

LCD-Kit03
640x480 – 18bits
LTM10C209A LCD Display

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Introduction

Welcome to the LCD-Kit03 – LTM10C209A. The LCD-Kit03 is high brightness and long life TFT LCD panel with 640 x 480 resolution and 18-bits display colors. It is made for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

The LCD-Kit03 is designed with High Luminance, clear 256k-colors and Low Reflection to present a High Image Quality. With its thin and light weight *plus* compact size (10.4"), LCD-Kit03 is also the most suitable solution for FA/OA Equipment, Display Terminals, Measuring Instrument and Industrial portable Workstation .

The LCD-Kit03 comes with specifically designed mounting kit for fast installation. It is also *Plug and Play*, can be directly and easily connected to JUKI, NOVA, POS,... series main boards and also PLC-655, PLC-508 LCD control card without any additional parts needed.

1.1 Specifications :

Supply Voltage : +5V

Panel Size : 10.4" Diagonal

Display Active Area Size: 211.2mm x 158.4mm

Viewing Area : 215.2mm x 162.4mm

Display Colors : 256k Colors by the combinations of 18 bits data

Number of Pixels : 640 (W) x 480 (H)

Brightness : 250 cd/m²

Pixel Format : 1 pixel = R + G + B dots

Pixel Arrangement : R, G, B Vertical Strip

Pixel Pitch : 0.33mm (H) x 0.33mm (V)

Viewing Direction : 6 o' clock (in direction of max. contrast)

Viewing Angle : +/- 50° (H), -10° ~ +30° (V)

Contrast Ratio : > 100 : 1

Outline Dimensions : 265.0mm (W) x 188.8mm (H) x 12.0mm (D)

Surface Treatment : Anti-glare and Hard Coat 3H

Backlight: Twin cold-cathode fluorescent lamps for sidelighting

Operating Temperature : 0~50°C

LCD MTBF : 50,000 hours

Backlight MTBF : 20,000 hours (min)

1.2 What You Have

In addition to this *User's Manual*, the LCD-Kit03 package includes the following items:

- one LTM10C209A 10.4" LCD Panel with its mounting kit
- one 70cm 44-pin LCD connection cable
- one BIOS Utility Diskette

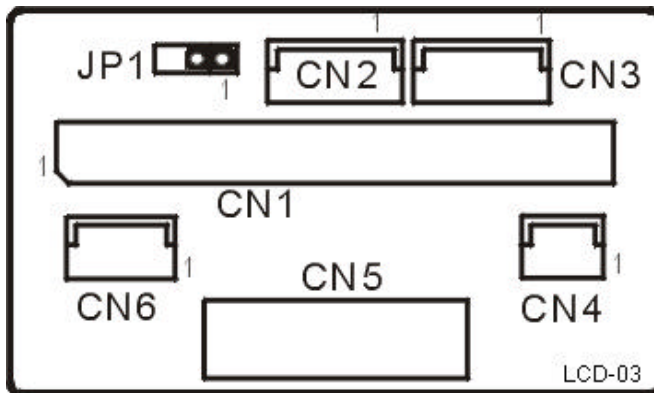
If any of these items is missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.

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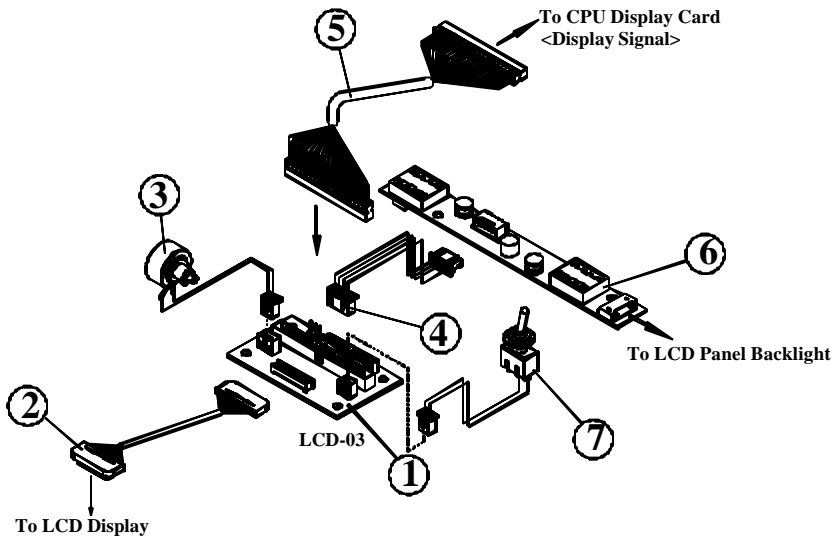
Installation

This chapter describes how to install the LCD-Kit03. The layout of LCD-03 Connection Board is shown on the next pages 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 LCD-Kit03.

2.1 LCD-03 Connection Board Layout



2.2 LCD-Kit03 Connection Layout



Note :

- ① LCD-03 Connection Board
- ② 31-pin connection cable, connecting CN5 and LCD Display
- ③ Brightness VR, connected to CN6
- ④ Backlight Inverter cable, connecting CN2 and Backlight Inv.
- ⑤ 70cm 44-pin LCD connection cable
- ⑥ Backlight Inverter
- ⑦ Backlight Inverter ON/OFF Switch, connected to CN4

2.3 Unpacking Precautions

- ✓ Some components on LCD-Kit03 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 LCD-Kit03 . 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.
- ✓ Do not touch the inner side of LCD panel and the connector/cable of fluorescent lamp/backlight when the power is on. The inverter supplies HIGH VOLTAGE to these parts (~ 550Vrms).
- ✓ Disconnect power supply before handling and doing connection on LCD-Kit03. 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.
- ✓ Be careful with the liquid crystal material. Do not swallow, inhale or have skin contact with this material in case that the LCD panel is broken and the liquid flow out. If you inhale the liquid material, rinse your mouth immediately with water then go to see a doctor. If you have skin contact with the liquid, wash it immediately with alcohol. Be careful, too, with the chips of glass if the panel is broken.
- ✓ For outdoor usage, an ultra-violet ray protect-lens is recommended to apply onto LCD display. It will prevent your LCD from strong sunlight, scratches, dust and water invasion etc. which can cause damage to the LCD display.

2.4 Backlight Inverter Control

- JP1: Backlight Inverter ON/OFF control - jumper

PIN NO.	FUNCTION
1-2	USE FPVEE
2-3	USE ENBKL

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LCD-Kit03 Connectors

3.1 LCD Connector

- **CN1: 22x2 Header/2.0mm LCD Connector**
(connect to LCD Control Card)

PIN NO	FUNCTION	PIN NO	FUNCTION
1	+12V	2	+12V
3	GND	4	GND
5	+5V	6	+5V
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	ENBKL
41	GND	42	NC
43	+5V	44	+5V

- **CN5: LCD OUTPUT (Hirose DF9-31P-1V) Connector**
(connect to Panel Display)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SHFCLK
3	GND	4	P18
5	P19	6	P20
7	GND	8	P21
9	P22	10	P23
11	GND	12	P10
13	P11	14	P12
15	GND	16	P13
17	P14	18	P15
19	GND	20	M
21	GND	22	P2
23	P3	24	P4
25	GND	26	P5
27	P6	28	P7
29	GND	30	+5V
31	+5V		

3.2 Backlight Connector

- **CN2: Backlight Inverter Connector**

PIN NO.	DESCRIPTION
1	Vin
2	ON/OFF
3	GND
4	VR

- **CN4: JST-2Pin/2.5mm Backlight Inverter ON/OFF Switch**

PIN NO.	DESCRIPTION
1	+12V

2	To CN2 pin1
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1-2 ON : Backlight Inverter ON

1-2 OFF : Backlight Inverter OFF

3.3 Touch Panel Power Connector

- CN3: Touch Panel Power Connector

PIN NO.	DESCRIPTION
1	+12V
2	GND
3	GND
4	+5V

3.4 Brightness Setting Connector

- CN6: Brightness VR Connector

PIN NO.	DESCRIPTION
1	Series Resistor to VCC
2	VR
3	GND

Note: Pin1 is reserved for potentiometer

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Voltage and BIOS Setting

After all jumpers and connectors have been set and connected correctly, the next step is to set the Voltage and BIOS of the LCD-Kit03. These settings are done on your SBC.

Voltage Setting

The Supply Voltage for LCD-Kit03 is +5V. You must set the *LCD Voltage Setting* Jumper on your SBC to +5V. Please, refer to SBC User Manual of your SBC or refer to the following tables.

BIOS Setting

For SBCs with C&T 65555 LCD/CRT Interface Chipset, the setting can be done simply in CMOS Setup. For SBCs with HM86508 LCD/CRT Interface Chipset, the BIOS setting must be done by upgrading the VGA BIOS using the BIOS file in the attached disk. Please, refer to the following tables for more detail information.

Note: *To do the above settings, you must have one VGA monitor connected to your SBC because your LCD-Kit03 may not work correctly or even does not show anything before the Voltage and BIOS settings are correct.*

4.1 BIOS Setting for SBCs with C&T 65555 Chipset

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	BIOS Setup	LCD Volt. Setting
JUKI-710	Standard CMOS Setup: LCD&CRT: Auto or Both Panel & P.M.U. Setup: Panel Type: 6 :640x480 18Bit TFT Color	JP9: 2-3 > ON 5-6 > ON
JUKI-740E	Peripheral Setup: LCD&CRT Selection : Auto or Both LCD Type : #6 640x480 18bit	JP39: 2-3 > ON
JUKI-745E	Peripheral Setup: LCD CRT Selection: Auto or Both LCD Type : #6 640x480 18bit	JP39: 2-3 > ON
NOVA-600	Peripheral Setup: LCD CRT Selection: Auto or Both LCD Type : #6 640x480 18bit	JP10: 2-3 > ON
POS-566	Peripheral Setup: LCD CRT Selection: Auto or Both LCD Type : #6 640x480 18bit	JP23: 2-3 > ON

4.2 BIOS Setting for SBCs with HM86508 Chipset

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	BIOS Setup	LCD Volt. Setting
JUKI-730 (ALi6117)	use flash634 j730lcd3.rom to upgrade bios	No volt. Setting (5V only)
JUKI-732E (ALi6117)	use flash634 j732lcd3.rom to upgrade bios	No volt. Setting (5V only)
JUKI-750E (ACC Maple)	use flash631j750lcd3.rom to upgrade to bios	No volt. Setting (5V only)
JUKI-752 (ACC Maple)	use flash631j752lcd3.rom to upgrade bios	No volt. Setting (5V only)
PM-1021 (ALi6117)	use flash634 1021lcd3.rom to upgrade bios	No volt. Setting (5V only)
NOVA-300 (ALi6117)	use flash634 n300lcd3.rom to upgrade bios	No volt. Setting (5V only)
WAFER-4823 (ACC Maple)	use flash631 4823lcd3.rom to upgrade bios	No volt. Setting (5V only)

Note : *to upgrade the BIOS, under DOS prompt insert the attached disk then type the bold letter command of the middle column then follow the instruction on your monitor.*

Example: for NOVA-300 SBC, under DOS prompt type:

A:\ **flash634 n300lcd3.rom** or

C:\ **flash634 n300lcd3.rom** if you have copied the files *flash634.com* and *n300lcd3.rom* to your hard-disk.