ground
17	(35)	VB1_TX2P	V-by-One HS Data Lane 2
18	(34)	VB1_TX2N	V-by-One HS Data Lane 2
19	(33)	GND	Ground
20	(32)	VB1_TX1P	V-by-One HS Data Lane 1
21	(31)	VB1_TX1N	V-by-One HS Data Lane 1
22	(30)	GND	Ground
23	(29)	VB1_TX0P	V-by-One HS Data Lane 0
24	(28)	VB1_TX0N	V-by-One HS Data Lane 0
25	(27)	GND	Ground
26	(26)	LOCKN	V-by-One LOCK
27	(25)	HTPDN	V-by-One HTPDN
28	(24)	Panel option	High/Low state control (Controlled by SW3)
29	(23)	Panel option	High/Low state control (Controlled by SW3)
30	(22)	Panel option	High/Low state control (Controlled by SW3)
31	(21)	Panel option	High/Low state control (Controlled by SW3)
32	(20)	Panel option	High/Low state control (Controlled by SW3)
33	(19)	Panel option	High/Low state control (Controlled by SW3)
34	(18)	Panel option	High/Low state control (Controlled by SW3)
35	(17)	Panel option	High/Low state control (Controlled by SW3)
36	(16)	Panel option	High/Low state control (Controlled by SW3)
37	(15)	Panel option	High/Low state control (Controlled by SW3)
38	(14)	GND	Ground
39	(13)	GND	Ground
40	(12)	GND	Ground
41	(11)	GND	Ground
42	(10)	GND	Ground
43	(9)	NC	No Connection
44	(8)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
45	(7)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
46	(6)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
47	(5)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
48	(4)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
49	(3)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
50	(2)	PVLCD_High	Panel power supply (selected by JP1 & JP2)
51	(1)	PVLCD_High	Panel power supply (selected by JP1 & JP2)

J8_OUT – V-by-One panel signal output connector: JAE FI-RE41S-HF (Matching type : JAE FI-RE41HL)

PIN	SYMBOL	DESCRIPTION
1	NC	No connection
2	NC	No connection
3	NC	No connection
4	NC	No connection
5	NC	No connection
6	NC	No connection

7	NC	No connection
8	NC	No connection
9	NC	No connection
10	NC	No connection
11	NC	No connection
12	NC	No connection
13	NC	No connection
14	NC	No connection
15	NC	No connection
16	NC	No connection
17	GND	Ground
18	VB1_TX15P	V-By-One Lane 15
19	VB1_TX15N	V-By-One Lane 15
20	GND	Ground
21	VB1_TX14P	V-By-One Lane 14
22	VB1_TX14N	V-By-One Lane 14
23	GND	Ground
24	VB1_TX13P	V-By-One Lane 13
25	VB1_TX13N	V-By-One Lane 13
26	GND	Ground
27	VB1_TX12P	V-By-One Lane 12
28	VB1_TX12N	V-By-One Lane 12
29	GND	Ground
30	VB1_TX11P	V-By-One Lane 11
31	VB1_TX11N	V-By-One Lane 11
32	GND	Ground
33	VB1_TX10P	V-By-One Lane 10
34	VB1_TX10N	V-By-One Lane 10
35	GND	Ground
36	VB1_TX9P	V-By-One Lane 9
37	VB1_TX9N	V-By-One Lane 9
38	GND	Ground
39	VB1_TX8P	V-By-One Lane 8
40	VB1_TX8N	V-By-One Lane 8
41	GND	Ground

P6 - Reserved: Mini USB

PIN	DESCRIPTION
1	+5V VCC
2	Data -
3	Data +
4	Ground

CN1 – RS-232 port: JST B6B-XH-A (Matching type : XHP-6)

PIN	SYMBOL	DESCRIPTION
1	EXT_MSTR2_SCL	Reserved
2	EXT_MSTR2_SDA	Reserved
3	VCC	+5V
4	TXD	RS-232 Tx data
5	GND	Ground
6	RXD	RS-232 Rx data

CN20 - Input power control : JST 2-way, B2B-PH-K (Matching type : PHR-2)

PIN	DESCRIPTION
1	+5V logic signal
2	+5V logic signal

PP1 - 12V/24VDC power input: Molex 43045-0400 or compatible (Matching type : Molex 43025-0400 or compatible)

PIN	DESCRIPTION
1	+12VDC / 24VDC in
2	Ground
3	+12VDC / 24VDC in
4	Ground

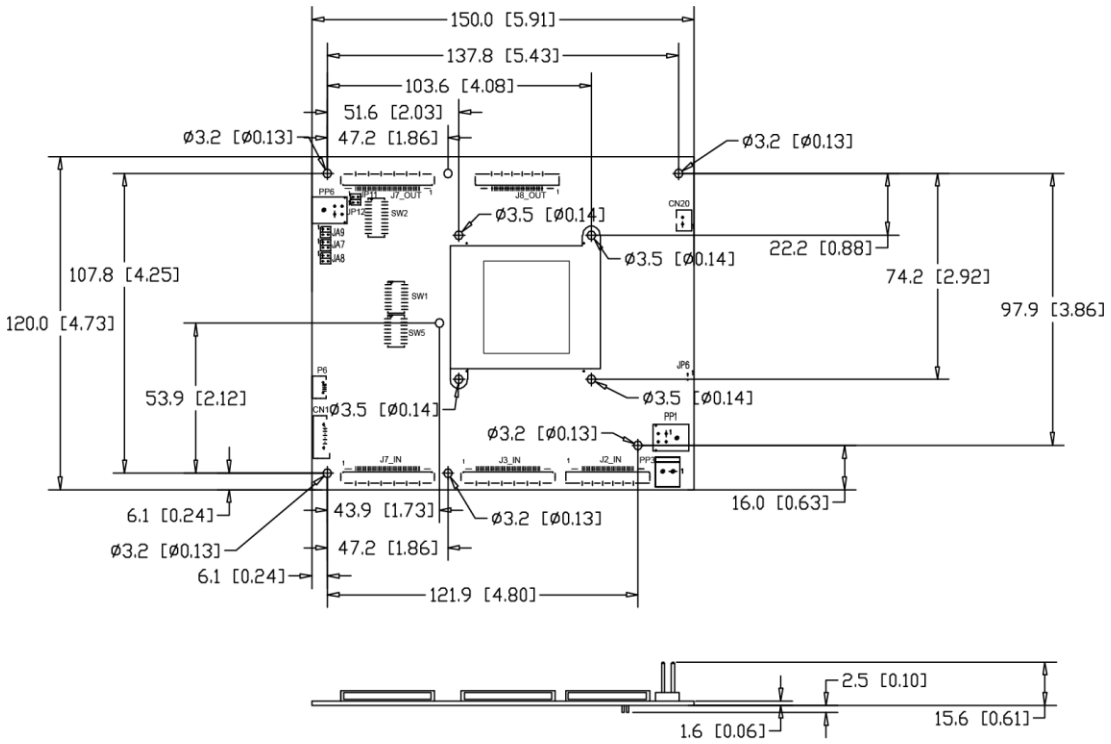
PP3 – Alternate 12V/24VDC input power: Molex 2 pin 0.156" pitch

PIN	DESCRIPTION
1	+12VDC / 24VDC in
2	Ground

PP6 – External panel power input: Molex 43045-0400 or compatible (Matching type : Molex 43025-0400 or compatible)

PIN	DESCRIPTION
1	External panel power
2	Ground
3	External panel power
4	Ground

BOARD DIMENSIONS



The maximum thickness of the IE-2000 is 20.65mm with or without video add-on board (measured from bottom of PCB to top of components, including any underside components & leads). We recommend clearances of:

- 5mm from bottom of PCB - if mounting on a metal plate we also recommend a layer of suitable insulation material is added to the mounting plate surface.
- 10mm above the components
- 3~5mm around the edges

Any of the holes shown above can be used for mounting the PCB, they are 3.2mm in diameter.

CAUTION: Ensure adequate insulation is provided for all areas of the PCB with special attention to high voltage parts such as the inverter.

TROUBLESHOOTING

General
A general guide to troubleshooting a flat panel display system it is worth considering the system as separate elements, such as:

- Controller (jumpers, PC settings)
- Panel (Cabling, connection, panel, PC settings)
- Backlight (inverter, cabling, backlight tubes)
- Cabling
- Computer system (display settings, operating system)

Through step by step cross checking with instruction manuals and a process of elimination to isolate the problem it is usually possible to clearly identify the problem area.

No image:

- If the panel backlight is not working it may still be possible to just see some image on the display.
- A lack of image is most likely to be caused by incorrect connection, lack of power, failure to provide a signal or incorrect graphic card settings.

Image position:
If it is impossible to position the image correctly, i.e. the image adjustment controls will not move the image far enough, then test using another graphics card. This situation can occur with a custom graphics card that is not close to standard timings or if something is in the graphics line that may be affecting the signal such as a signal splitter (please note that normally a signal splitter will not have any adverse effect).

Image appearance:

- A faulty panel can have blank lines, failed sections, flickering or flashing display
- Incorrect graphics card refresh rate, resolution or interlaced mode will probably cause the image to be the wrong size, to scroll, flicker badly or possibly even no image.
- Incorrect jumper settings on the controller & IE-2000 may cause everything from total failure to incorrect image. CAUTION: Do not set the panel power input incorrectly.
- Sparkling on the display: faulty panel signal cable.

Backlight:
Items to check include: Power input, Controls, Inverter and Tubes generally in this order.
If half the screen is dimmer than the other half:

- Check cabling for the inverter.
- For a specific backlight tube check the AC pins orientation (CAUTION: Never reverse any DC power pins).

Also:

- If adjusting brightness control has no effect the chances are that the VR rating or method of adjusting brightness is not compatible or correctly connected to the inverter.
- If system does not power down when there is a loss of signal

Continued failure:
If unit after unit keeps failing consider and investigate whether you are short circuiting the equipment or doing something else seriously wrong.

Generally after common sense issues have been resolved we recommend step by step substitution of known working parts to isolate the problem.

SPECIFICATIONS

Panel compatibility	Compatible with 120Hz panel with 4096x2160 resolutions. A specified BIOS and some factory adjustment may be required for individual panel timings.
No. of colours	Up to 10 bit per color, providing 1.07 billion colours.
Panel signal	V-By-One
Board dimensions	150mm x 120mm (5.91 in x 4.73 in)
Power consumption	10W approx. (not including panel power consumption)
Input voltage	12V/24VDC +/- 5%
Storage temperature limits	-40^{o}C to +70^{o}C
Operating temperature limits	0^{o}C to +60^{o}C

NOTES

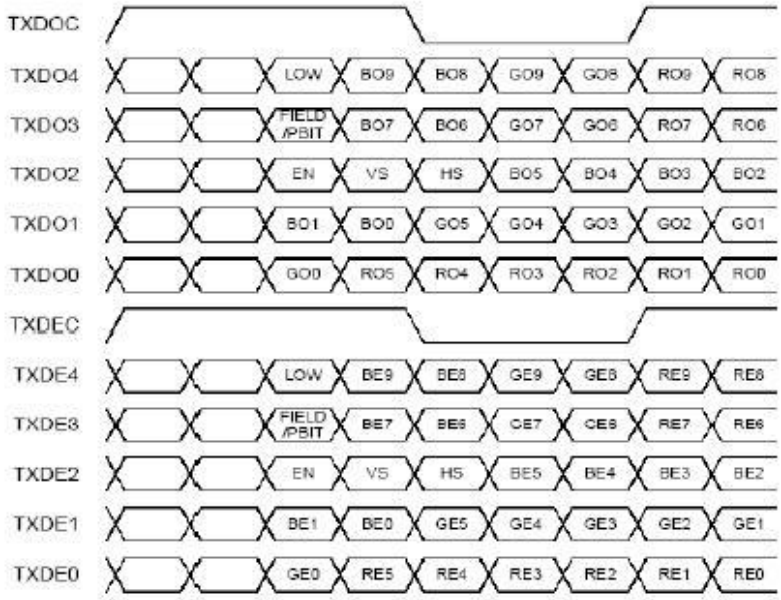
Please note the following:

- For specific panel setup a sample of an LCD may be required (this will be returned) and a copy of the full technical specifications for the panel from the manufacturer.
- Re-layout and custom development services are available.

Appendix I – Mapping definition

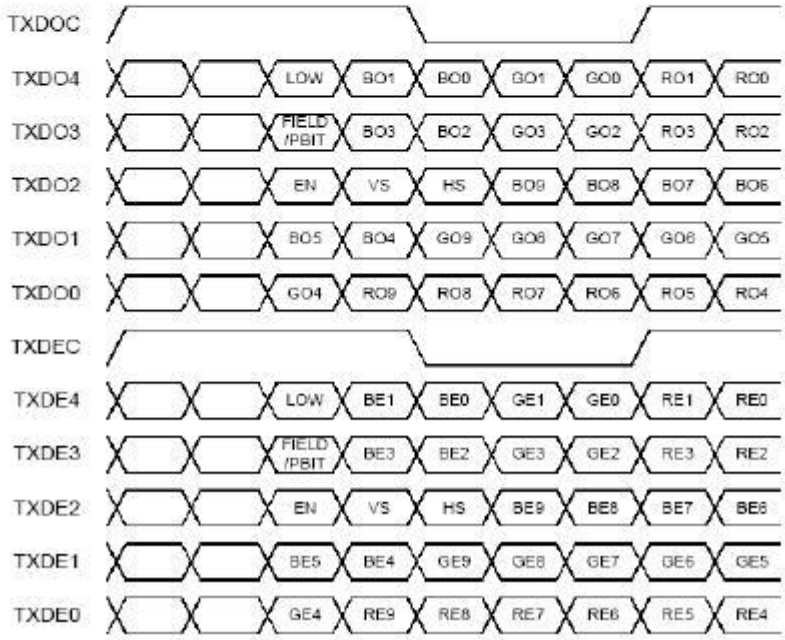
- Definition of VESA :

DPort Output Pair	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DB[7:6] / TXDEC							
DB[3:2] / TXDE0	GE0	RE5	RE4	RE3	RE2	RE1	RE0
DB[5:4] / TXDE1	BE1	BE0	GE5	GE4	GE3	GE2	GE1
DB[9:8] / TXDE2	EN	VS	HS	BE5	BE4	BE3	BE2
DG[3:2] / TXDE3	field/prg	BE7	BE6	GE7	GE6	RE7	RE6
DG[5:4] / TXDE4	low	BE9	BE8	GE9	GE8	RE9	RE8
DG[7:6] / TXDO0	GO0	RO5	RO4	RO3	RO2	RO1	RO0
DG[9:8] / TXDO1	BO1	BO0	GO5	GO4	GO3	GO2	GO1
DR[5:4] / TXDO2	EN	VS	HS	BO5	BO4	BO3	BO2
DR[7:6] / TXDO3	field/prg	BO7	BO6	GO7	GO6	RO7	RO6
DR[9:8] / TXDO4	low	BO9	BO8	GO9	GO8	RO9	RO8
DR[3:2] / TXDOC							



- Definition of JEIDA :

DPort Output Pair	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DB[7:6] / TXDEC							
DB[5:4] / TXDE0	GE4	RE9	RE8	RE7	RE6	RE5	RE4
DB[5:4] / TXDE1	BE5	BE4	GE9	GE8	GE7	GE6	GE5
DB[9:8] / TXDE2	EN	VS	HS	BE9	BE8	BE7	BE6
DG[3:2] / TXDE3	field/prg	BE3	BE2	GE3	GE2	RE3	RE2
DG[5:4] / TXDE4	low	BE1	BE0	GE1	GE0	RE1	RE0
DG[7:6] / TXDO0	GO4	RO9	RO8	RO7	RO6	RO5	RO4
DG[9:8] / TXDO1	BO5	BO4	GO9	GO8	GO7	GO6	GO5
DR[5:4] / TXDO2	EN	VS	HS	BO9	BO8	BO7	BO6
DR[7:6] / TXDO3	field/prg	BO3	BO2	GO3	GO2	RO3	RO2
DR[9:8] / TXDO4	low	BO1	BO0	GO1	GO0	RO1	RO0
DR[3:2] / TXDOC							



WARRANTY

The products are warranted against defects in workmanship and material for a period of three (3) year from the date of purchase provided no modifications are made to it and it is operated under normal conditions and in compliance with the instruction manual.

The warranty does not apply to:

- Product that has been installed incorrectly, this specifically includes but is not limited to cases where electrical short circuit is caused.
- Product that has been altered or repaired except by the manufacturer (or with the manufacturer's consent).
- Product that has subjected to misuse, accidents, abuse, negligence or unusual stress whether physical or electrical.
- Ordinary wear and tear.

Except for the above express warranties, the manufacturer disclaims all warranties on products furnished hereunder, including all implied warranties of merchantability and fitness for a particular application or purpose. The stated express warranties are in lieu of all obligations or liabilities on the part of the manufacturer for damages, including but not limited to special, indirect consequential damages arising out of or in connection with the use of or performance of the products.

CAUTION

Whilst care has been taken to provide as much detail as possible for use of this product it cannot be relied upon as an exhaustive source of information. This product is for use by suitably qualified persons who understand the nature of the work they are doing and are able to take suitable precautions and design and produce a product that is safe and meets regulatory requirements.

LIMITATION OF LIABILITY

The manufacturer's liability for damages to customer or others resulting from the use of any product supplied hereunder shall in no event exceed the purchase price of said product.

TRADEMARKS

The following are trademarks of Digital View Ltd:

- Digital View
- IE-2000

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