ABN-262

Dual Copper Gigabit Ethernet PCI-E

Bypass Adapter

User's Manual

Revision: 0.95

Portwell Inc.

4F., No.186, Jian 1st Rd., Jhonghe City, Taipei County 23553,

Taiwan (R.O.C.)

Headquarter: +886-2-7731-8888 | FAX: +886-2-8227-1109

http://www.portwell.com.tw

Email: info@mail.portwell.com.tw

ISO 9001

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General Introduction

1.1 Introduction

The ABN-262 is PCI Express x4 interface cards, contains two independent Gigabit Ethernet ports. To enhance Ethernet controller performance, it is designed with two Intel® 82574L Gigabit Ethernet Controllers to provide two Gigabit Ethernet ports.

1.2 Product Packing List

Before beginning installing, please make sure the following items have been included in the box.

1. ABN-262 dual copper Gigabit Ethernet PCI-E bypass adapter
2. Driver CD
3. User's Manual

If any of these items is missing or damaged, contact you local dealer from whom you purchased the product.

1.3 Features

- Dual copper PCI-E Gigabit Ethernet ports via Intel® 82574L controller
- Built-in Watchdog Timer (WDT) to bypass Ethernet ports on a host system hang or power failure
- Easy configuration of Normal/Bypass model and WDT timer
- Built with both onboard LED indicators and LED pin-out for LAN status and bypass mode, provides variable LED location for system integration
- Low Profile form factor to fit in a wider variety of systems

1.4 Specifications

Technical Specifications:

- **Standard:** IEEE 802.3z 1000BASE-SX Gigabit Standard; IEEE 802.3x Flow Control
- **Interface:** PCI-Express base specification Rev. 1.1
- **PCI-Express Bus Type**: x4
- **Installbale PCI Slot**: PCI Express x4/x8/x16
- **Controller:** Intel® 82574L
- **Holder:** Metal bracket for both full height PCI-E x4 slots (metal bracket in low profile is optional)
- **Driver Support:** Windows 2000, Windows XP SP3; Linux for

kernel 2.6.x

Mechanical and Environmental:

- **Board Size:** 167.65 (W) x 68.9 (L) mm
- **Power Consumption:** 3.92W
- **Operating Temperature:** 0 to 60 ℃ (32 to 140℉)
- **Operating Storage:** -20 to 80 ℃ (-68 to 176℉)
- **Operating Humidity:** 5% to 90% RH(non-condensing)
- **Weight:** 77.7g

1.5 Block Diagram

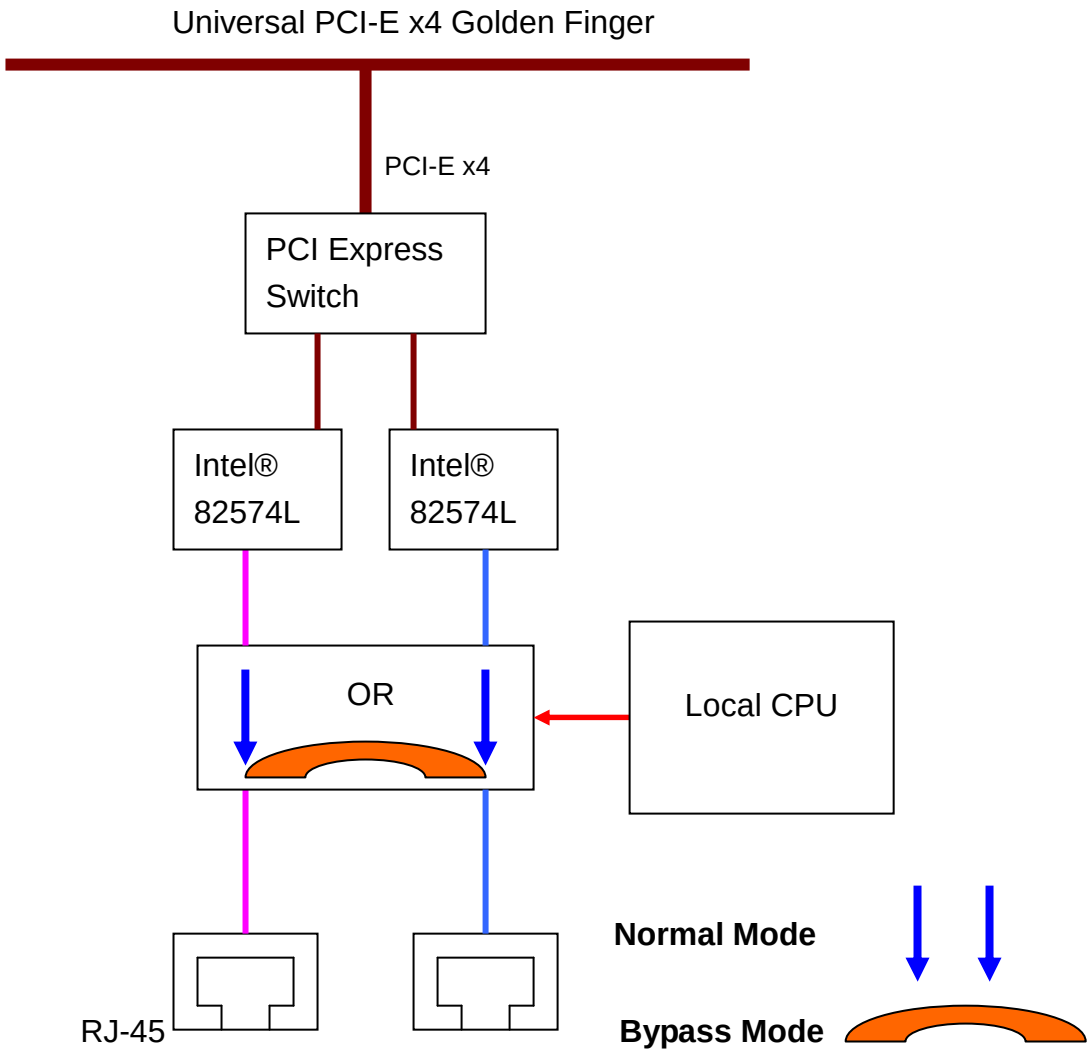


Figure 1.5: ABN-262 Block Diagram

1.6 Board Layout: Dimensions

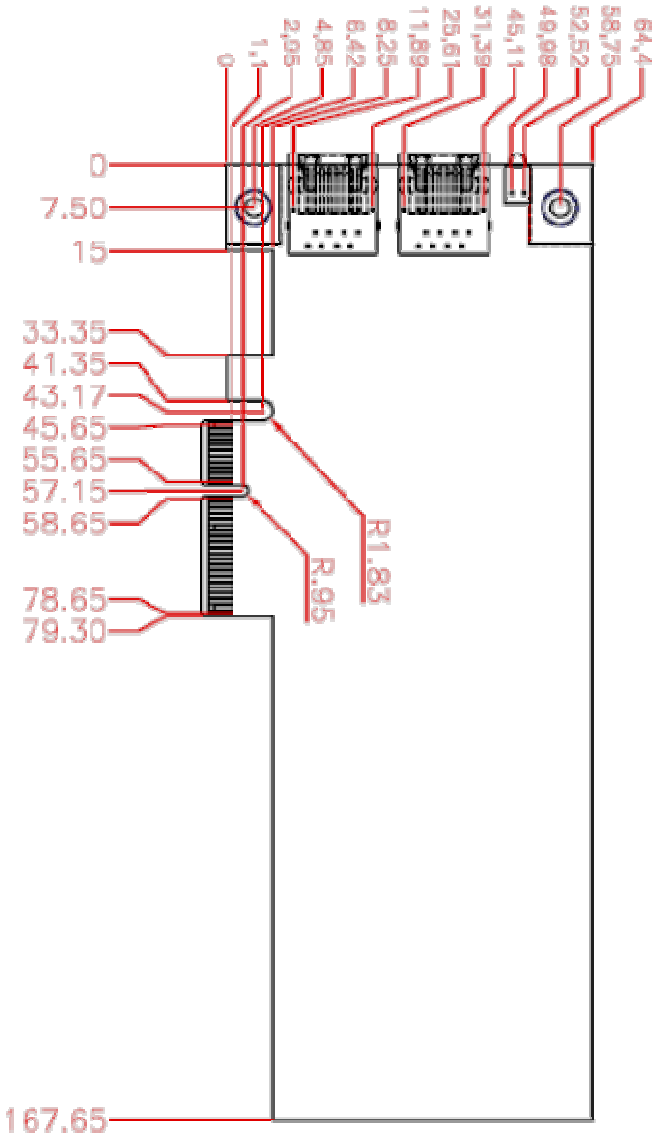


Figure 1.6.1: Board layout: dimension (component side)

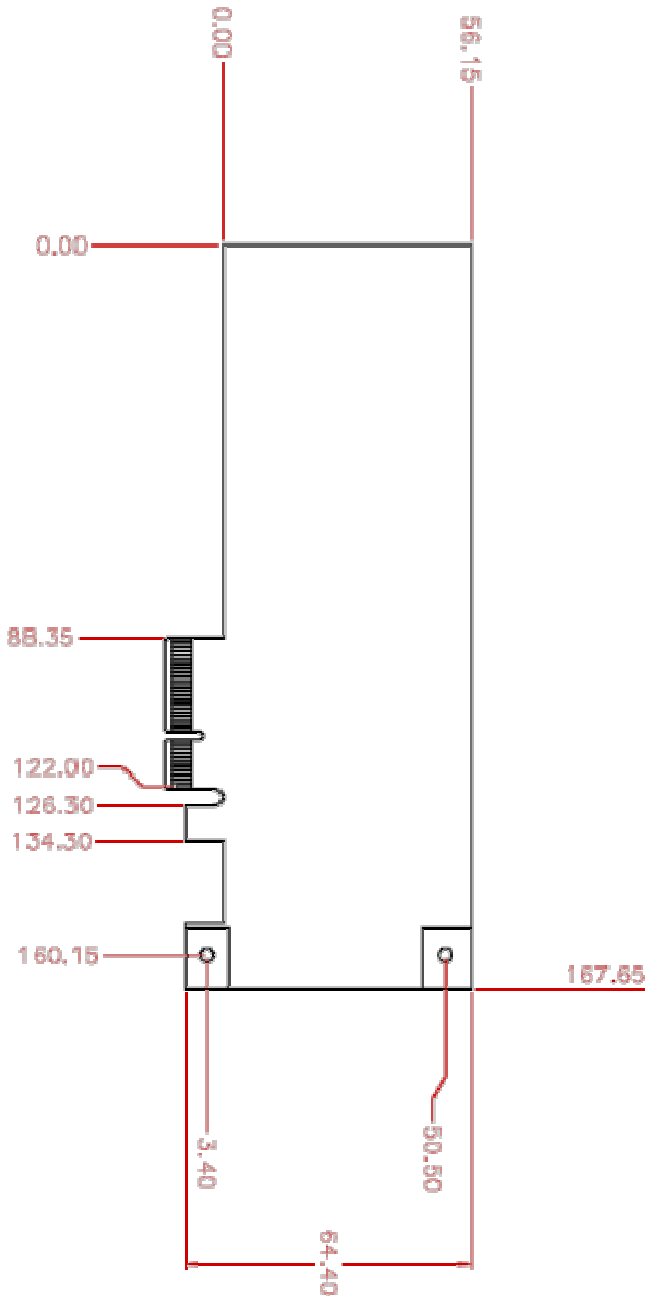


Figure 1.6.2: Board layout: dimension (solder side)

Hardware Installation

2.1 Jumpers

Label	Function
JP1	For Portwell debug purpose
JP2	Bypass Function Boot-up Setting
JP3	Bypass Function Setting
JP4	External LED indicator

Bypass Function Boot-up Setting (JP2)	
Setting	Function
1-2	Enable Bypass Function before OS boot-up
2-3(default)	Disable Bypass Function before OS boot-up
Note: To active this function, jumper JP3 should be set on pin1 and pin 2 short	

Bypass Function Setting (JP3)	
Setting	Function
1-2(default)	Enable Bypass Function
2-3	Disable Bypass Function

External LED indicator (JP4)	
Pin	Function
Pin 1	Bypass LED (–)
Pin 2	Bypass LED (+)
Pin 3	Connect 220 ohm resistor to 3.3V (+)

Pin 4	Active LED of LAN0, active low (-)
Pin 5	100M Link LED of LAN0
Pin 6	1G Link LED of LAN0
Pin 7	Connect 220 ohm resistor to 3.3V (+)
Pin 8	Active LED of LAN1, active low (-)
Pin 9	100M Link LED of LAN1
Pin 10	1G Link LED of LAN1

2.2 Connectors

Label	Function
J1	LAN0 Connector
J2	LAN1 Connector

2.3 Locating Jumpers & Connectors

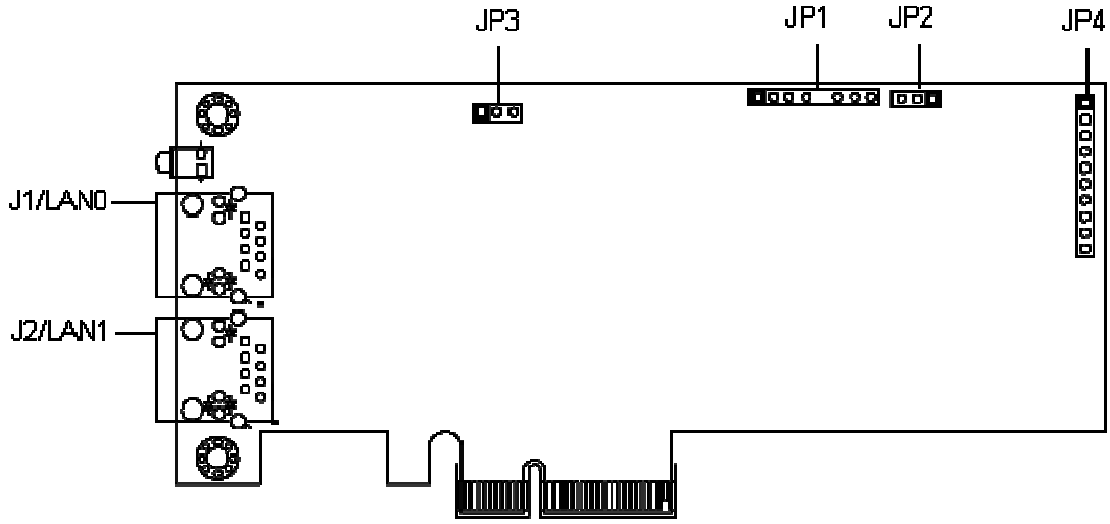


Figure 2.3.1: Jumper & Connector (component side)

Ethernet Interface

3.1 Ethernet Driver Support

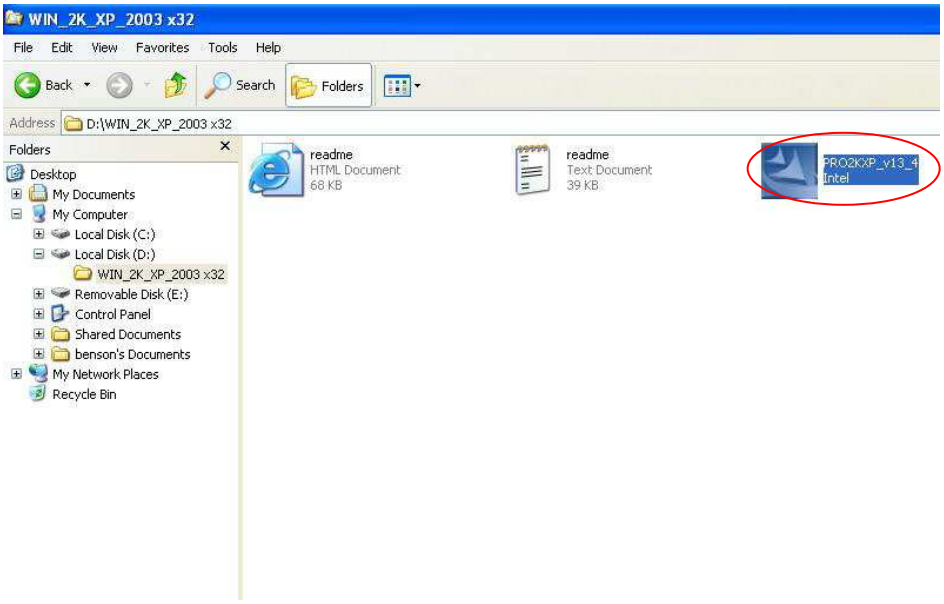
The Ethernet drivers of ABN-262 are supported under Window XP SP3; Linux for kernel 2.6.x. For other supported drivers, please contact Portwell or refer to Intel.

3.2 Installation of Ethernet Driver on Windows XP

The following steps are manual installation for Windows XP

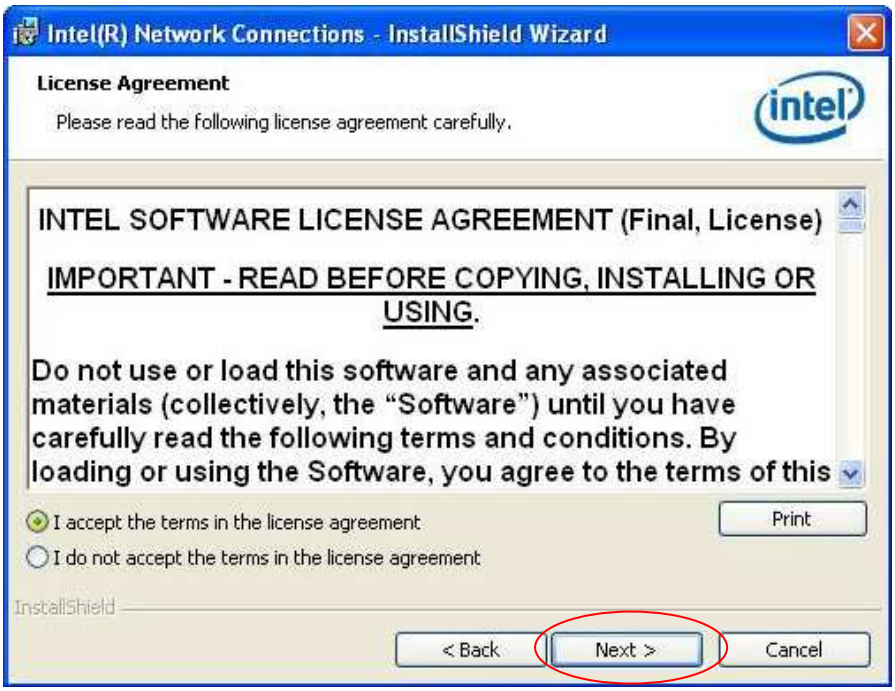
a. Insert Driver CD to CD-ROM.

b. Run pro2kxp_v13_4.exe under *Driver\WIN_2K_XP_2003*

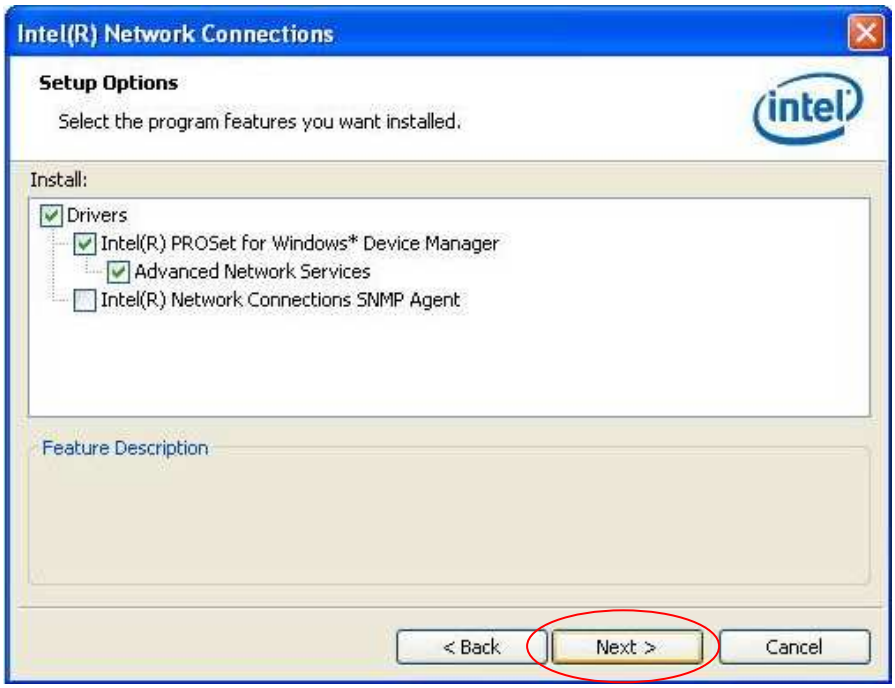


c. Click “Next” to install DriverInstaller on your computer

d. Click “Next” to continue



e. Click “Next” to continue



f. Click “Next” to continue

g. Click “Finish” to complete the installation

3.4 Installation of Ethernet Driver on Linux

Most of the kernels contain the driver for ABN-262, and these OS will automatically install the new hardware when booting up. If this doesn't happen, please follow the step to install.

a. Get the driver from CD or download from Intel website.

NOTE: For ABN-262, the driver is e1000e-Driver_Version.tar.gz

b. Make the file and install to the machine

Example: Installation of e1000e-0.4.1.12.tar on Fedora core 4.

```
[root @ host~]# tar -zxvf e1000e-0.4.1.12.tar
[root @ host~]# cd e1000e-0.4.1.12/src/
[root @ host src]# make install
[root @ host src]# modprobe e1000e
```

NOTE: Please consult with your vender or read the reference document about compiling driver for different version of kernel.

c. Reboot the system if necessary.

Programming Bypass

4.1 Programming Bypass

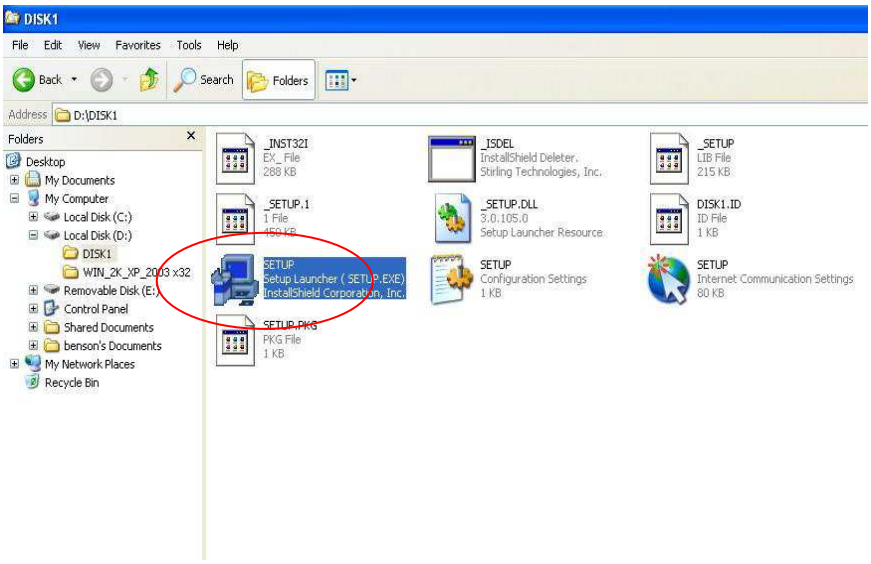
The bypass driver of ABN-262 are supported under Window XP SP3; Linux for kernel 2.6.x. For other supported drivers, please contact Portwell.

Note: Fedora core/Red Hat 9.0. Test program is based on gcc version 4.1.0 20060304 (Fedora Core 5) and gcc version 3.2.2 20030222(red-hat 9).

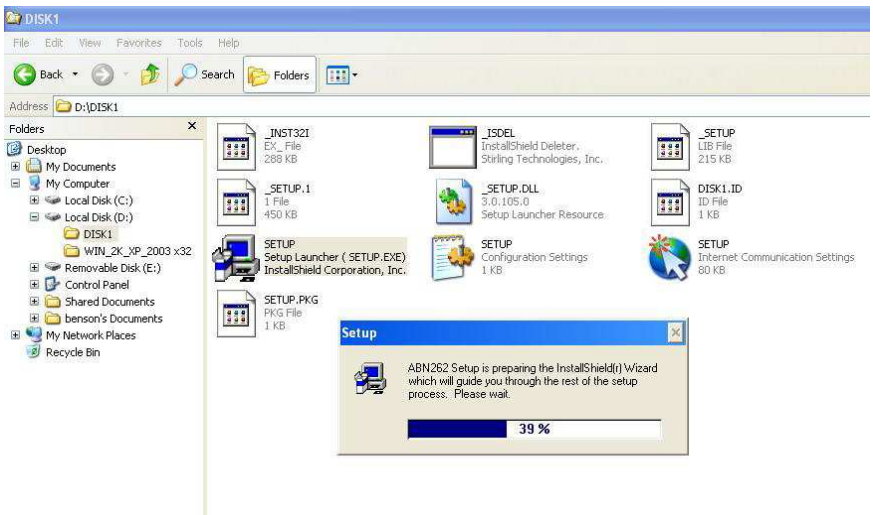
4.2 Installation of Bypass Driver on Windows XP

The following steps are manual setup for windows OS:

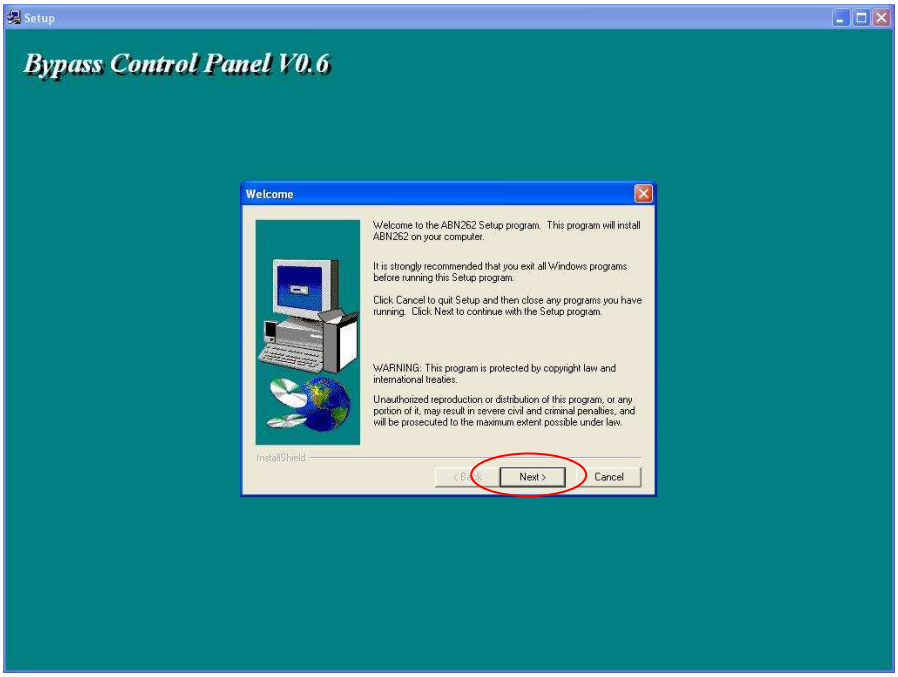
a. Run SETUP.exe



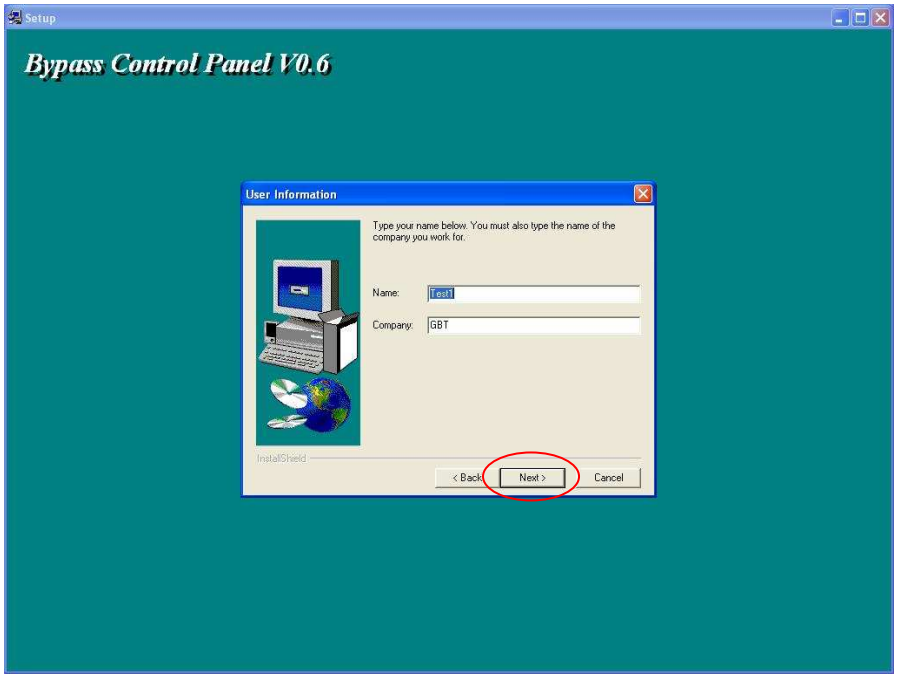
b. Click “Next” to install the program



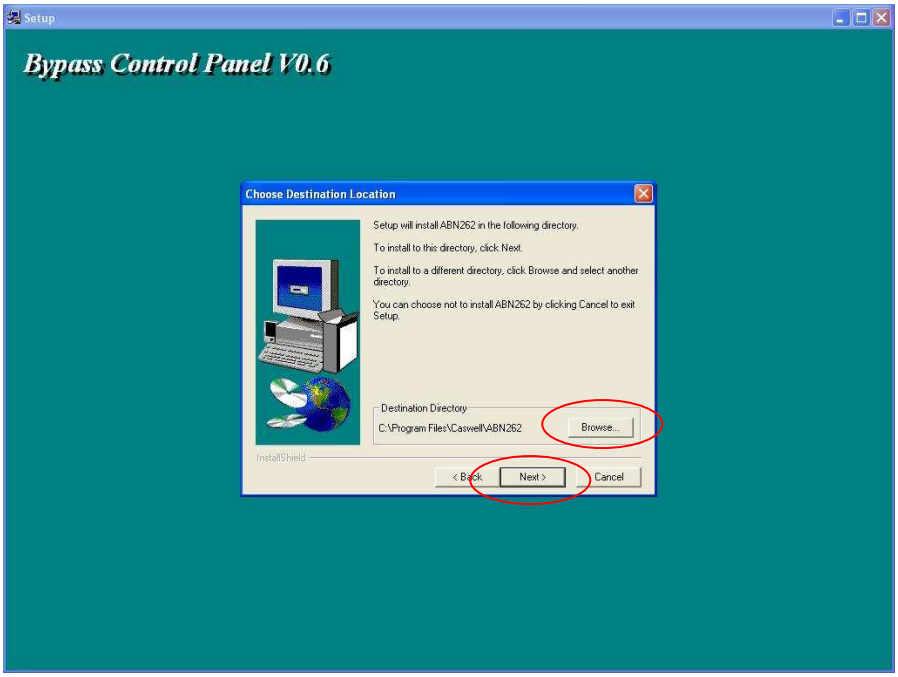
c. Click “Next” to continue



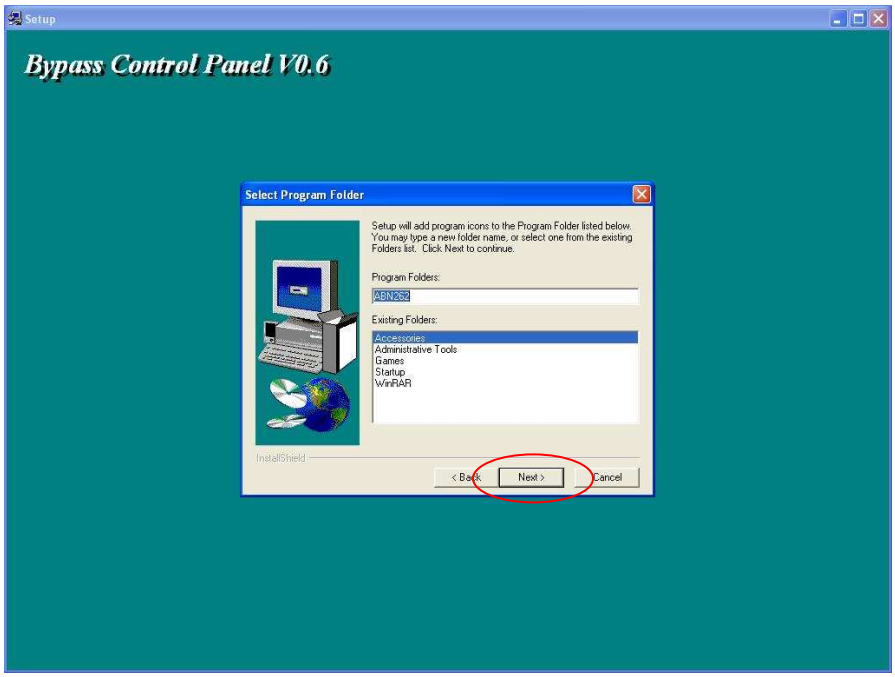
d. Click “Next” to continue



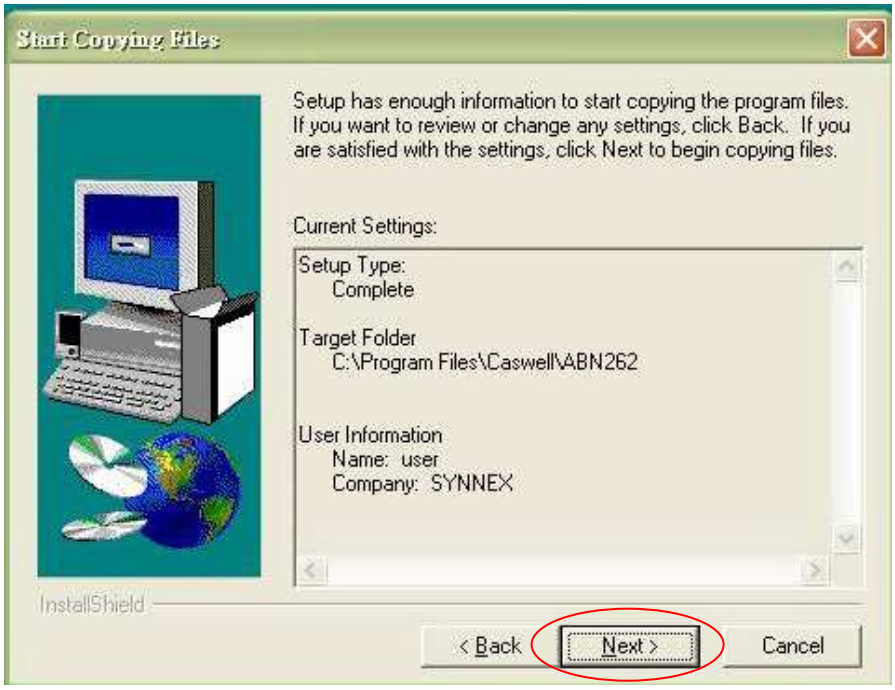
e. Click “Next” to continue

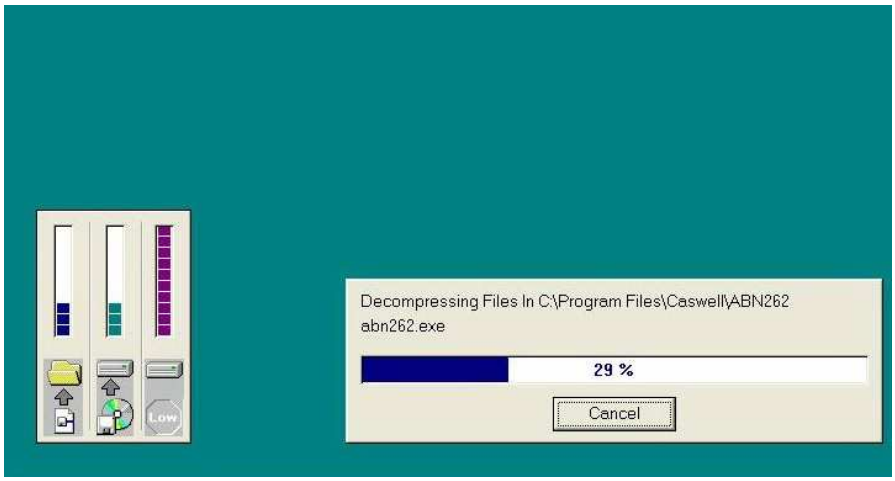


f. Click “Next” to continue

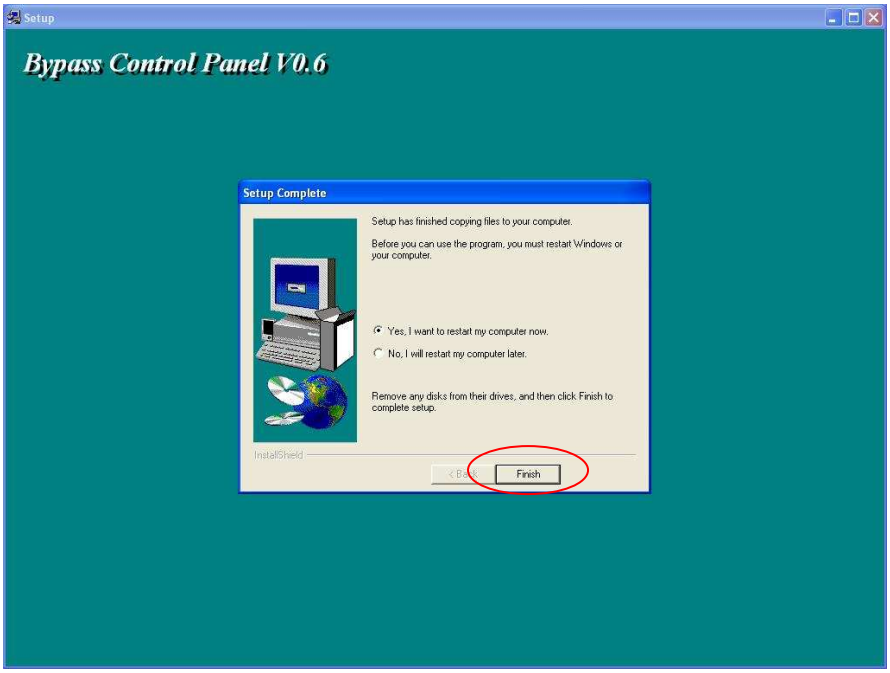


g. Click “Next” to continue

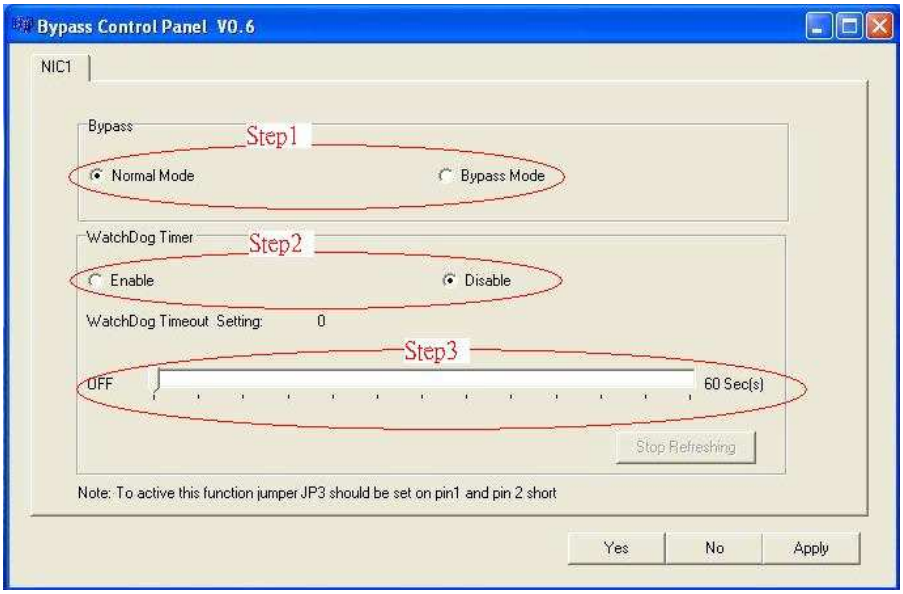




h. Click “Finish” to restart your system



i. Run Bypass Control Panel



Step 1 Manual to transform Normal & Bypass mode for Bypass

Step 2 Manual to transform Enable & Disable mode for WDT

Step 3 Manual to setting second for WatchDog Timer

4.2 Installation of Bypass Driver on Linux

The following steps are manual setup for 2.6.X kernel:

A. Copy ABN-262 bypass program to Linux OS

B. Select OS kernel version (kernel 2.6) and go into path.

C. Go into development path to make test program:

[root @ host]# cd development

[root @ host development]# ./complie.sh

D. Run test program and go into main test screen.

root @ host development]# cd application\test_all

[root @ host test_all]# ./ test_all_abn262

Portwell ABN262 Bypass program version:1.00 Author: Jason Wu
function select: [1] set to normal mode [2] set to nonormal mode [3] watch dog timer setting [ESC] exit program
Select function:1

1. [1]set to normal mode: set bypass mode disable.
2. [2]set to bypass mode: set bypass mode enable.

3. [3] watch dog timer setting: bypass function enabled and disable base on watch dog setting.
   - Select [1] to clear the set of watchdog flag.
   - Select [2] to disable watch dog timer and keep status as current state
   - Select the watch dog timer you want to test: [4]~[7]
   - Select [3] to start watch dog timer function. The bypass mode will enabled when time is up.

WATCH DOG TIMER SETTING
function select: [1] clear watch dog timer and set it to normal mode [2] disable bypass&watch dog timer [3] refresh bypass&watch dog timer [4] set wdt period:1 s [5] set wdt period:2 s [6] set wdt period:3 s [7] set wdt period:4 s [ESC] return main window
Select function:

4.3 Programming Guide

Following is API description.

4.3.1 bypass_unit_found

Function name	bypass_unit_found
Description	To find the NIC device
Format:	
int bypass_unit_found (unsigned char prod_num) Input: prod_num PROD_ABN262: bypass card of abn262 Return: X: device was found successfully and X is the number of found device(s) 0:can not find device.	

4.3.2 set_to_normal

Function name	set_to_normal

Description	Set Ethernet segment to normal mode
Format:	
unsigned char set_to_normal(unsigned char mode,unsigned char seg,unsigned char proc_dev) Input: 1. mode:0x00 ignore. 2. seg: 1:segement 1. 2:segement 2. 3:segement 3. 3. proc_dev: PROD_ABN262: bypass card of abn262 Return: 0: return ok. -1:return fail.	

4.3.3 set_to_nonormal

Function name	set_to_nonormal
Description	Set Ethernet segment to non-normal mode

Format:
unsigned char set_to_nonormal(unsigned char mode,unsigned char seg,unsigned char proc_dev) Input: 1. mode:0x00 ignore. 2. seg: 1:segement 1. 2:segement 2. 3:segement 3. 3. proc_dev: PROD_ABN262: bypass card of abn262 Return: 0: return ok. -1:return fail.

4.3.4 set_period_wdt

Function name	set_period_wdt
Description	Set watch dog timer period
Format:	
int set_period_wdt (unsigned char pd,unsigned char seg,unsigned char proc_dev)//v1.04 Input: 1. pd 1:set watch dog timer period as 1s 2:set watch dog timer period as 2s 3:set watch dog timer period as 3s 4:set watch dog timer period as 4s (Abn262 supports watch dog timer count from 1 to 63 seconds) 1. seg: 1:segement 1. 2:segement 2. 3:segement 3. 2. proc_dev: PROD_ABN262: bypass card of abn262	

Return: 0: return ok. -1:return fail.

4.3.5 arm_wdt

Function name	arm_wdt
Description	Test mode changing rate by watchdog timer, and its period is set by set_period_wdt function. Its mode will be changed to bypass-mode when watchdog timer time out.
Format:	
unsigned char arm_wdt(unsigned char mode,unsigned char seg,unsigned char proc_dev) Input: 1. mode: 0x00 ignore seg: 1:segement 1. 2:segement 2. 3:segement 3.	

proc_dev: PROD_ABN262: bypass card of abn262 Return: 0: return ok. -1:return fail.

4.3.6 dis_arm_wdt_to_sts

Function name	Dis_arm_wdt_to_sts
Description	Clear the set of watchdog flag.
Format:	
unsigned char dis_arm_wdt_to_sts(unsigned char mode,unsigned char seg,unsigned char proc_dev) Input: 1. mode: 0x00 ignore seg: 1:segement 1. 2:segement 2. 3:segement 3. proc_dev:	

PROD_ABN262: bypass card of abn262 Return: 0: return ok. -1:return fail.

4.3.7 dis_bp_wdt

Function name	dis_bp_wdt
Description	Disable watch dog timer and keep status as current state
Format:	
1. If Ethernet is on bypass mode, when user does this command, it will be disable watch dog and keep it in bypass mode. If normal mode, after doing this command, it will be kept in normal mode. unsigned char dis_bp_wdt(unsigned char mode,unsigned char seg,unsigned char proc_dev) Input: 1. mode: 0x00 ignore	

seg: 1:segement 1. 2:segement 2. 3:segement 3. proc_dev: PROD_ABN262: bypass card of abn262 Return: 0: return ok. -1:return fail.

4.3.8 read_status_now

Function name	read_status_now
Description	Read bypass status
Format:	
unsigned char read_status_now(unsigned char mode,unsigned char seg,unsigned char proc_dev) Input: 1. mode: 0x00 ignore	

seg: 1:segement 1. 2:segement 2. 3:segement 3. proc_dev: PROD_ABN262: bypass card of abn262 Return: 0:normal mode. 2:bypass mode

4.3.9 read_settint_wdt

Function name	read_setting_wdt
Description	Read watch dog timer setting
Format:	
unsigned char read_setting_wdt(unsigned char mode,unsigned char seg,unsigned char proc_dev) Input: 1. mode: 0x00 ignore	

2. seg: 1:segement 1. 2:segement 2. 3:segement 3. 3. proc_dev: PROD_ABN262: bypass card of abn262 Return: 0: ok. 1: fail. 0xff:device fail.

4.3.10 scenario_go

Function name	scenario_go
Description	Go ABN262 bypass module all functions automatically.
Format:	
unsigned char scenario_go(unsigned int rst[][DO_FUNCTION_NUM],unsigned char prod_type)	

Input: 1. rst: array of return code. 0:normal mode. 2:bypass mode. prod_type: PROD_ABN262: bypass card of abn262 DO_FUNCTION_NUM:0x06.(it has 6 functions to test) Return: 0:ok 1:fail.

4.3.11 bypass_proc_step

Function name	bypass_proc_step
Description	Run ABN262 bypass function
Format:	

unsigned char bypass_proc_step(unsigned char dowhat,unsigned char *rst,unsigned char prod_type,unsigned char para_var)

Input:

1. dowhat:

DO_SET_NORMAL: Do normal mode function

DO_SET_NONNORMAL: Do non_normal mode function

DO_SET_WDT_PERIOD: Set watch dog timer period.

DO_SET_WDT_DIS_BP: disable watch dog timer.

DO_SET_WDT_DIS_ARM: Clear the set of watchdog timer.

DO_SET_WDT_ARM: Do watch dog timer expire function.

2. *rst

array of return code.

0:normal mode.

2:bypass mode.

3. prod_type:

PROD_ABN262: bypass card of abn262

Return:

0:ok

1:fail.