

**Federal Communications Commission (FCC) Statement**

This Equipment has been tested and found to comply with the limits for a class B 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 receiver.
- Connect the equipment into 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.

**Warning:**

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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 &  
(2) This device must accept any interference received, including interference that may cause undesired operation.

## TC-Card Hardware Installation Guide

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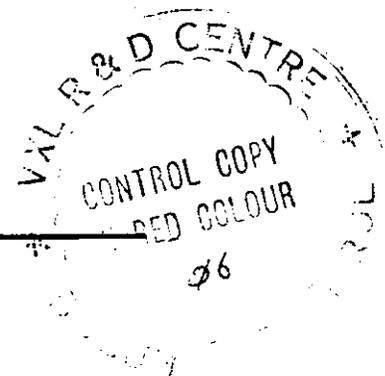
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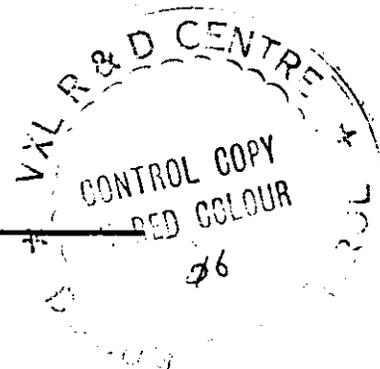
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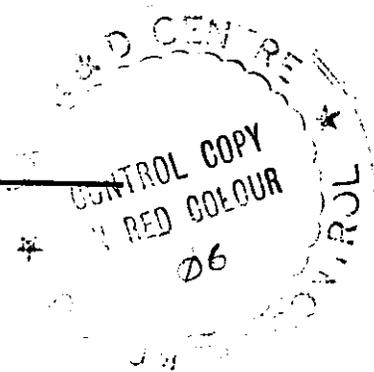
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## Chapter-1

# INTRODUCTION

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## OVERVIEW

Congratulations!

You have made the right decision to protect your investment in your existing PC.

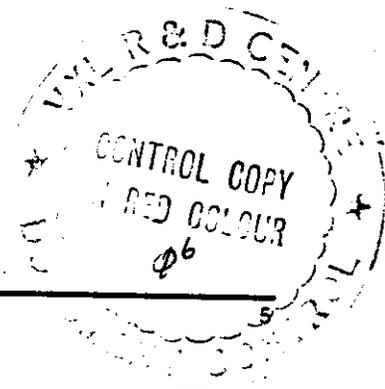
Easy to install, TC-Card instantly converts an IBM compatible PC into a Thin Client. After installation you can use your system either in PC mode or as a Thin Client. Following installation into the PC, we will refer to the PC system as a Thin Client while it is connected onto a ICA network.

The Thin Client provides a cost effective route of bringing Windows applications to the desktop, providing network users with the user friendly Windows NT™ operating system.

The Thin Clients are essentially terminal devices that connect onto multi-user application servers operating under the Citrix MetaFrame™, Citrix WinFrame™ and Windows NT operating system. They communicate with the application server via the ICA protocol developed by Citrix Systems Inc.

The client has built within it simple setup procedures which allow the definition of server connection configuration, user names, resolution, passwords and a variety of other customizable features.

The Thin Client is equipped with a 10Base-T Ethernet port which gives an instant connection to a multi-user Windows NT™ application server.



## FEATURES

### The Thin Client terminal:

- is fully compatible with all Windows 3.1, Windows 95, Windows NT and DOS (text) applications through WinFrame and ICA based application servers.
- provides secure access to network resources.
- provides extremely low administration costs.
- is 100% ICA 3 protocol compliant.
- can be directly connected to any server equipped with Microsoft NT Server – TSE, Citrix™ MetaFrame™ Enterprise, Citrix™ MetaFrame™ Terminals, Citrix™ WinFrame™ Enterprise, Citrix™ WinFrame™ Terminals, Insignia™ Solutions NTrigue™, NCD WinCenter Pro, Tektronix™ WinDD™ or any other server supporting the ICA 3™ protocol.

**Note:** In an endeavor to provide a better product to you, the customer, our Company pursues continuous development of software and hardware features. As a result the product you received may have features additional to those contained and described within this guide.

### OPTIONAL FEATURES \* :

- VGA port supporting SVGA display monitors.
- 10Base-2 Ethernet port.



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\* Some of the options are mutually exclusive. Only certain combinations of the optional features are possible.

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## Chapter-2

# INSTALLATION

The TC-Card carton would contain:

- TC-Card
- Hardware Installation Guide (which you are currently reading)
- Software User's Guide

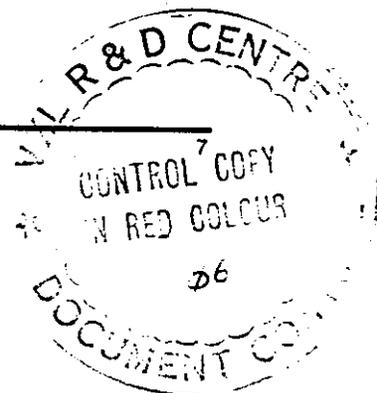
*Note: Trans-shipment should be done in the original packing to avoid damage. Retain the carton and package material for re-packing.*

## INSTALLATION PROCEDURE

- Switch off the PC. Remove the PC's cabinet cover.
- **Precaution :** Always switch off the PC before removing or inserting the card.
- Insert the TC-Card in one of the empty ISA slots. Fix the TC-Card's clamp to PC's cabinet.
- Re-fix the PC's cabinet cover.
- Connect the monitor cable to the VGA connector of the card.  
If you are already using a display card, change the VGA option in the TC-Card using P11 jumper setting as shown in the table below.

Option	Jumper P11
Disable VGA	Pin 1 & 2 short
Enable VGA	Pin 2 & 3 short

After the TC-Card is fixed into your PC, the PC system is called as a Thin Client with reference to your ICA network. Connect the Thin Client to the server by any of the means described in the topic "Typical Network Installations".

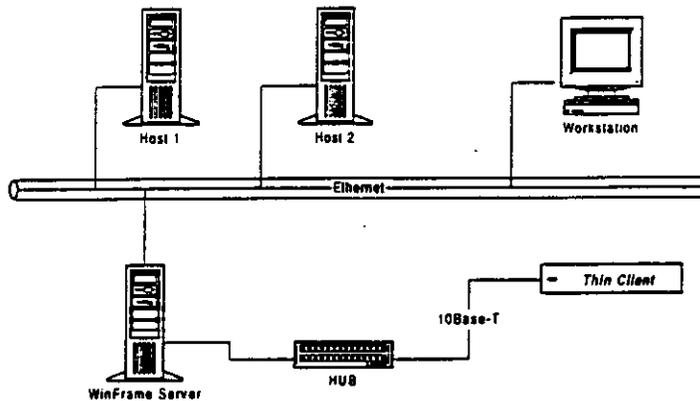


## TYPICAL NETWORK INSTALLATIONS

The Thin Client communicates with the server using the ICA 3 protocol. This section illustrates how to install Thin Client in different network topologies. The Thin Client can be linked to the server by:

- LAN connection through TCP/IP through 10base-T (10base-2 optional)
- Direct connection through RS232 (through a serial port)
- Dial-In remote connection through modem (through a serial port)

If LAN connection through TCP/IP is desired, then connect 10BASE-T cable from Thin Client 10BASE-T outlet to a hub as shown in figure.



LAN Connection (Through 10BASE-T)



If Direct Connection through RS232 is desired, connect

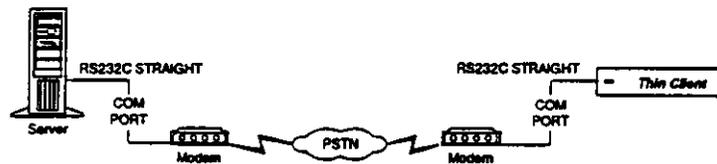
- RS232 cross cable from a PC serial port (COM1 or COM2) to a Server serial port as shown in figure below.



*Direct Connection through RS232*

If Dial-In Remote Connection through modem is desired, connect

- RS232C straight cable from a PC serial port to a modem connected to telephone line as shown in figure below.



*Dial-In Remote Connection through Modem*

Refer to chapter "Connectors & Cabling Information" for more information about connectors and cables.

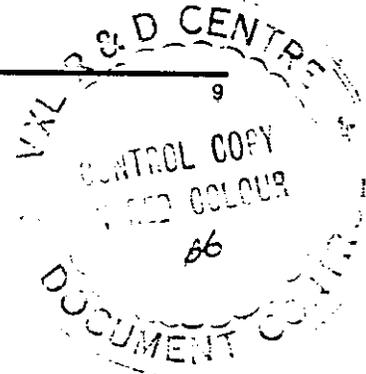
## PC BIOS SETUP

- Switch on the PC
- Enter the BIOS setup, instructions will appear on the display directing you to press a special key such as "del" key at the required time. Set below listed parameters to the specified values:

BIOS Parameter	Change to
Boot Sequence	C,A
D000-D3FF Shadow	Disabled**

BIOS setup procedure and default values of all PC BIOS are not same. Please use your PC's installation/user's manual to locate how to access setup utility and how to change above parameter values. In case of problem in locating or changing above parameters, please contact your PC's supplier.

\*\* If Jumper P9 is equipped, the Shadow RAM area D8000-DBFF should be disabled.



If your BIOS supports Plug and Play (PnP), enter the PnP PCI CONFIGURATION.

The TC-Card is not configured for PnP and if your PC supports this feature, it should be disabled for the ISA slot and IRQ selected for this card. Default IRQ is 5.

PnP PCI CONFIGURATION	
Resources controlled by	Manual
IRQ 5	Legacy ISA

For other BIOS that support PnP with different setup fields, follow the BIOS instructions to select the TC-Card IRQ as non-PNP.

- Save and exit from the setup.
- Reset the PC, using Reset button.

After few moments the following message would appear.

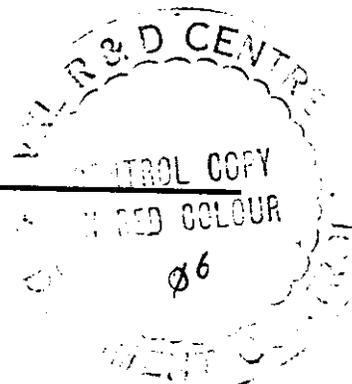
```
#TC-Card Configuration#  
  
TC-Card is using IRQ 5 and IO_Base 300h  
Press Ctrl+Alt+z to change settings . . . . .
```

**NOTE :** If you want to change the setup configuration, press Ctrl+Alt+z. Refer to section TC-Card Setup for details.

If there is no response from keyboard for few seconds, the system boots through TC-Card and Thin Client model screen appears which is followed by client prompt Enter the Client Name.

Conduct Thin Client setup. Refer to your Thin Client Software User's Guide.

If the system does not boot through TC-Card for the default values, refer the topics "Customizing the Configuration" and "TC-Card Setup".



## CUSTOMIZING THE CONFIGURATION

In most cases the default settings should allow for a simple installation of the TC-Card. With some PCs, particularly those that had been used with many card devices, special setup may be required.

The TC-Card is factory set to operate at IRQ 5 and IO\_Base 300h by default and uses memory space D000-D3FF. This setting may be currently used by another card within your PC. There may be two cases to customize your TC-Card.

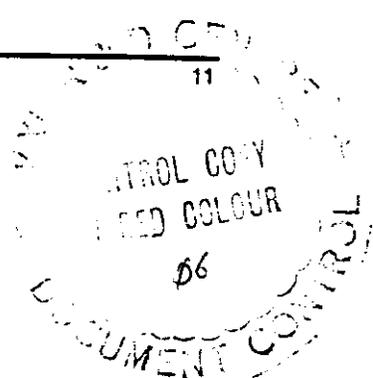
### Case 1 IRQ 5 & IO\_Base 300h already in use by another card

- In order to rectify this first reset your PC. Using a system diagnostic utility like MSD of DOS 6.0, note down the unused (unoccupied) IRQ's (between 0-7), IO\_Base (between 200 - 3E0).

These parameters are required to configure your card through TC-Card Setup application. Refer to following section Setup application for changing the existing settings.

### Case 2 During startup #TC-Card Configuration# message does not appear

- Check whether memory segment D000-D3FF is occupied. If occupied,
  - switch off the PC and remove the screws
  - equip the jumper P9 on the TC-Card
  - refix the PC screws and switch on the PC
  - enter PC-Bios and disable the Shadow RAM D8000-DBFF area



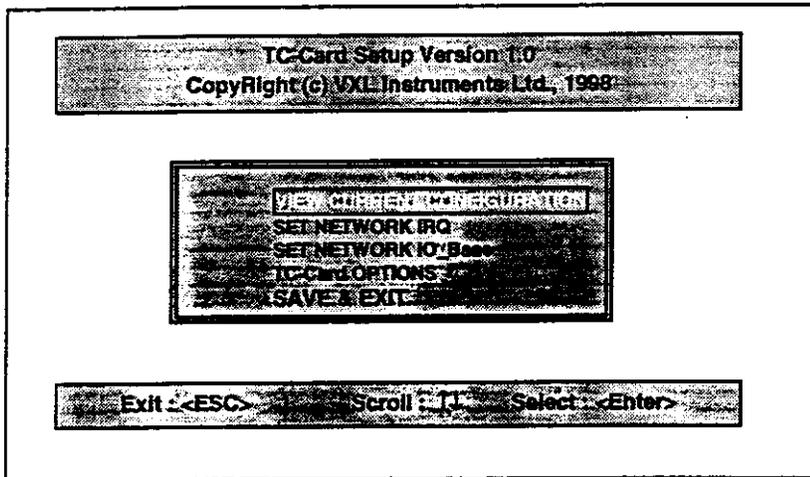
## TC-CARD SETUP

TC-Card setup application is used to configure your TC-Card. To enter into the TC-Card setup application:

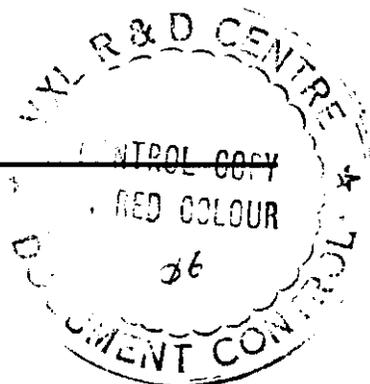
- Reset the PC
- After few moments the following message would appear :

```
#TC-Card Configuration#  
  
TC-Card is using IRQ 5 and IO_Base 300h  
Press Ctrl+Alt+z to change settings . . . .
```

- Now press Ctrl+Alt+z simultaneously.
- You would enter the TC-Card Setup as shown below.



TC-Card Setup Dialog Box



The TC-Card setup is pre-loaded with default values. Use the cursor keys to move among the fields and menu items. The setup basically consists of following options:

#### VIEW CURRENT CONFIGURATION

- Select this option, if you want to see the current configuration of the TC-card. You can see the IRQ and IO\_Base address that is currently used.
- **Ethernet address** is purely informatory. This is also referred to as the MAC address and cannot be altered.

#### SET NETWORK IRQ

- You can select one of the free IRQs listed.
  - \* Notation indicates that the IRQ is occupied by other devices & cannot be selected.
  - ▶ Notation indicates the current setting.
- Set the IRQ to the value, which you set to legacy ISA in PC's BIOS setup.

#### SELECT IO\_BASE

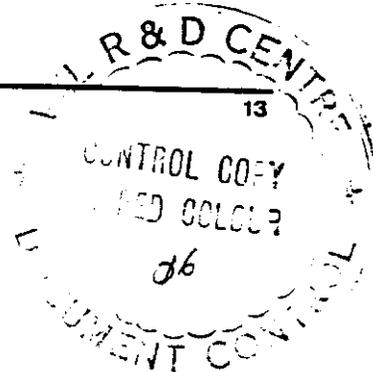
- You can select one of the free IO\_BASE VALUES listed.
  - \* Notation indicates that the IO\_BASE is occupied by other devices & cannot be selected.
  - ▶ Notation indicates the current setting.
- Set the IO\_BASE to the value noted as an unoccupied IO\_BASE address in the PC's bios setup.

#### TC-Card OPTIONS

- If you want to use TC-Card as a VGA Card press **Enter** key on the field *Disable Network Controller*. This disables the TC-Card booting as Thin Client.

#### SAVE & EXIT

- Save the setup changes and then to exit from the setup. Press **ESC** to exit from the setup without saving setup changes.
- After making the appropriate changes in the setup, **Save and Exit** from the setup.



## Appendix-A

# SPECIFICATIONS

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### MECHANICAL

Height	25 mm
Width	121 mm
Depth	180 mm
Weight (approximately)	150 gm

### ENVIRONMENTAL

Operating Temperature	+ 5° C to +50° C
Storage Temperature	- 20° C to +65° C
Humidity	10% to 90% RH non condensing

### ELECTRICAL

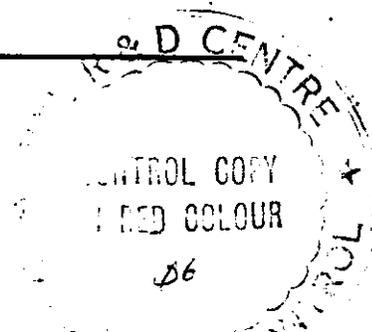
Power Consumption (Max.)	1.5W
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### NETWORK CONNECTION

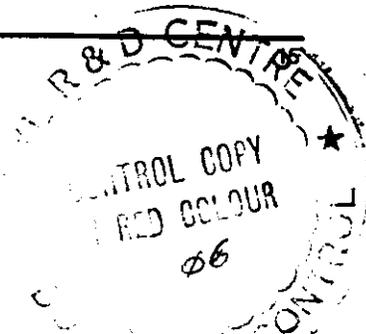
10Base-T Interface	RJ-45 Modular 8 pin jack (for twisted pair cable)
10Base-2 (Optional)	BNC Connector (for thin coaxial cable)
IRQ Options	2/9, 3, 4, 5, 10, 11, 12, 15
I/O Base Address Options	200, 220, 240, 260, 280, 2A0, 2C0, 2E0, 300, 320, 340, 360, 380, 3A0, 3C0, 3E0
Status Indicator	Green LED

### VIDEO CONNECTION

SVGA compatible supporting 1024 x 768, 800x600, 640x480 resolutions, 256 colors.



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**Appendix-B**

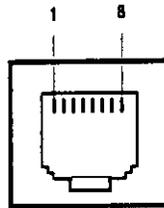
**CONNECTORS & CABLING  
INFORMATION**

**CONNECTORS**

**10BASE-T**

RJ-45 Modular 8 pin jack

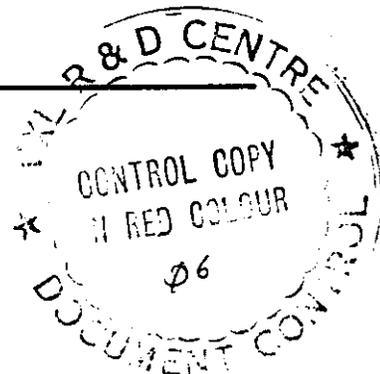
Pin	Signal
1	TXD+
2	TXD-
3	RXD+
6	RXD-



**10BASE-2**

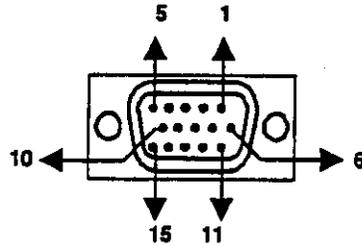
BNC Connector

Pin	Signal
1	SIGNAL
2	GND



## Video Port

15 Pin D-type Female Connector



Pin	Signal
1	Red
2	Green
3	Blue
4	No Connection
5	GND

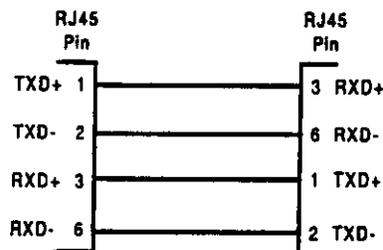
Pin	Signal
6	Red return GND
7	Green return GND
8	Blue return GND
9	No Connection
10	GND

Pin	Signal
11	No Connection
12	No Connection
13	Horizontal Sync
14	Vertical Sync
15	No Connection

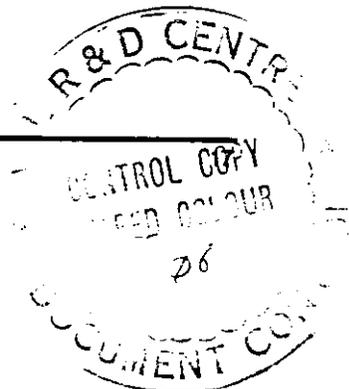
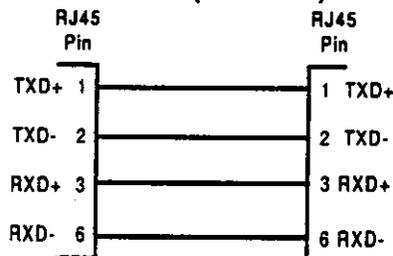
## CABLING REQUIREMENTS

### 10BASE-T Connection

#### Cross Connection - (Without Hub)

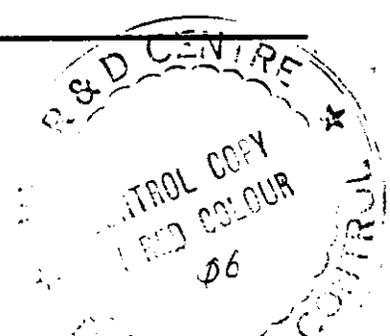


#### Straight Connection - (With Hub)



**NOTES**

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