



User's Manual

Glaive with FIR-C650 main board, 12.1 & 15 inch LCD's

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and shielded AC power cables must be employed with this equipment to insure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Important Safety Information

SAFETY INSTRUCTIONS

1. Please read these safety instructions carefully.
2. Keep this User's Manual for later reference.
3. Don't use liquid or spray detergent for cleaning. Use only a moistened sheet or cloth.
4. For pluggable equipment, the socket-outlet should be installed near the equipment and should be easily accessible.
5. Keep this equipment from extreme humidity areas.
6. Lay this equipment on a stable surface when installing.
7. Do not leave this equipment in a non-air conditioned environment, or in a storage temperature above 60° C. Such conditions may damage the equipment.
10. Place the power cord so that it will not be stepped on. Do not place anything over the power cord. The power cord must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not used for a long time, disconnect the equipment from the mains to avoid damage.
14. Never open the equipment. For safety reasons, qualified service personnel should only open the equipment.
15. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The Power cord or plug is damaged.
 - b. Liquid has penetrated the equipment.
 - c. The equipment has been exposed to extreme moisture conditions.
 - d. The equipment does not work well or you cannot get it work according to the user's manual.
 - e. The Equipment has been dropped and damaged.
 - f. The equipment has obvious signs of damage.

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Chapter 1

Introduction

Glaive Characteristics

- Glaive uses a high speed processor capable of handling a high capacity of data efficiently.
- Glaive's solid quality Aluminum housing distinguishes it from ordinary plastic housings.
- The Glaive touch terminal all-in-one is a robust, fanless design and is suitable for a multitude of business types.
- Glaive is very suitable to be used as a Thin Client in a networked environment.
- The LCD panel can be tilted at multiple angles for operator ease of use.
- Glaive's functionality extends far beyond the standard setup. Glaive can be adapted for a variety of uses with the addition of any of the following options: Magnetic Card Reader, VFD/LCD customer display and Cashdrawer, Hard disk, Modem, LAN, Audio devices, Compact Flash, Camera, Biometric reader and a wide variety of USB devices (all available upon request).
- Glaive's security is designed to prevent data theft. The Glaive system can be totally diskless or may be equipped with an internal 2.5" HDD. Data Backup can be constrained to Backup Servers in a network environment, or to (optional) removable external Storage devices making it hard to copy data without authority.
- Glaive is a fanless solution, which utilizes the solid aluminum housing to dissipate any excess heat.
- Additionally the aluminum casing also assures compliance to vigorous EMI radiation testing.

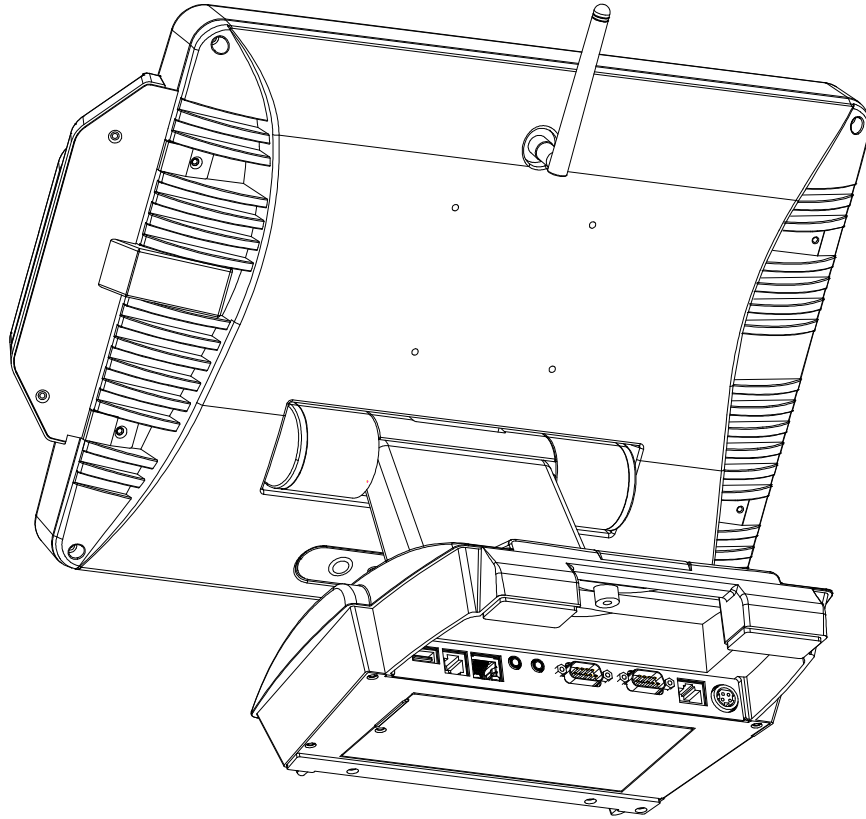
How to Use This Manual

This manual contains all the information you need to set up and use Glaive. In addition, you can also consult the manuals for the operating system and any additional hardware manuals for peripherals that you may have added.

- Chapter 1** Provides an introduction to Glaive and this manual.
- Chapter 2** Provides all necessary information for all hardware setup.
- Chapter 3** Provides the necessary information for installing the video drivers, touch screen tools, audio, USB and LAN drivers.
- Chapter 4** Lists all Glaive specifications and Information for the mainboard configuration.
- Chapter 5** Provides information for troubleshooting the Glaive.

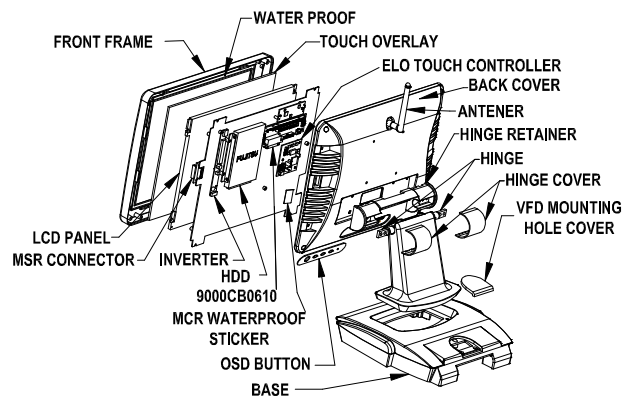
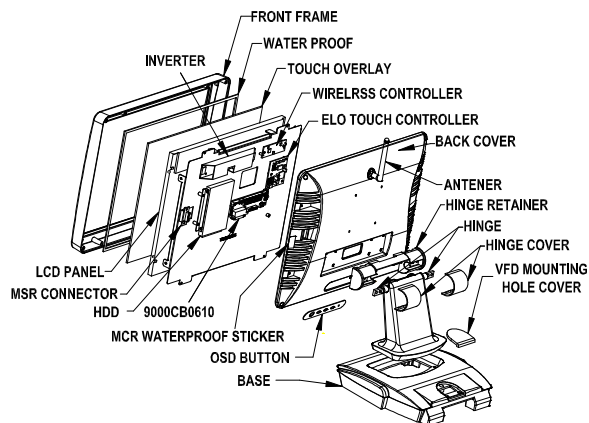
A Visual Tour of Glaive

Before you start, take a few moments to become familiar with Glaive.



12" Glaive

15" Glaive



What comes with Glaive

The following items are standard with Glaive:

- Main system with LCD panel
- Power adapter
- User's guide
- FIR-C650 motherboard user's guide
- ELO touch screen driver CD
- Motherboard chipset driver CD
- AC power cord

The following items are optional:

- Magnetic Card Reader (MCR) and bracket
- VFD customer display
- Wireless LAN
- Hard Disk Drive



Glaive with MCR

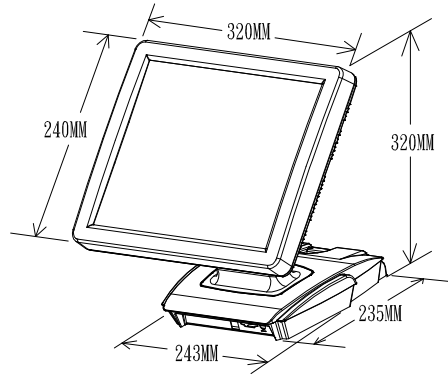


Glaive with VFD

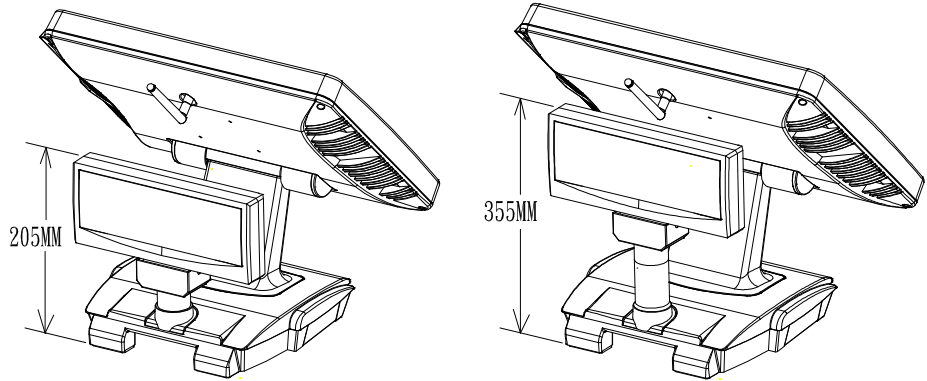
FIR-C650 Main Board

Dimensions 12.1"

Glaive Dimensions

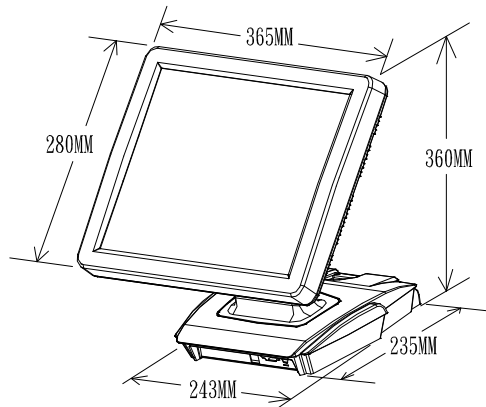


Glaive and VFD customer display



Dimensions 15"

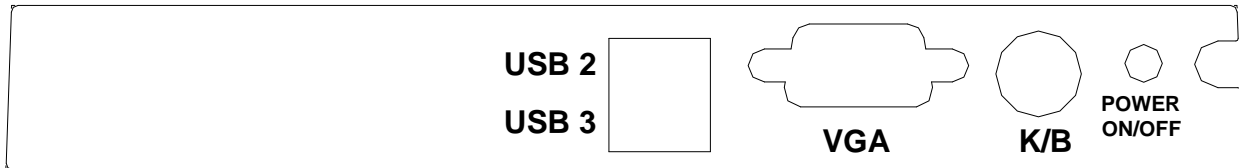
Glaive Dimensions



Connector Panels

Font Connector Panel

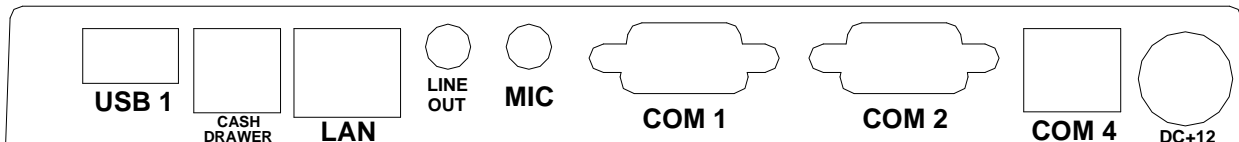
The Font connector panel is located at the bottom of the main unit base.



I/O Port	Connector Type	Description
USB 2 & 3	USB Type A	These are USB version 2.0 ports and can be used to connect most USB devices.
VGA	VGA Connector	The VGA port is for use with an external LCD or CRT monitor.
KBD	PS/2 Keyboard Connector	The KBD port for an external keyboard.
Power Switch	Tactile Switch	ATX power switch function.

Rear Connector Panel

The Second connector panel is located on left side of the back of the main unit. It comes with a cover that needs to be removed to install a CD ROM Driver or a VGA monitor.



I/O Port	Connector Type	Description
Power	DC Power Connector	Connects Glaive to the power supply.
Cash Drawer	RJ11 Connector	Cash Drawer Connector, 12 V Actuation support for solenoid.
Line Out	Earphone Connector	The audio port is for speakers.
LAN	LAN RJ45 Connector	The LAN port is used to hook Glaive to a local area network.
COM1 COM2	DSUB Connector	The serial ports COM1/COM2 can be used to connect serial devices such as a mouse or a fax/modem.
COM4	VFD/ COM4 RJ45 Connector	This RJ45 port is used to attach a VFD customer display or may be used as an additional serial port.
USB 1	USB A Connector	This is a USB version 1.1 for additional devices

Chapter 2

Hardware Setup

Glaive Assembly

Please make sure that the power supply is disconnected when making any hardware changes to Glaive.

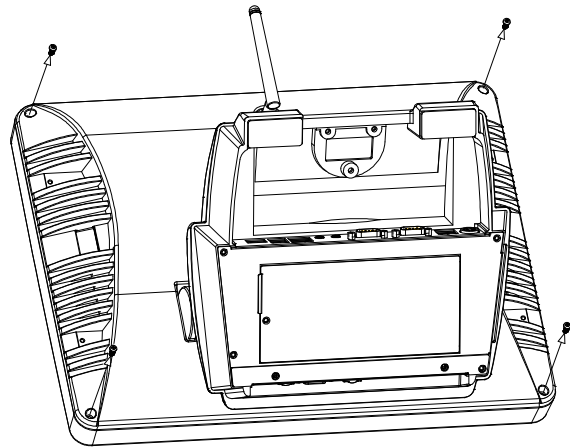
Hard Disk Drive Installation

A standard Glaive comes without a hard disk drive (HDD), unless it is pre-requested.

Installing a HDD

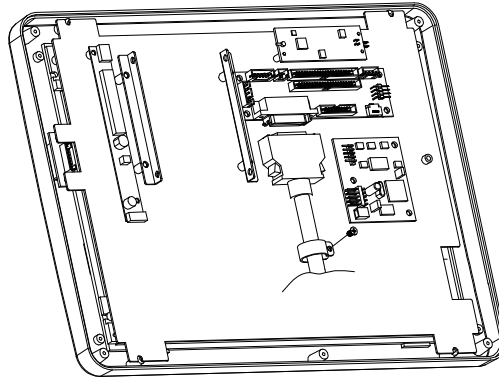
1. Turn off power and remove power cable from main unit.

2. Remove 4 screws and slightly separate the LCD front frame from the rear housing.

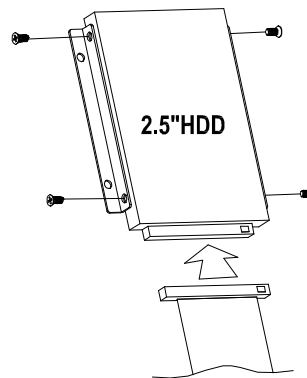


FIR-C650 Main Board

3. Unplug the JCS1 cable from the 9000PB0610 I/O board.



4. Lay the LCD face down on a flat surface and use the 4 screws provided to mount the HDD into the bracketed space.



5. Connect the existing 44pin ribbon cable to the HDD
6. Reconnect the JCS1 cable to the 9000PB0610 I/O board
7. Reassemble the LCD front frame and rear housing and secure with 4 screws.
8. Connect the main unit power.

Note: If the HDD does not work normally, please refer to **troubleshooting**

Compact Flash Installation

Glaive will configure Compact Flash in IDE mode as secondary master after it is installed. The next available drive letter will be automatically assigned to Compact Flash.

Installing Compact Flash

1. Turn off power and remove power cable from Glaive.

2. As the compact Flash socket is located internally, position Glaive to expose the underside and unscrew the single retaining screw and remove the bottom cover plate.



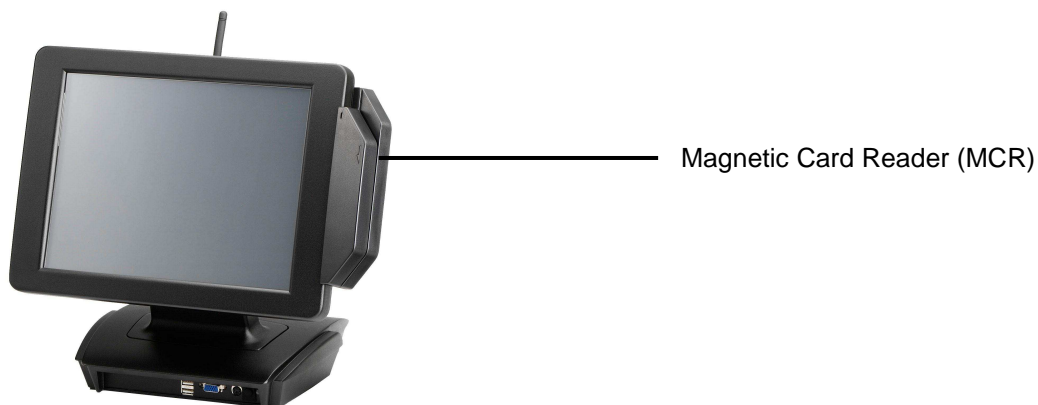
3. Insert the Compact Flash as shown in the picture.



4. Replace the bottom cover plate and secure with the single screw.
5. Connect the main unit power and power the unit on.
6. The Compact Flash will automatically appear as the next available IDE drive

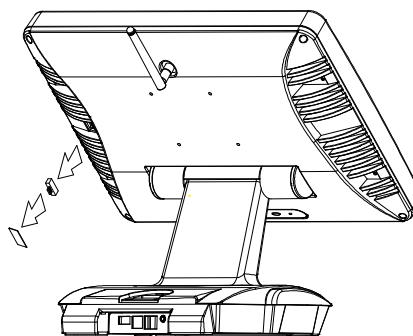
Magnetic Card Reader Installation

An optional Magnetic Card Reader (MCR) can be installed on the right side of the Glaive.

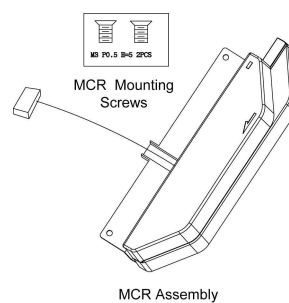


Installing an MCR

1. Turn off system power.
2. Unplug the loopback from the MCR socket. The MCR socket is found on the right side on the back of the main Unit.

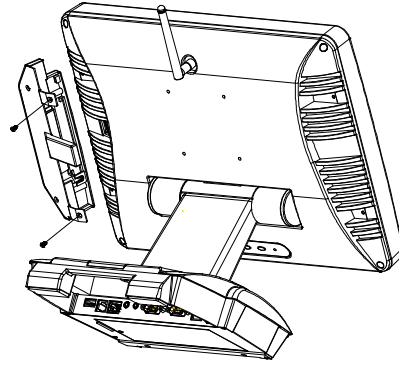


-
3. Connect the MCR cable to the MCR socket.

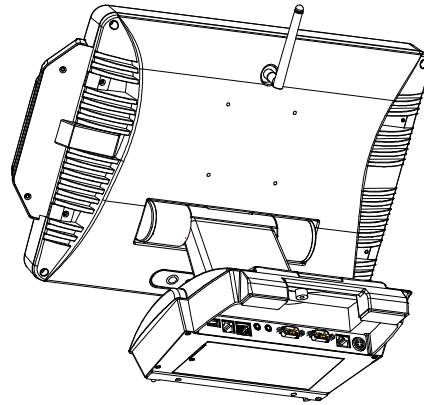


FIR-C650 Main Board

4. Secure the MCR to the main unit with 2 screws.



5. Turn on system power.



Note: If the MCR does not work normally, please refer to **troubleshooting**.

Attention: The loopback or the MCR cable must be inserted in the socket for an external keyboard to function with Glaive.

MCR Parameter Modification

This option is for users who need to customize the MCR parameters for a particular task. Some of the useful parameters include:

The selection of country code, other than the default English.

The choice of track combinations.

The preamble/postamble codes.

The MCR parameters can be modified by using the supplied utility program.

The utility can be found on the CD that came with your system in the “Utilities” folder. The program name is msr_v12_win.zip.

If you are upgrading and earlier system to include our MCR reader, then this utility can be located on our website at http://www.firich.com.tw/tech_drivers.htm in the section labeled as “MSR Utility”.

Unzip this file onto your system hard disk, in a folder of your choice.

It will also create 3 subfolders named Disk1, Disk2, and Disk3.

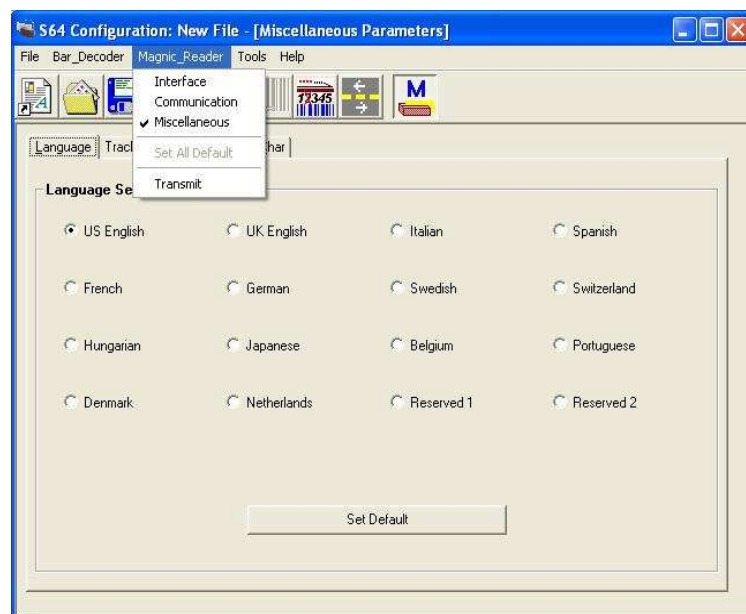
Change to the folder “**Disk1**” and run the “**Setup.exe**” program, and follow the simple onscreen instructions.

When the installation finishes, you will find that a new folder has been created in your “Program files” folder, labeled as “Decoder” with a subfolder named “S64 Decoder”.

Now change folder to **C:\Program Files\Decoder\S64 Decoder** and run the program named “**S64_cfg.exe**”.

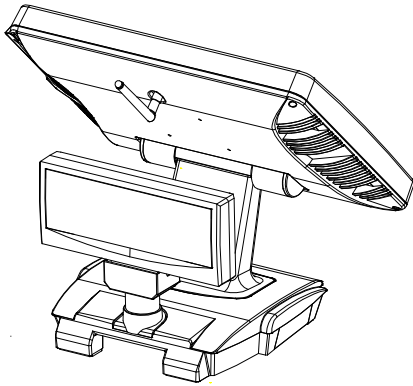
When the program has loaded please select the **Magnic_Reader** menu item as in the following picture. By using the 3 top items listed; **Interface**, **Communication** and **Miscellaneous**, you will be able to alter many of the parameters associated with the MCR unit.

When you have finished your modifications and are sure that they are set exactly how you want them to be, just click on the menu item **Transmit** to download the new parameter to the MCR unit. Please refer to the Help menu for any further assistance.



VFD Customer Display Installation

An optional VFD customer display can be installed on the back of Glaive.

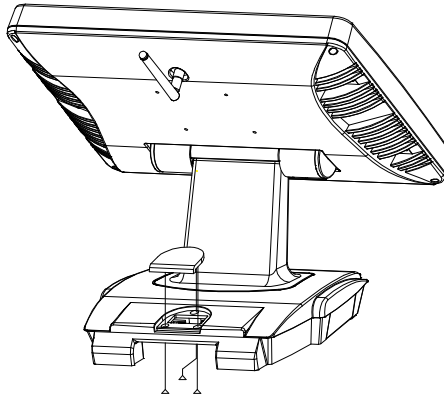


Rear view with VFD attached.

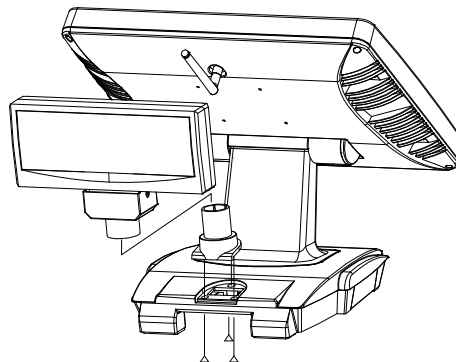
Installing a VFD

1. Turn off system power.
2. Make sure that JP4 and JP5 on the M/B are set correctly. It is important to note that the supply voltage for the customer display has been set to +12V, which is for **VFD** type. If an **LCD** customer display is chosen, please change it to +5V through JP4 on M/B. Please refer to page 50 of FIR-C650 motherboard manual COM4 Voltage selection and COM4 mode selection.

3. Remove the VFD Mounting Cover from the base.

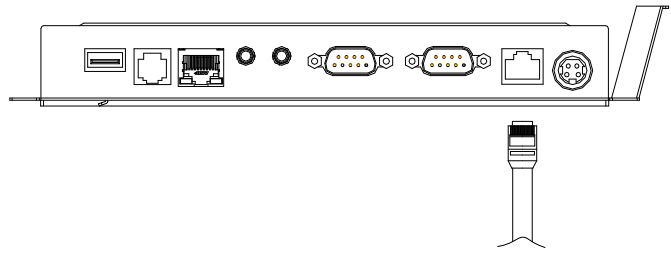


4. Secure the VFD Holder to the base with 3 screws and place VFD display into the holder.

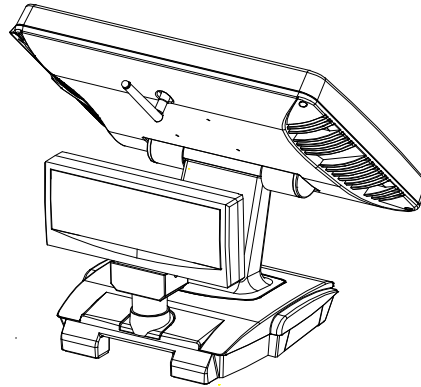


FIR-C650 Main Board

5. Connect the VFD RJ45 cable in the VFD/COM4 port on the I/O panel which is located under the base.



6. Turn on VFD power switch, then turn on system power.

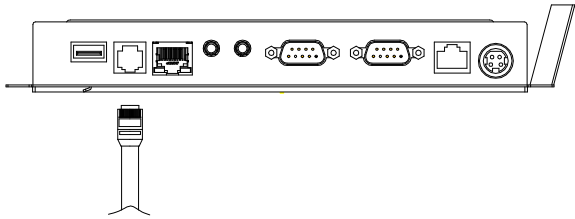


Note: If the VFD does not display correctly after an application is loaded, please refer to [troubleshooting](#).

Cash Drawer Installation

Before connecting the cash drawer to the Glaive, please make sure the drive voltage and cable pin assignment of the cash drawer matches the definition of the cash drawer port of Glaive. Please refer to page 54 in the motherboard manual for more information on the Cash Drawer.

Plug cash drawer cable into cash drawer port.



Note: If the cash drawer cannot be detected by the system, please refer to [troubleshooting](#).

Up to two cash drawers may be driven from this port. Driving voltage of the solenoid is DC+12V. I/O port 280h is used for drawer operation. A test program is supplied, for Linux and Windows, source code of which is available on request by software developers.

Hardware logic is as follows.

To open drawer1, write 01h to port 280h, wait 200 msec, then write 00h to turn off the drive.

To open drawer2, write 02h to port 280h, wait 200 msec, then write 00h to turn off the drive.

To test for drawer open, read port 280h, if bit 0=1 then drawer is open, if bit 0=0 drawer is closed.

CMOS Setup

Please refer to the FIR-C650 M/B User's Manual Chapter 4 for a detailed description of the BIOS CMOS setup.

Chapter 3

Software Setup

Operating System Installation

Glaive units are widely used as networked Thin Client terminals and as such do not have an internal hard disk drive. This is our factory default. However, users can upgrade Glaive later by adding their own hard disk drive. Similarly the unit may have been ordered and delivered with a hard disk drive installed. And unless the unit has also been pre-installed with an operating system, then one will have to be installed.

Windows 98 SE installation

As it is not possible to attach an IDE CDROM drive to the Glaive unit, installing Windows 98 SE may appear to be difficult. There are a number of ways in which Windows 98 SE can be installed.

This is probably the easiest method.

This objective is to create a bootable MSDOS Compact Flash that will include all the required Windows 98 setup files.

Items required:

A PC or Notebook computer equipped with a CDROM drive, a Compact Flash reader/writer device, a 128MB or 256MB Compact Flash, a floppy disk drive with an MSDOS boot diskette that also contains the DOS system utilities "Fdisk" and "Format" programs.

* Real-mode CD-ROM drivers

You will need real-mode CD-ROM drivers loaded so you can access the Windows 98 Second Edition CD. If you have ever run Windows 98 SE Setup before and have created a Startup Disk, you can boot and use the CD-ROM drivers included on that disk. If you do not have a Startup Disk, you will need to run the installation program that came with your CD-ROM hardware.

1. Boot the PC or Notebook from the Floppy diskette
2. Insert the 128MB or 256MB Compact Flash into the reader/writer device
3. Use the Format program to format the Compact Flash as a "bootable" FAT16 volume
4. Copy all files from the floppy to the Compact Flash
5. Create a folder called "W98Flat" on the Compact Flash drive (to create a folder, switch to the Compact Flash drive letter and type: MD W98Flat
6. Now, switch to the Windows 98 Second Edition CD-ROM drive and to the Win98 directory
7. Then copy the Windows 98 Second Edition Setup files to the folder you just created on the Compact Flash by typing: Copy *.* < Compact Flash drive letter>\W98Flat
8. After all the files are copied, you may now remove the Compact Flash from the PC

FIR-C650 Main Board

9. Insert the Compact Flash into the Glaive (follow instructions earlier in this manual)
10. Modify CMOS BIOS to Boot from Compact Flash
11. Power on the system and the unit should boot MSDOS from the Compact Flash drive
12. At the MSDOS prompt, type FDISK and partition the Hard Disk drive as required
13. After partitioning is complete, Format the Hard Disk drive
14. At the MS DOS prompt change directory to W98Flat
15. Type Setup and press Enter
16. Follow the onscreen instructions for normal installation of Windows 98 SE

Windows 2K/XP installation

Installing Windows 2K or XP can be performed on the Glaive quite simply

Items required:

A USB CDROM drive

1. Attach the USB CDROM drive to Glaive.
2. In the CMOS setup "Advanced Chipset setup" change the item "USB Device Legacy Support" to "All Devices" this will allow booting from any USB bootable device.
3. Power on and modify CMOS BIOS settings to enable the USB CDROM to be the first bootable device (see CMOS setup in the motherboard manual)
4. Insert the 2K or XP CDROM disk into the drive
5. Reboot the system
6. The Glaive will boot from CDROM drive and automatically start the setup programs
7. Follow the onscreen instructions for normal installation of 2K or XP

Device Driver Installation

Glaive comes with a variety of drivers for different operating systems.

You will find 1 CD with Glaive.

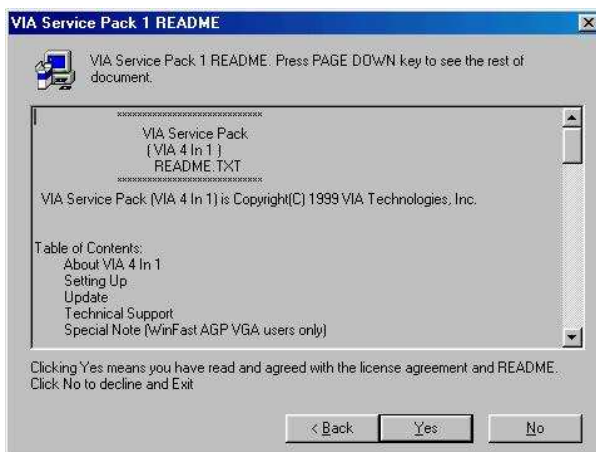
The CD has all the necessary drivers to setup Glaive.

VIA 4 in 1 Installation Utilities for Windows 98

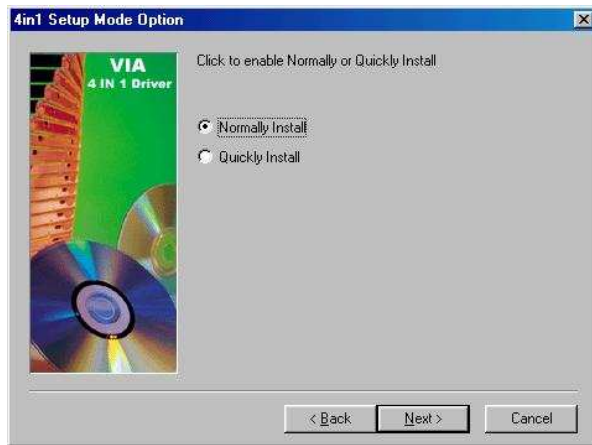
1. Locate D:\4in1 folder
2. Run **Setup.exe**



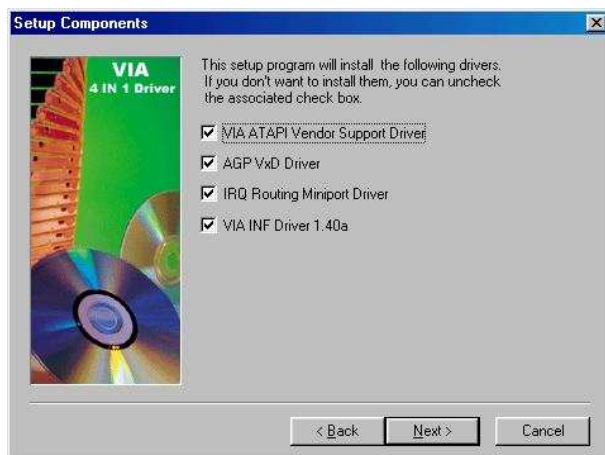
3. Click **Next**



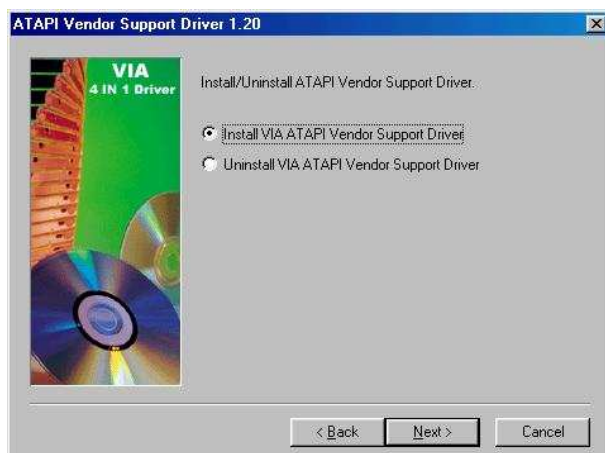
4. Click **Yes**



5. Click **Next**

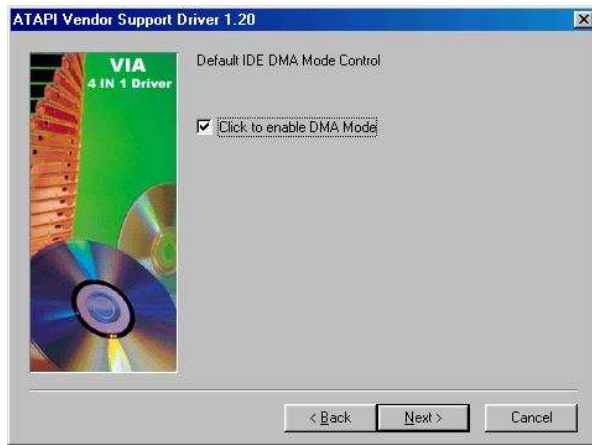


6. Click **Next**

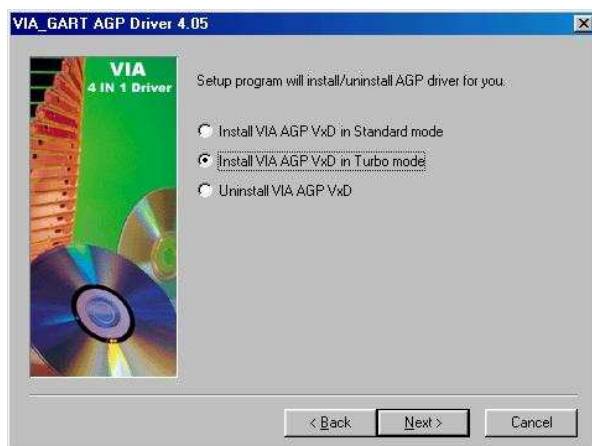


7. Click **Next**

FIR-C650 Main Board



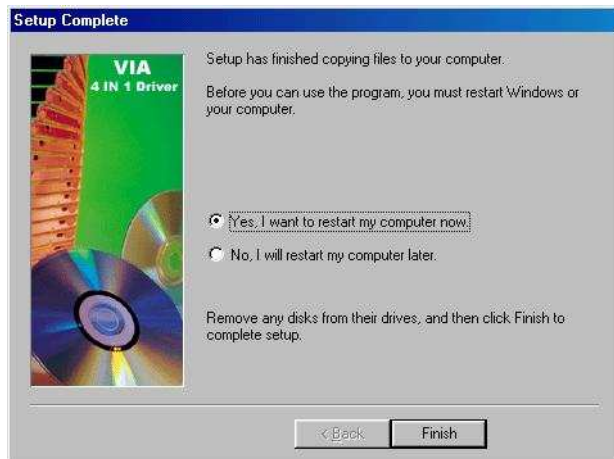
8. Click **Next**



9. Click **Next**



10. Click **Next**



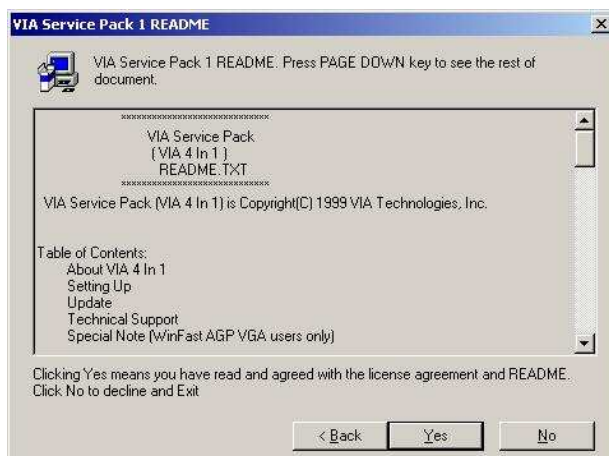
11. Click **Finish**

VIA 4 in 1 Installation Utilities for Windows 2000

1. Locate **D:\4in1** folder
2. Run **Setup.exe**

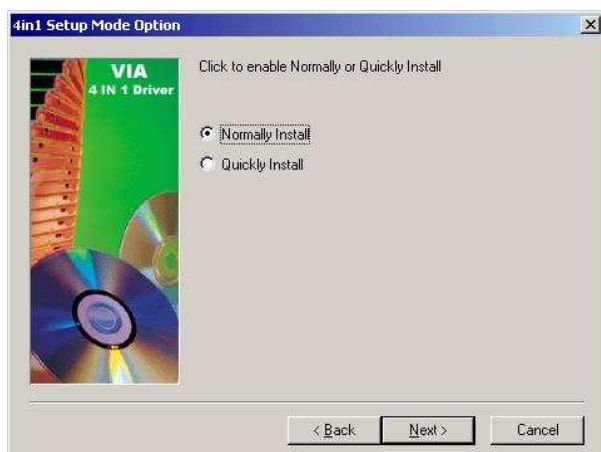


3. Click **Next**



4. Click **Yes**

FIR-C650 Main Board



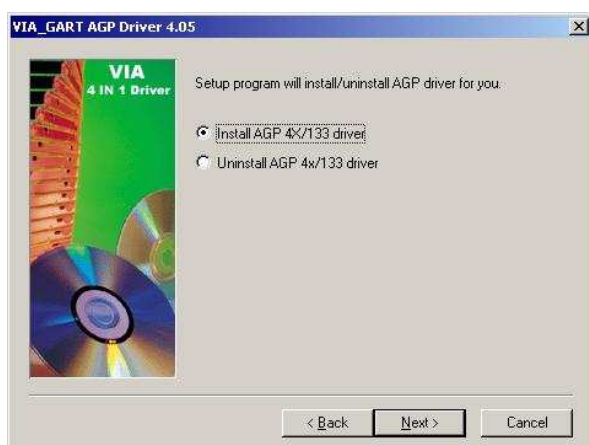
5. Click **Next**



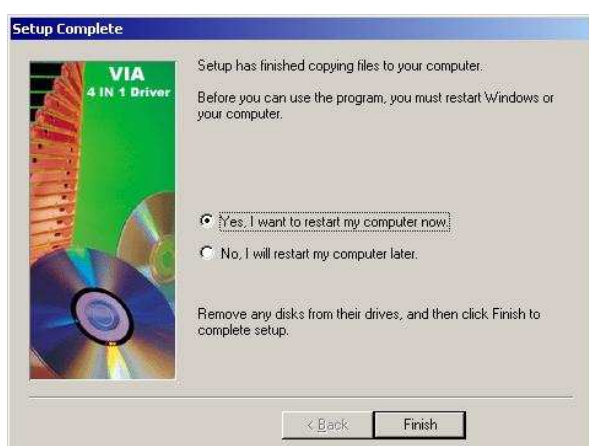
6. Click **Next**



7. Click **Next**



8. Click **Next**



9. Click **Finish**

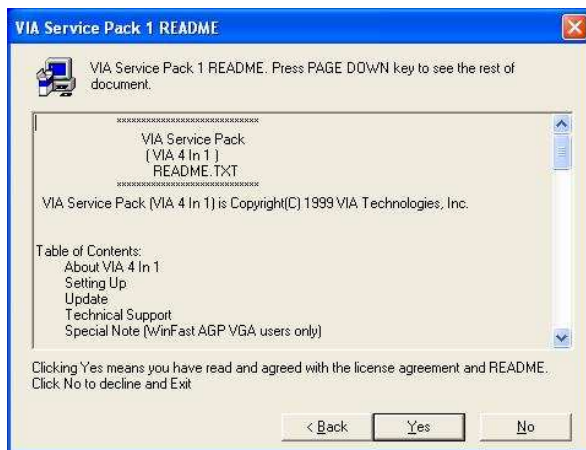
VIA 4 in 1 Installation Utilities for Windows XP

1. Locate **D:\4in1** folder
2. Run **Setup.exe**

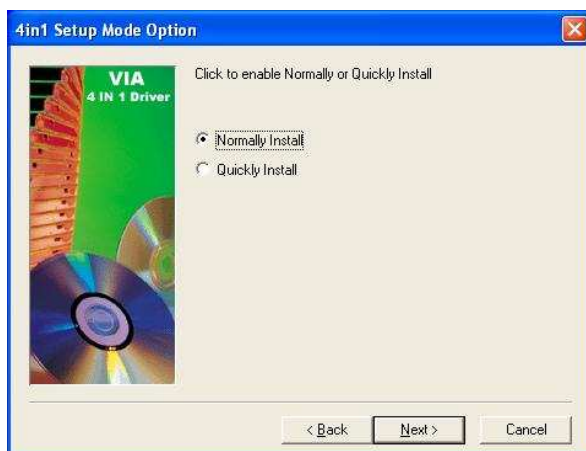


3. Click **Next**

FIR-C650 Main Board



4. Click **Yes**



5. Click **Next**



6. Click **Next**

FIR-C650 Main Board



7. Click **Next**



8. Click **Finish**

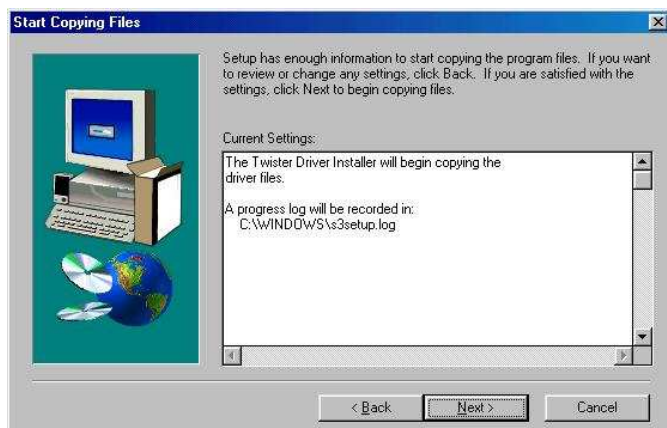
VGA Driver Installation

VT8606 driver installation Windows 98

1. Locate the VGA folder on the utilities CD.
2. Open **D:\VGA\VIATwister\Win9x** folder
3. Run **Setup.exe**.



4. Select **Next** to continue



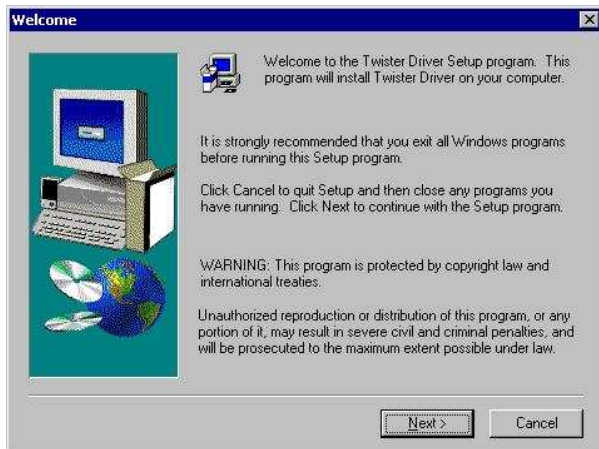
5. Select **Next** to continue.



6. Click **Finish** to complete the installation procedure and restart Glaive.

VT8606 driver installation Windows 2000

1. Open **D:\VGA\VIA\ Twister\WIN2K&XP** folder.
2. Run **Setup.exe**.



3. Select **Next** to continue.



4. Select **Next** to continue.



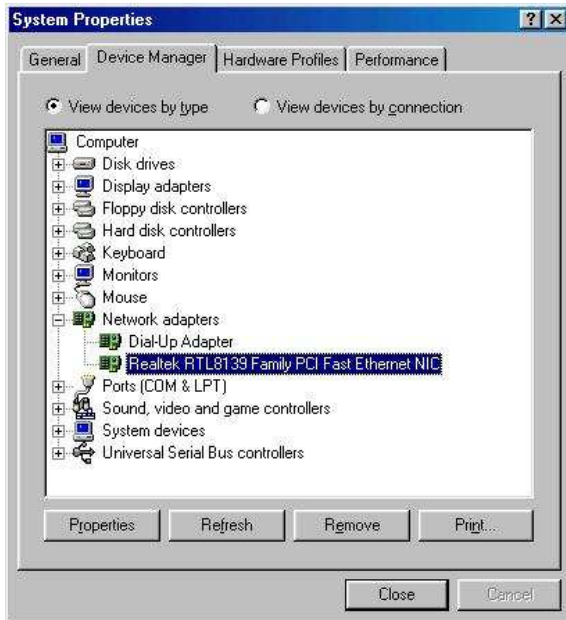
5. Click **Finish** to complete the installation procedure and restart Glave.

LAN Driver Installation

Realtek LAN Driver Installation Windows 98

1. Open Device Manger in the System Properties.

Select **PCI Ethernet Controller**



Click **Properties**



2. Select the **Driver** tab.

Click **Update Driver**.

FIR-C650 Main Board



3. Click **Next**.



4. Select Search for a better driver than the one your device is using now (Recommended). Click **Next**.



5. Select Specify a location:
Click **Browse**.
Open D:\LAN\REALTEK\8139C\WIN98
Click **Next**.

FIR-C650 Main Board



6. Click **Next**.



7. Click **Finish**.



8. Click **Yes** to restart your computer.

Realtek LAN Driver Installation Windows 2000 and Windows XP

After Windows 2000 is installed the Realtek LAN driver will be automatically installed.

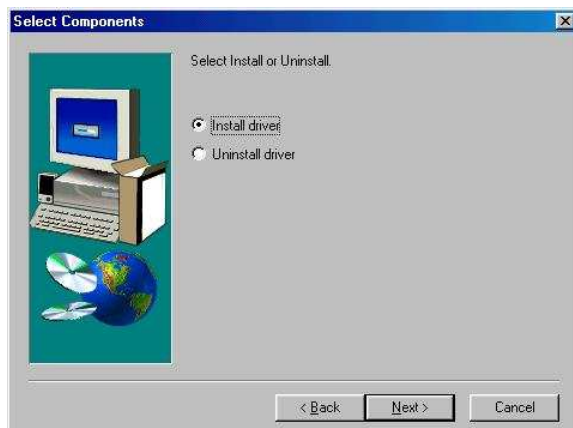
Audio Driver Installation

Audio Driver Installation for all Windows Operating Systems

1. Open D:\AUDIO\VIA\686A_B
2. Run **SETUP.EXE**



3. Click **Next**



4. Click **Next**



5. Click **Finish**

USB 2.0 Installation

USB 2.0 Installation for Windows 98 Operating Systems

1. Open D: \USB20\VIA
2. Run **Setup.exe**



3. Click **Next**



4. Click **Next**



5. Click **Finish**

USB 2.0 Installation for Windows 2000 and XP

For Windows 2000, SP4 must be installed for USB 2.0 support.

For Windows XP, SP1 or SP2 must be installed for USB 2.0 support.

Note, with lower version service packs only USB 1.1 is supported. This will be indicated in the device manager as an exclamation icon (!) beside the USB device.

Following service pack upgrade, it is NOT necessary to install the VIA USB 2.0 driver.

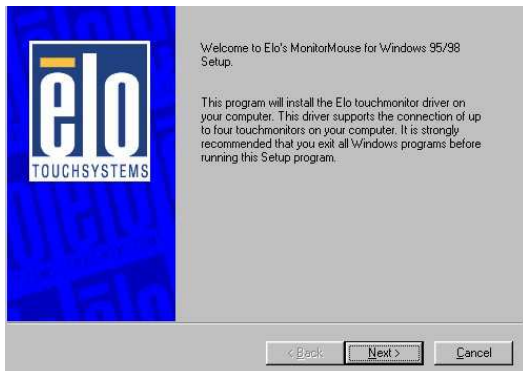
ELO Touch Tools Installation

ELO Touch Tools Installation for all Windows Operating Systems

1. Locate **D:\TOUCHSCREEN\ELO Touch**
2. Select the relevant ELO folder for the operating system that you are using.

Example. If you are installing for a Windows 98 system, then select **Elo Win9x_Me**. If you are installing under Windows 2000 or XP then select **Elo Touch 2K_XP**

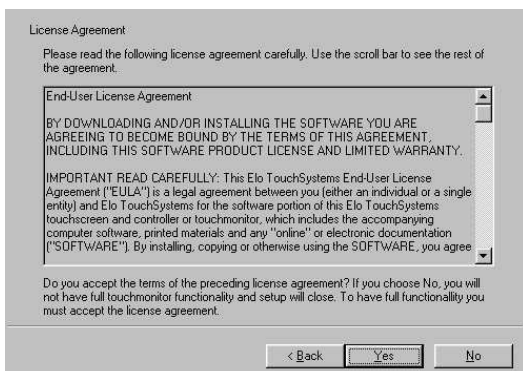
3. Run **Setup.exe**



4. Click **Next**

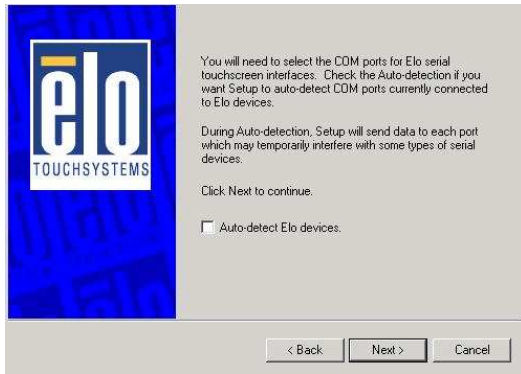


5. Check "Install serial Touch screen Drivers." And Click **Next**.

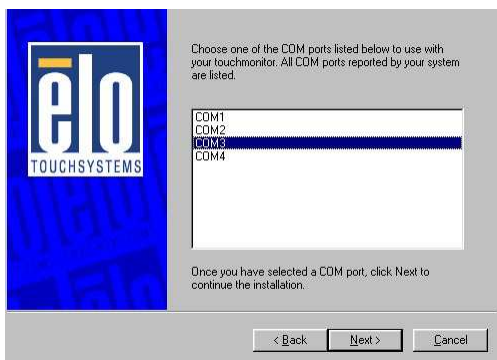


6. Read the "**License Agreement**" and click **Yes** if you accept it.

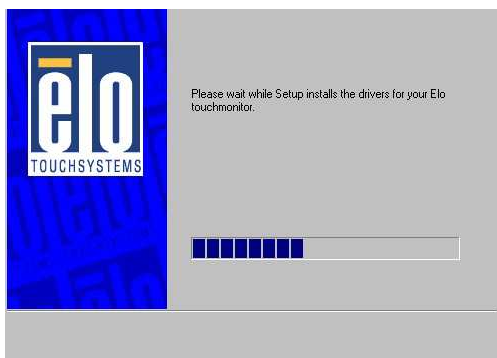
FIR-C650 Main Board



7. Select "Auto-detect Elo devices." and click **Next**.



8. Select the COM port for the touch monitor. It is recommended that you select COM3 for the touch screen, as this port is internally configured for touch operation.



9. Wait until the ELO Touch Tools have been installed.

FIR-C650 Main Board



10. Select View ELO touch screen control panel and click **Finish**.

IT MAY BE NECESSARY TO RESTART YOUR COMPUTER TO UTILIZE YOUR TOUCHSCREEN FEATURES.



11. Click **NEXT** while this window appears after system finishes rebooting.



12. Click **YES** to restart your computer again.

After the system finishes rebooting follow the directions to calibrate ELO Touch Tools.

ELO Control Panel

This section explains the different options in the ELO control Panel.

General tab

The general tab allows you to:

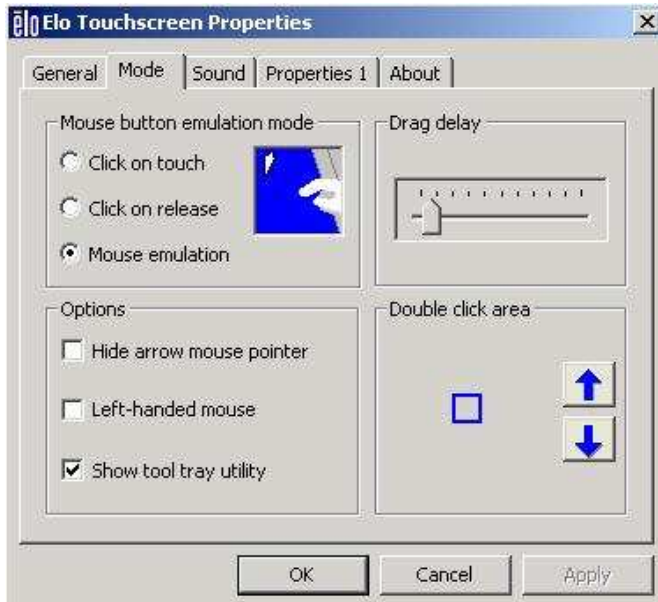
- Change the COM port your touch screen is set to.
- Calibrate the touch screen with the **Align** button.



Mode tab

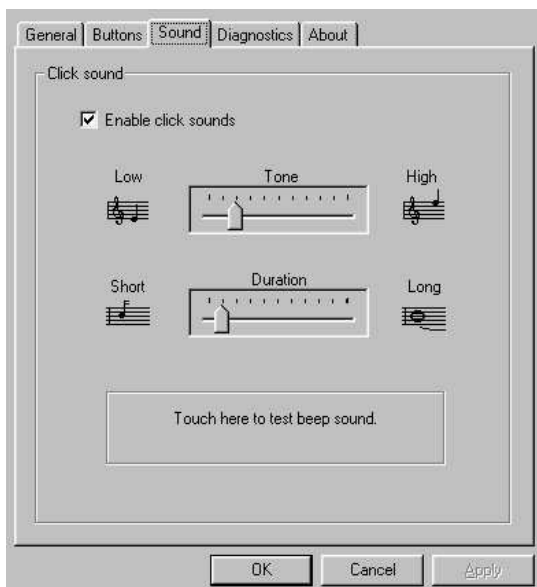
The Buttons tab allows you to:

- Adjust all mouse emulation controls.
- Change cursor properties
- Enable or disable right mouse button utility.

**Sound tab**

The Sound tab allows you to:

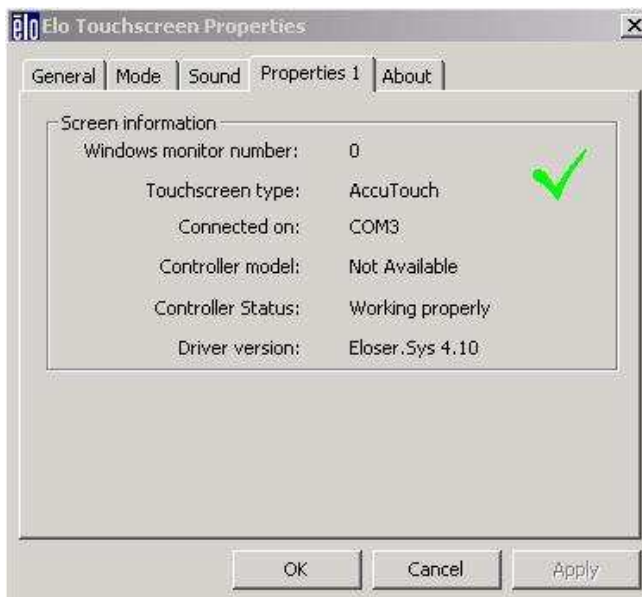
- To change sound properties for ELO touch tools.



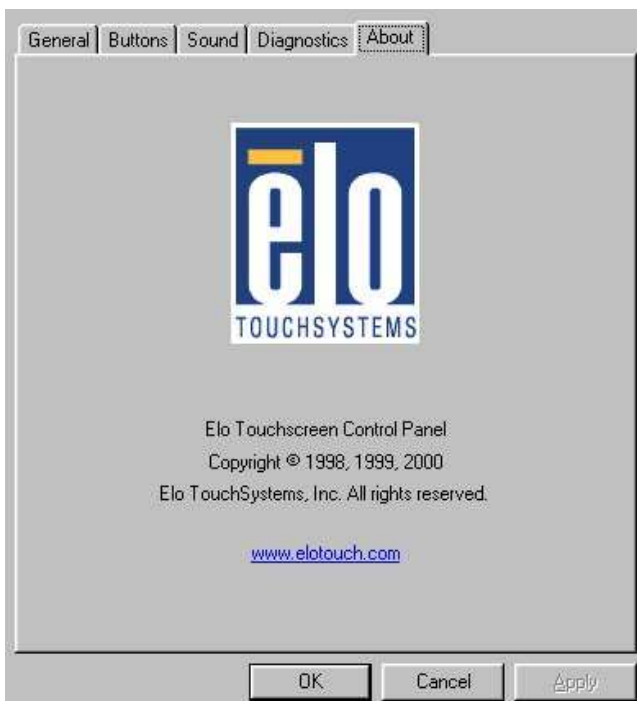
Properties tab

The Diagnostics tab allows you to:

- View Controller Information.

**About tab**

The About tab displays Information about ELO Touchsystems



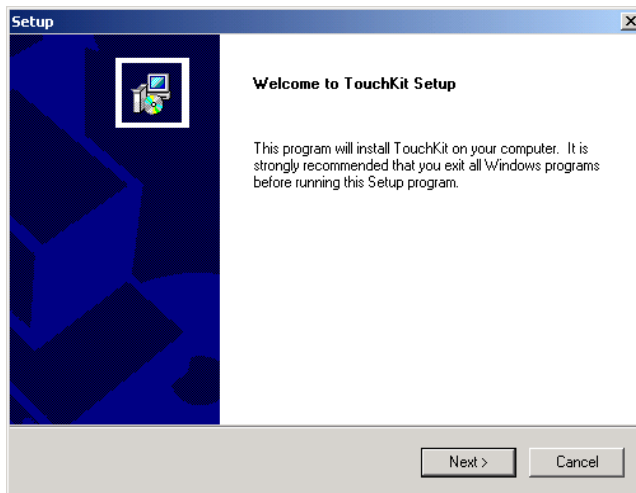
TouchKit Tools Installation

TouchKit Tools Installation for all Windows Operating Systems

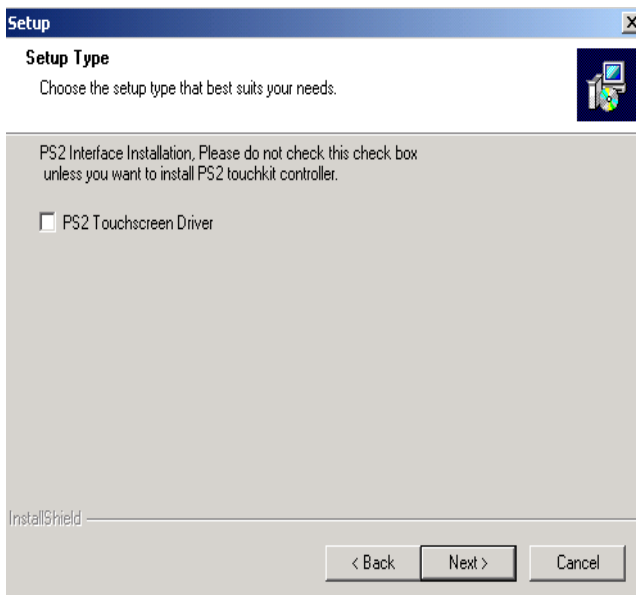
1. Locate **D:\TOUCHSCREEN\leGalax Touch\Driver**
2. Select the relevant eGalax folder for the operating system that you are using.

Example. If you are installing for a Windows 98 system, then select **Win9x_Me**. If you are installing under Windows 2000 or XP then select **Win2000_XP**

3. Run **Setup.exe**

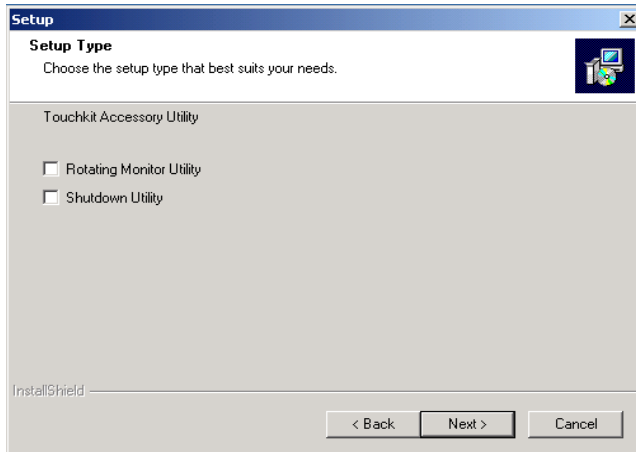


4. Click **Next**

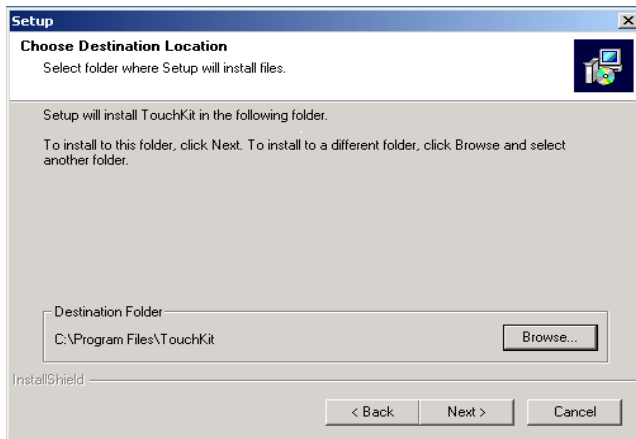


5. Click **Next**

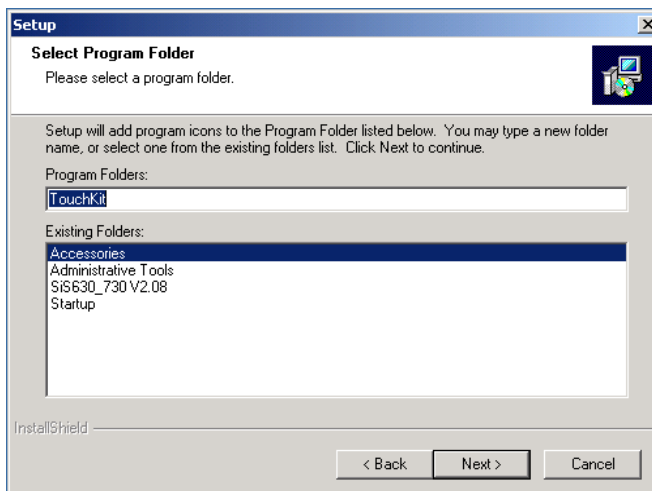
FIR-C650 Main Board



6. Click **Next**

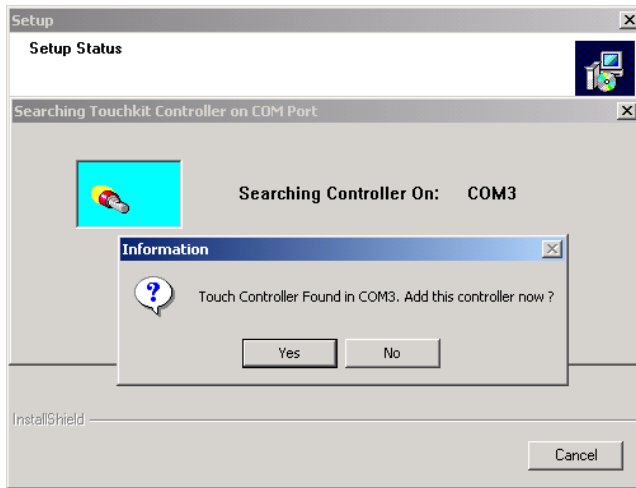


7. Click **Next**

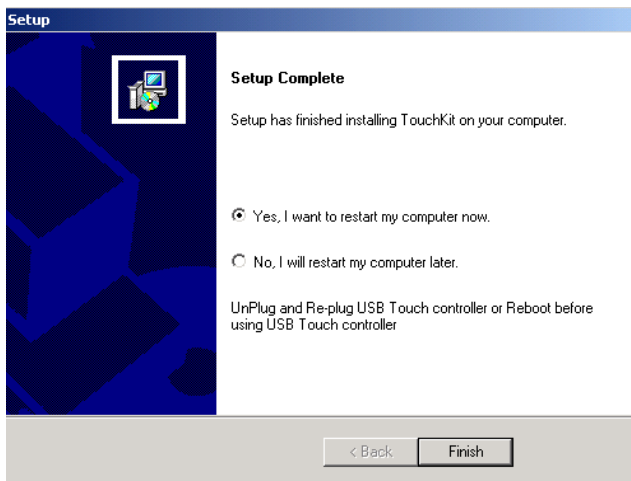


8. Click **Next**

FIR-C650 Main Board



9. Click **Yes**



10. Click **Finish** to restart your computer again.

After the system finishes rebooting follow the directions to calibrate the Touch screen.

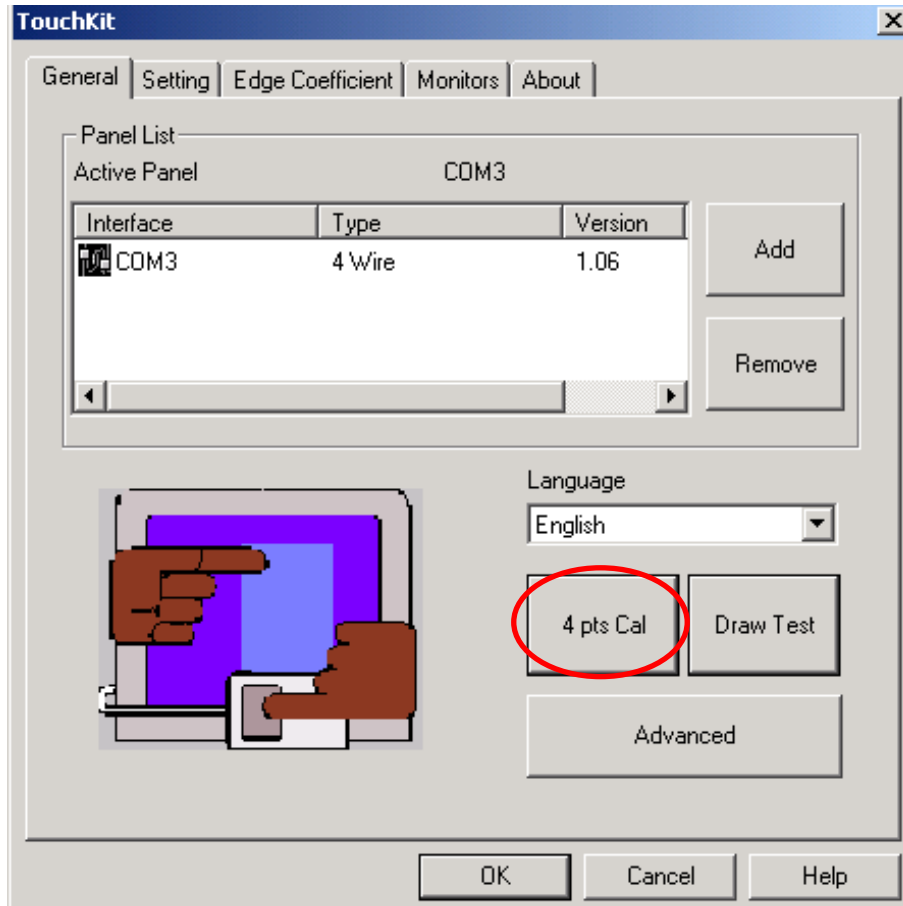
TouchKit Control Panel

This section explains the different options in the TouchKit control Panel.

General tab

The general tab allows you to:

- Change the COM port your touch screen is set to.
- Calibrate the touch screen with the **4 pts Cal** button.



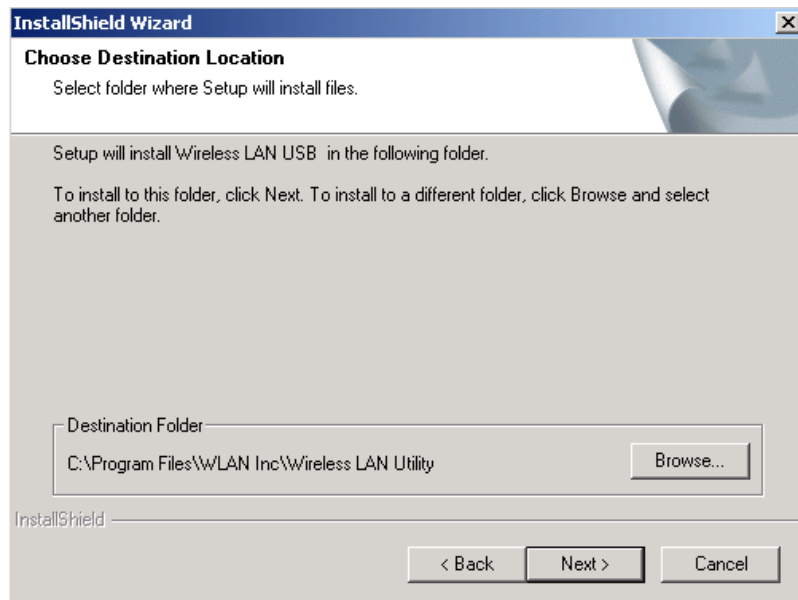
Wireless LAN Driver Installation

Wireless LAN Driver Installation for all Windows Operating Systems (Optional)

1. Open **D:\Wireless LAN** folder
2. Run **Setup.EXE**



3. Click **Next**



4. Click **Next**

Chapter 4

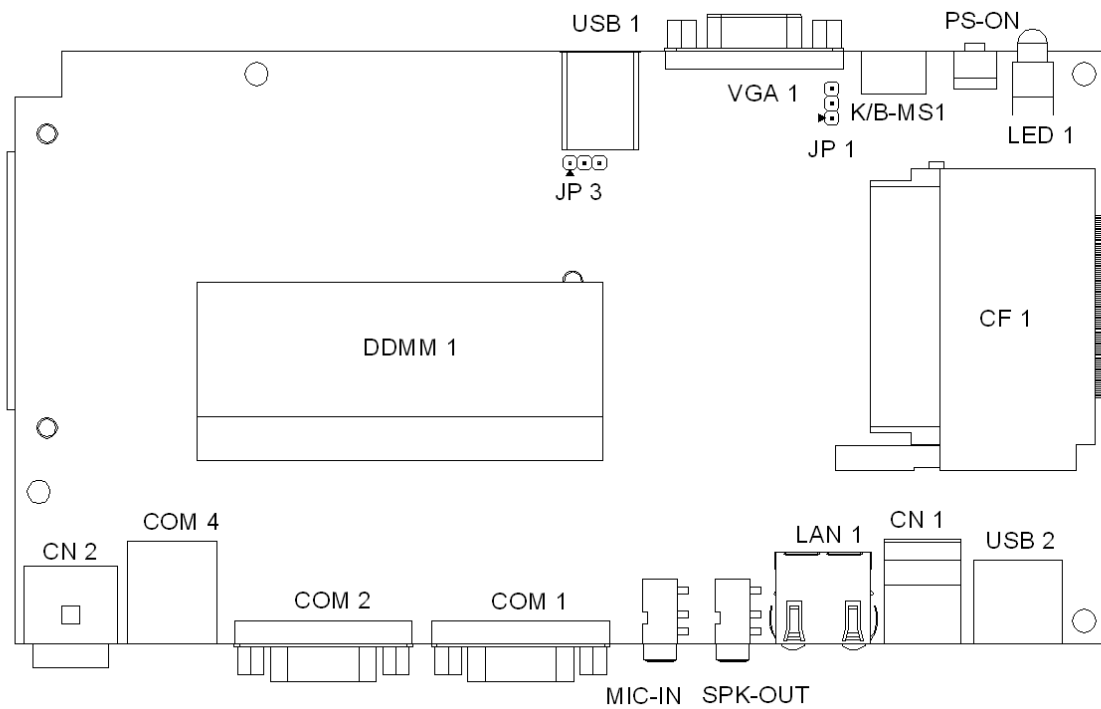
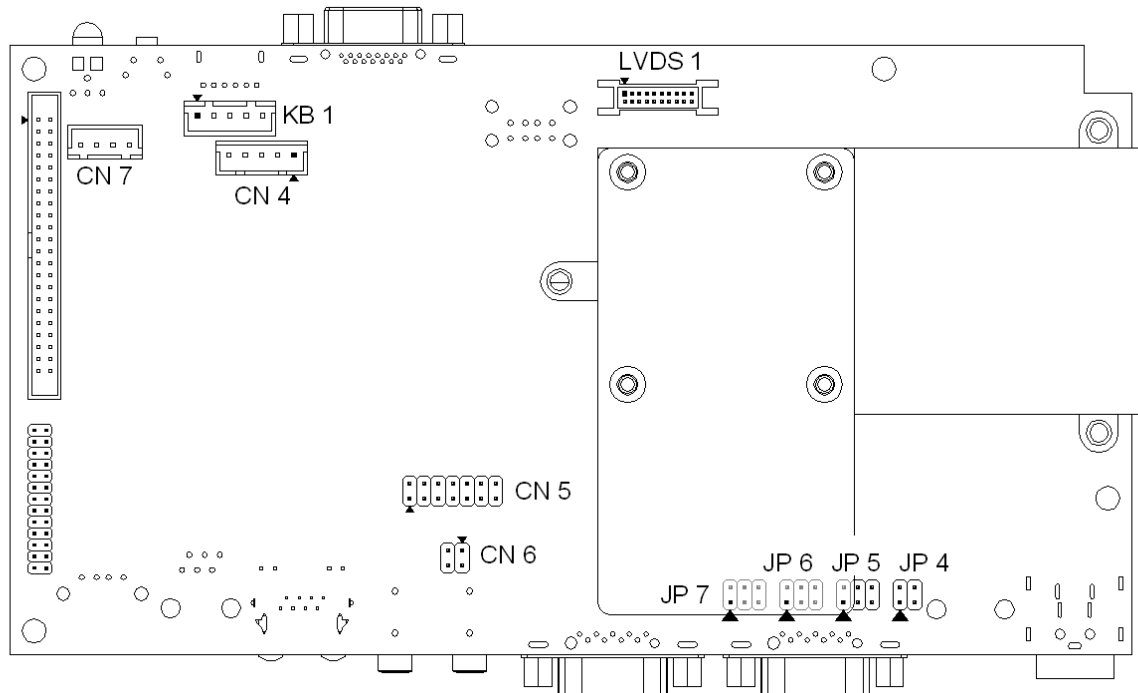
Specifications

System Configuration	
CPU	Intel® Ultra Low Voltage Celeron 400MHz
Chipset	VIA® VT8606 (Integrated 2D/3D graphics accelerator) & VT82C686B.
DRAM	One 144-pin SO-DIMM socket. Maximum memory is 512MB.
Primary SVGA	AGP On chip VT8606 (Share memory up to 32MB RAM) for primary LCD panel.
Primary LCD Panel	12" TFT LCD Panel (800X600) or 15" TFT LCD Panel (1024X768)
Primary Touch Panel	ELO 5-wire resistive touch panel or 4-wire resistive touch panel
Compact Flash Disk socket	Type II Compact Flash™ Disk. The Flash Disk provides 100% compatibility with IDE hard disk.
Power	62-Watt external power adapter.
I/O Port	
Serial Port	2 User available Com ports (COM1 & COM2). 2 System assigned Com ports (COM3 & COM4). COM3 for primary touch screen. COM4 for customer character display.
USB port	Supports 1 x USB V1.1 port, 2 x USB2.0 ports for user expansion Two internal USB 2.0 ports reserved for Wireless LAN and IC Card reader.
Cash drawer port	RJ11 Single/Dual Cashdrawer port, 12V actuation support.
Keyboard Port	One PS/2 keyboard port.
LAN Port	10/100Mbps Ethernet Controller Realtek RTL8100BL.
VGA Port	Standard VGA Port.
Audio Port	Integrated VT1612A PCI, Sound Blaster compatible, AC97.
Construction	
	Injection-Molded, Die-cast aluminum enclosure, spill resistance.

FIR-C650 Main Board

Optional Features	
Customer display	Integrated VFD/LCD customer display.
Magnetic card reader	Integrated Single / Dual / Triple Track MCR.
FDD	External USB Floppy disk drive.
HDD	Internal 2.5" 30GB (or above) hard disk drive.
KB-32	32 Key programmable keypad w/wo Dallas ID keyfob pad.
Power Consumption	
	20-30W Idle (Standard system and accessing HDD)

MainBoard Configuration



This chapter describes how to connect peripherals, switches and indicators to the FIR-C650 board.

Label	Function
LVDS1	LVDS LCD Panel connector
VGA1	VGA connector
LAN1	LAN RJ45 connector
USB1	USB 2.0 dual port connector
USB2	USB 1.1 port connector
COM1	Serial port connectors
COM2	Serial port connectors
COM4	Serial port connectors
KB_MS1	Keyboard & Mouse connector
KB1	Internal Keyboard connector
SPK_OUT1	Speaker out connector
MIC_IN1	MIC in connector
IDE1	Ultra ATA100 Primary IDE connectors
CF1	Compact Flash Storage Card Type II connector
PS_ON1	Power on Switch
LED1	Power LED
CN1	Digital I/O connector
CN2	+12V DC power connector
CN3	External switches and indicators
CN4	LVDS back light connector
CN5	Multi-function connector
CN6	Line out connector
CN7	Power output connector

JP1**Clear CMOS Setup**

JP1	Description
Short 1-2 (default)*	Keep CMOS Setup (Normal Operation)
Short 2-3	Clear CMOS Setup

JP3**TFT LCD Voltage (5V / 3V) Setting**

JP3	Description
Short 1-2	3V TFT LCD
Short 2-3	5V TFT LCD

JP4 *COM4 Voltage Selection*

JP4	Description
Short 1-2	+12V
Short 2-4	+5V

JP5 *COM4 Mode Selection*

JP5	Description
Short 1-2	Short CTS-RTS
Short 3-5	+12/+5V output
Short 4-6	Ground output

JP6 *COM2 RI Function Setting*

JP6	Description
Short 1-2	RI is +5V output
Short 3-4	RI function
Short 5-6	RI is +12 Volt output

JP7 *COM1 RI Function Setting*

JP7	Description
Short 1-2	RI is +5 Volt output
Short 3-4	RI function
Short 5-6	RI is +12 Volt output

LVDS1 *LVDS Function Setting*

PIN No.	Description	PIN No.	Description
1	LCD (+3V or +5V)	2	LCD (+3V or +5V)
3	LVDS data0 output -	4	LVDS data0 output +
5	GROUND	6	GROUND
7	LVDS data1 output -	8	LVDS data1 output +
9	GROUND	10	GROUND
11	LVDS data2 output -	12	LVDS data2 output +
13	GROUND	14	GROUND
15	LVDS clock output -	16	LVDS clock output +
17	GROUND	18	GROUND
19	LVDS data3 output -	20	LVDS data3 output +

VGA1**15 Pin Female Connector**

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	VCC / NC	10	GROUND
11	NC	12	DDC DAT
13	HSYNC	14	VSYSN
15	DDCCLK		

LAN1**RJ45 Connectors (10 / 100M)**

PIN	Description	PIN	Description
1	TX+	7	N/C
2	TX-	8	N/C
3	RX+	9	Speed +
4	N/C	10	Speed -
5	N/C	11	Active/LINK +
6	RX-	12	Active/LINK -

USB1**2 Ports USB Connect (USB 2.0)**

PIN	Description	PIN	Description
1	VCC	5	VCC
2	DATA0-	6	DATA1-
3	DATA0+	7	DATA1+
4	GROUND	8	GROUND

USB2**1 Ports USB Connect (USB 1.1)**

PIN	Description	PIN	Description
1	VCC	2	DATA-
3	DATA0+	4	GROUND

COM1 *D-SUB Serial Port Connector*

PIN	Description	PIN	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GROUND		

COM2 *D-SUB Serial Port Connector*

PIN	Description	PIN	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GROUND		

COM4 *RJ-45 Serial Port Connector*

PIN	Description	PIN	Description
1	+12/+5V	2	+12/+5V or CTS
3	GROUND	4	GROUND or RTS
5	DTR	6	DSR
7	TXD	8	RXD

KB_MS1 *Mini DIN Keyboard / Mouse Connector*

PIN	Description
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

KB1 *6 Pin Keyboard Connector*

PIN	Description
1	+5V
2	KEYBOARD CLOCK
3	PC KB CLOCK
4	KEYBOARD DATA
5	PC KB DATA
6	GROUND

SPK_OUT1 *Speaker out Connector*

PIN	Description	PIN	Description
1	NC	2	GROUND
3	Line Out (Left)	4	Speaker Out (Right)

MIC_IN1 *Microphone in Connector*

PIN	Description	PIN	Description
1	NC	2	GROUND
3	MIC In	4	NC

IDE1 *IDE Interface connector*

PIN	Description	PIN	Description
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	CHRDY	28	REV. PULL LOW
29	DACK	30	GROUND
31	INTERRUPT	32	N/C
33	SA1	34	PD66 SELECT
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	+5V	42	+5V
43	GND	44	N/C

CF1**Compact Flash Storage Card Socket pin assignment**

PIN	Description	PIN	Description
1	GROUND	26	PULL DOWN
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	VCC
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	N/C
19	A1	44	VCC
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	PULL DOWN	50	GROUND

CN1**DGI/O Connector**

PIN	Description	PIN	Description
1	GROUND	2	DGI/O OUT 0
3	DGI/O IN 0	4	+12V
5	DGI/O OUT 1	6	GROUND

CN2**+12V DC Power Connector**

PIN	Description	PIN	Description
1	+12V	2	GROUND
3	+12V	4	GROUND

CN4***LCD Back Light Connector***

PIN	Description	PIN	Description
1	+12V	2	+12V
3	GROUND	4	GROUND
5	Back Light enable		

CN5***Multi-function connector (USB 2.0 and COM3)***

PIN	Description	PIN	Description
1	+5V	2	+5V
3	USB- (USB2.0)	4	USB- (USB2.0)
5	USB+ (USB2.0)	6	USB+ (USB2.0)
7	GROUND	8	GROUND
9	DTR	10	CTS
11	RTS	12	TX
13	RX	14	DSR

CN6***Line out connector***

PIN	Description	PIN	Description
1	LINE Out (Left)	2	GROUND
3	LINE Out (Right)	4	GROUND

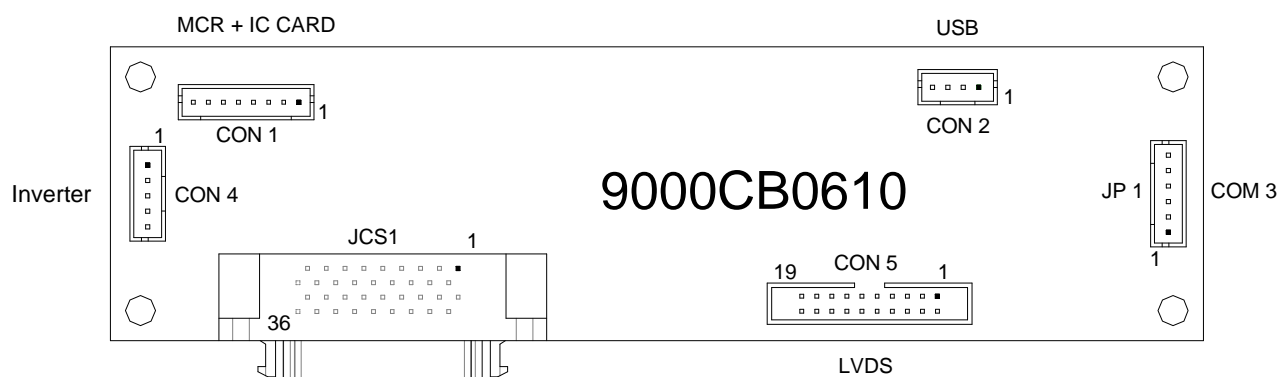
CN7***Power output connector***

PIN	Description	PIN	Description
1	+12V	2	GROUND
3	GROUND	4	+5V

I/O board Configuration

The 9000CB0610 board carries the following signals to the mainboard. Including: LCD, inverter, COM3, Keyboard and two USB port.

9000PB0610 I/O Board Pin Definition



JCS1

Multi Signal connector

PIN No.	Description	PIN No.	Description
1	XN	19	YP
2	XP	20	YN
3	USB1 DATA-	21	+5V
4	GND	22	USB1 DATA+
5	PVDD	23	PVDD
6	RX0-	24	RX0+
7	RX1-	25	RX1+
8	RX2-	26	RX2+
9	RXCLK-	27	RXCLK+
10	RX3-	28	RX3+
11	GND	29	GND
12	USB2 DATA-	30	VCC
13	GND	31	USB2 DATA+
14	KB-CLK	32	VCC
15	KB-DATA	33	PC-CLK
16	GND	34	PC-DATA
17	+12V	35	+12V
18	GND	36	Back Light Enable

CON1***K/B Wedge MCR/USB connector***

PIN No.	Description
1	USB DATA+
2	GND
3	DC- DATA
4	KB- DATA
5	PC-CLK
6	KB-CLK
7	VDD
8	USB DATA-

CON2***USB connector***

PIN No.	Description
1	VDD
2	DATA-
3	DATA+
4	GND

CON4***LCD Back Light connector***

PIN No.	Description
1	DC+12V
2	DC+12V
3	Back Light Enable
4	GND
5	GND

CON5***LVDS connector***

PIN No.	Description	PIN No.	Description
1	PVDD	11	RX2-
2	PVDD	12	RX2+
3	GND	13	GND
4	GND	14	RXCLK-
5	RX0-	15	RXCLK+
6	RX0+	16	GND
7	GND	17	RX3-
8	RX1-	18	RX3+
9	RX1+	19	GND
10	GND	20	GND

CON6***RS232 connector***

PIN No.	DESCRIPTION
1	GND
2	TX
3	RTX
4	RS
5	DSR
6	+5V

Troubleshooting

Please note that the following troubleshooting guide is designed for people with strong computer hardware knowledge such as System Administrators and Engineers.

Power is on, but there is no Panel Display

- A) Check that the mainboard Power LED is on when the power adapter power switch is in the on position.
Ensure that the correct AC voltage is selected (the voltage switch is located beside the power switch).
- B) Check that the Power are running when system power is on.
 - B-1)** Check whether the ATX power switch cable is properly connected to mainboard CN2 (Please refer to page7 in the FIR-C650 User's guide).
- C) Please ensure that the IDE cable is properly connected to the HDD and the red stripe on the ribbon cable should align with IDE1 on the IDE connector of HDD.
- D) Reset CMOS DATA by shorting mainboard JP1 PIN2 and PIN3 for a few seconds (Please refer to page49 in the FIR-C650 User's guide).
- E) Check if the system is beeping.
 - E-1)** A single long repeated beep indicates that a DRAM error has occurred. Make sure DRAM is properly installed or replace DRAM.
 - E-2)** One short beep after power on, means system is ok, but LCD panel or VGA interface could be defective.
 - E-2-1)** INIT display should be set for AGP in the COMS setup.
 - E-2-2)** LVDS board connection to mainboard LVDS1 could be defective.
 - E-2-3)** The connection between the LVDS board and the LCD panel connector not connected properly.
 - E-2-4)** The LCD cable could be defective.
 - E-2-5)** The Inverter cannot produce backlight.
 - E-2-6)** The LCD panel could be defective.

To check where the problem could be:

Please connect a VGA monitor to the VGA port. If the VGA monitor is display normally, one of the problems above is occurring, otherwise it could be the mainboard is not functioning properly.

Cannot Detect HDD

- A) IDE cable is not connected properly to mainboard IDE1 or it could be defective.
- B) HDD power cable is not connected properly to the I/O board or it could be defective.
- C) Check CMOS setup, set IDE HDD to Auto detects.
- D) On-board IDE port could be defective.

Touch Panel Does not Work

- A) Check CMOS settings, COM3 needs to be "Enabled". The correct settings are "3E8h" and "IRQ10".
- B) Check that there are no conflicts between COM3 IRQ10 and any other devices.
- C) Check that the ELO driver or the TouchKit driver has been properly installed. Or try to re-install again (Please refer to the ELO driver installation or the TouchKit driver).
- D) Check that the ELO controller or the TouchKit driver on COM3 has been detected during the ELO driver or the TouchKit driver installation. If yes, then check that the flat cable from the ELO touch screen or the TOUCHKIT touch screen has been properly connected to the ELO controller or the TouchKit controller (**Attention:** Pin1 mark should be on the same side as the ELO controller).
- E) Check that the ELO controller or the TouchKit controller Green LED is blinking?
If no, there is no DC+5V support for the ELO controller or the TouchKit controller from the mainboard.
 - E-1) Check that the COM3 cable is properly connected between mainboard CN5 and the Touch screen controller.
- F) Touch screen controller could be defective or the touch panel could be defective.

ELO Touch Panel Cannot Calibrate Correctly

- A) Please replace the ELO controller, and re-calibrate. If this works, change back to the original ELO controller, and re-calibrate.
- B) If the ELO touch panel still cannot calibrate correctly after changing to a new ELO controller, the touch panel may be not installed properly or it could be defective.

PS/2 Keyboard is not Functioning Normally

- A) Make sure the keyboard is properly connected to the PS/2 keyboard port before the system is powered up. If the keyboard is connected after Windows2000 has been booted, the keyboard will not work.
- B) Check that the LED on the keyboard goes on then off after power on. If yes, the keyboard is getting power correctly.
- C) If the MCR is not required. Please make sure the loopback is plugged into the MCR connector board.
- D) Check that the 6-wire cable has been properly connected between the MCR connector board and mainboard KB1

The mainboard KB1 cable can be removed. Then short Pins 2-3 and Pins 4-5 If the keyboard still does not work, then check next step. Otherwise, the cable or MCR

connector board could be defective.

- E)** The mainboard could be defective.

MCR is not Functioning Properly

- A)** Check if the green MCR LED is on.
 - A-1)** Check if the MCR is properly connected to the MCR connector board on main system.
 - A-2)** Make sure the 6 wire cable is properly connected between 9000PB0610 I/O board CN20 and the MCR connector board.
 - A-3)** The MCR connector board could be defective.
 - A-4)** The MCR module could be defective.
- B)** If a keyboard is connected to the PS/2 keyboard port, and functions correctly, then the MCR module could be defective.

VFD Display is not Functioning Properly

- A)** Ensure that COM4 is enabled in the CMOS setup, and data is written to COM4 in the application.
- B)** Check if there is any display when system power is ON, if the screen is blank, please follow the steps below.
 - B-1)** Make sure the power switch on the VFD display is on before powering the main system.
 - B-2)** Make sure that the mainboard JP4 & JP5 jumper settings are correct.

The proper settings are:
JP4 Pins 1-2 shorted
JP5 Pins 1-2, Pins 3-5 and Pins 4-6 shorted
- C)** The on-board COM4 I/O chips could be defective.

LAN is not Functioning Properly

- A)** Check if the LAN driver is installed properly. (Please refer to the LAN driver installation)
- B)** Check if there are any IRQ conflicts.
- C)** Check if the RJ45 cable is properly connected.
- D)** The on board LAN chip could be defective.

COM1, COM2 are not Functioning Properly

- A)** Check if the I/O ports are enabled in the CMOS setup.
- B)** Check if there are any IRQ conflicts.
- C)** The mainboard could be defective.

Cash Drawer Port is not Functioning Properly

- A)** Make sure the pin assignment matches between the cash drawer and the RJ11 cash drawer port.
- B)** Verify the digit I/O port address and bit are “280h” respectively. Command send “L” level for 200ms (Refer to FIR-C650 user’s manual page 54).
- C)** The mainboard could be defective.

USB device is not Functioning Properly

- A)** Ensure that the USB controller is “enabled” in the CMOS setup.
- B)** Ensure that the USB Legacy is “enabled” in the CMOS setup. (Windows 98 、 Windows 2000 、 Window XP Professional)
- C)** Ensure that the USB Legacy is “Disabled” in the CMOS setup. (Embedded OS: Windows XP Embedded 、 Window CE. NET 、 Linux RedHat 9)