PLC-69030

User Manual

Version 1.1

C&T 69030 Flat Panel Control board

March 16, 2004

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Chapter 1 Introduction

Welcome to the PLC-69030 Series. The PLC-69030 is a PCI bus flat panel graphic acceleration card. This card uses C&T 69030 LCD/CRT Controller Chips to support high resolution LCD/CRT display panel. It is made for the SBCs that are not equipped with LCD/CRT interface from the factory and is the best solution for internal flat panel connection.

PLC-69030 is a 50-pin LCD connector (TTL Signal) with FP24-01 Connection Module for extra 44-pin connectors. This model is for internal flat panel connection application, for example: for connection with LCD-Kit01, WS-842CD, MPC-6020..etc.

Specifications

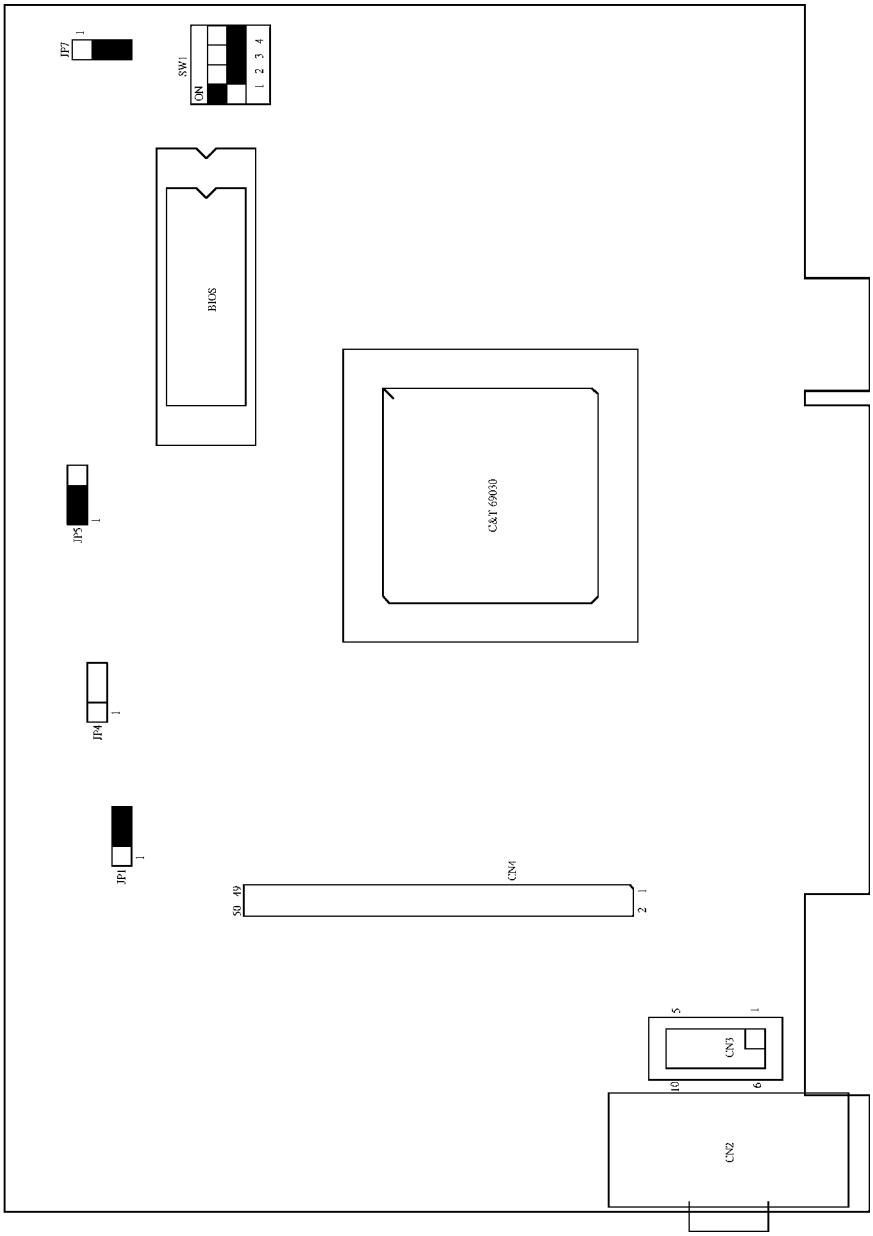
- **Bus** : PCI bus
- **LCD/CRT Interface :** C&T 69030 Chipset with 4MB Video DRAM
- **CRT Resolution :**
  - ✓ 1600 x 1200 , 16bit colors
  - ✓ 1280 x 1024 , 24bit colors
- **36-bit LCD Interface Resolution:**
  - ✓ 1600 x 1200 , 16bit colors
  - ✓ 1280 x 1024 , 24bit colors
- **Output Connector (CRT):**
  - ✓ 15-pin D-sub female connector (CN2)
  - ✓ 2x5 box header/2.54mm connector (CN3)
- **Output Voltage :** 3.3 V or 5 V (selectable from JP5)
- **LCD Type :** TFT or DSTN (selectable from JP2,JP3)
- **Support 24-bit and 36-bit data signals**

Chapter 2 Installation

This chapter describes how to install the PLC-69030. The layout of PLC-69030 is shown on the next page and the Unpacking Precautions that you should be careful with are described on the following page. Also included is the jumpers and connectors description for this PLC-69030.

2.1 Layout

(please, refer to the next page)


JP7
SW1
ON
1 2 3 4
BIOS
C&T 69030
JP5
JP4
JP1
CN4
50 49
2 1
5 1
CN3
10 6
CN2

2.2 Unpacking Precautions

- Some components on PLC-69030 are very sensitive to static electric charges and can be damaged by a sudden rush of power. Ground yourself to remove any static charge before touching your PLC-655 . You can do it by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.
- Disconnect power supply before handling and doing connection on PLC-69030. Do not plug any connector or jumper while the power is on. It will cause fatal damage to your LCD panel.
- Make sure that every connector is connected in correct direction. Any incorrect connection may cause smoke or burn of electrical parts or fatal damage of your LCD panel.

2.3 JUMPER SETTING

- **JP1: FPVDD or FPVEE Selector**

This jumper decides which signal is used to generate the panel bias voltage VEE. The default setting is **FPVEE**.

PIN NO.	DESCRIPTION
1-2	USE FPVDD
2-3	USΞ FPVEE

- **JP4: Output +12V and +5V Power Supply**

JP4 supplies +12V and +5V voltage for any additional device or application.

Warning: don't short any two pins of this jumper. It will cause short circuit.

PIN NO.	DESCRIPTION
1	VDD SAFE (+5V)
2	GND
3	+12V SAFE

- **JP5: LCD VOLTAGE SETTING**

PIN NO.	DESCRIPTION
1-2	**3.3 V**
2-3	5 V

- **JP7: SELECT BIOS**

The BIOS used on PLC-69030 is 64K Flash ROM. It is divided into two segments, 32K each, BIOS 1 & BIOS 2. Each Segment is programmed with 8 types of LCD resolution.

PIN NO.	DESCRIPTION
1-2	BIOS 1
2-3	**BIOS 2**

- **SW1: LCD PANEL TYPE SETTING (BIOS 1)**

PIN NO.				RESOLUTION
1	2	3	4	
ON	ON	ON	ON	#1: Reserved
ON	ON	ON	OFF	#2: Reserved
ON	ON	OFF	ON	#3: Reserved
ON	ON	OFF	OFF	#4: Reserved
ON	OFF	ON	ON	#5: Reserved
ON	OFF	ON	OFF	#6: Reserved
ON	OFF	OFF	ON	#7: Reserved
ON	OFF	OFF	OFF	#8: Reserved

- **SW1: LCD PANEL TYPE SETTING (BIOS 2)**

PIN NO.				RESOLUTION
1	2	3	4	
ON	ON	ON	ON	#1: 1024 x 768 DSTN Color Panel
ON	ON	ON	OFF	#2: 640 x 480 DSTN Mono Panel
ON	**ON**	**OFF**	**ON**	#3: 640 x 480 DSTN Color Panel
ON	ON	OFF	OFF	#4: 800 x 600 DSTN Color Panel
ON	OFF	ON	ON	#5: 640 x 480 Sharp 12-bit TFT Color Panel
ON	OFF	ON	OFF	#6: 640 x 480 18-bit TFT Color Panel
ON	OFF	OFF	ON	#7: 1024 x 768 36-bit TFT Color Panel
ON	OFF	OFF	OFF	#8: 800 x 600 TFT Color Panel

2.4 CONNECTOR

- **CN2: DSub-15pin CRT (VGA monitor) Connector(connect to CRT Panel)**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	HS
5	VS	6	NC
7	NC	8	GND
9	GND	10	GND
11	NC	12	NC
13	NC	14	NC
15	NC		

- **CN3: 5X2 header CRT Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	6	NC
2	GREEN	7	NC
3	BLUE	8	GND
4	HS	9	GND
5	VS	10	GND

- **CN4: 25X2 header LCD Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VPCLK	2	P33
3	P34	4	P31
5	P35	6	P32
7	P30	8	P28
9	P39	10	P27
11	P25	12	P26
13	P24	14	P21
15	P23	16	P22
17	P16	18	P20
19	P17	20	P18
21	P19	22	P14
23	P13	24	P12
25	P15	26	P11

27	P7	28	P10
29	PLCD	30	PLCD
31	P9	32	P8
33	P4	34	P6
35	P3	36	P5
37	P2	38	P1
39	M	40	P0
41	SHFCLK	42	ENABLK
43	FPVDD	44	FLM
45	FPVEE	46	LP
47	GND	48	GND
49	+12V	50	+12V

- **Flat Panel Display Interface**

	Mono	Mono	Mono	Color	Color	Color	Color	Color	Color	Color	Color
	SS	DD	DD	TFT	TFT	TFT	STN-SS	STN-SS	STN-DD	STN-DD	STN-DD
Pin Name	8-bit	8-bit	16-bit	9/12/16-bit	18/24-bit	36-bit	8-bit (4bP)	8-bit (4bP)	8-bit (4bP)	16-bit (4bP)	24-bit
P0	D0	UD3	UD7	B0	B0	FB0	R1	R1	UR1	UR0	UR0
P1	D1	UD2	UD6	B1	B1	FB1	B1	G1	UG1	UG0	UG0
P2	D2	UD1	UD6	B2	B2	FB2	G2	B1	UB1	UB0	UB0
P3	D3	UD0	UD4	B3	B3	FB3	R3	R2	UR2	UR1	LR0
P4	D4	LD3	UD3	B4	B4	FB4	B3	G2	LR1	LR0	LG0
P5	D5	LD2	UD2	G0	B5	FB5	G4	B2	LG1	LG0	LB0
P6	D6	LD1	UD1	G1	B6	SB0	R5	R3	LB1	LB0	UR1
P7	D7	LD0	UD0	G2	B7	SB1	B5	G3	LR2	LR1	UG1
P8			LD7	G3	G0	SB2		B3		UG1	UB1
P9			LD6	G4	G1	SB3		R4		UB1	LR1
P10			LD5	G5	G2	SB4		G4		UR2	LG1
P11			LD4	R0	G3	SB5		B4		UG2	LB1
P12			LD3	R1	G4	FG0		R5		LG1	UR2
P13			LD2	R2	G5	FG1		G5		LB1	UG2
P14			LD1	R3	G6	FG2		B5		LR2	UB2
P15			LD0	R4	G7	FG3		R6		LG2	LR2
P16					R0	FG4					LG2
P17					R1	FG5					LB2
P18					R2	SG0					UR3
P19					R3	SG1					UG3
P20					R4	SG2					UB3
P21					R5	SG3					LR3
P22					R6	SG4					LG3
P23					R7	SG5					LB3
P24						FR0					
P25						FR1					
P26						FR2					
P27						FR3					
P28						FR4					
P29						FR5					
P30						SR0					
P31						SR1					

P32						SR2					
P33						SR3					
P34						SR4					
P35						SR5					
SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK
Pixels/Clock	8	8	16	1	1	2	2-2/3	5-1/3	2-2/3	5-1/3	8

Appendix A FP24-01 Connection Module

The FP24-01 converts PLC-69030's on board 50pin LCD interface signal to the 44-pin (Hirose DF9-41P-1V) LCD connectors. The 44-pin connector will only support 24-bit flat panel.

- **J3 : 44-pin LCD Interface Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	2	+12V
3	GND	4	GND
5	5V/3.3V	6	5V/3.3V
7	FPVEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	SHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL
41	NC	42	NC
43	FPVDD	44	5V/3.3V

- **J2 : LCD Backlight Power Connector**

PIN NO.	DESCRIPTION
1	N/C
2	GND
3	+12V
4	GND
5	FPVEE Inverter Enable