# IIM 7100A User's manual

Version 3.0





## **COPYRIGHT NOTICE**

Copyright 2002 WIZnet Inc. All Rights Reserved

Technical Support E-mail: <u>support@wiznet.co.kr</u> Tel: 82-2-547-9709 Fax: 82-2-547-9711

For more information, visit our website at http://www.wiznet.co.kr



# **Table of Contents**

1.	Read	First	8
	1.1.	Product Contents	8
	1.2.	Product Specification	8
	1.2	2.1. IIM7100A Module	8
	1.2	2.2. IIM7100A Test board	8
2	Overv	/iew	9
3	Hardw	vare Specification	11
	3.1.	IIM7100A Module (Model number: IIM7100	A)11
	3.2.	IIM7100A Test board(model r	number:
	DKIIM	17100A)	12
	3.3.	Pin Assignment and Dimension	13
	3.4	Memory map	16
	3.5	Miscellaneous (IIM7100A Test Board)	17
	3.	5.1. Ethernet Interface	17
	3.5	5.2. Serial Interface	17
	3.	5.3. LED	18
4.	Install	lation	19
	4.1.	Hardware Connection	19
	4.1	1.1. Network connection	19
	4.1	1.2. Serial Connection	19
	4.1	1.3. Power Connection	20
	4.1	1.4. Entire System Connection	20
	4.2.	Software Installation	21
	4.2	2.1. Installation Process	21
	4.2	2.2. "IIM_CfgTool.exe" Features	
	4.2	2.3 "IIM_PCUtil.exe" Features	29
5	Test C	Operation	31
	5.1	Step 1	32
Haı	dwired I	Internet Connectivity Wizard (WIZnet, Inc.)	3



	5.1.1	Network configuration	32
	5.1.2	IIM7100A Environment Setup	
	5.1.3	Confirming Operation	
	5.2 St	ep 2	
	5.2.1	Network Configuration	
	5.2.2	IIM7100A Environment Setup	
	5.2.3	Confirming Operation	
	5.3 St	ер 3	
	5.3.1	Network Configuration	
	5.3.2	Confirming Operation	50
6	Firmware	Uploading	51
	6.1 W	hen using "IIM_CfgTool.exe" program.	
	6.2 W	hen doing serial upload	53
	7. Seria	l Configuration	
	Downloadir	ng procedure of configuration file	55



# Illustrations

[Image 2-1] IIM7100A Test board connected to serial device and PC .	9
[Image 3-1] IIM7100A Module Frontal View	11
[Image 3-2] IIM7100A Module Rear View	11
[Image 3-3] IIM7100A Test Board	12
[Image 3-4] IIM7100A Module Pin Assignment	13
[Image 3-5] IIM7100A Module Dimension	14
[Image 3-6] Serial Pin Assignment of IIM7100A Test Board	17
[Image 4-1] IIM7100A Test Board Network Connection	19
[Image 4-2] IIM7100A Test Board and Serial Device Connection	19
[Image 4-3] IIM7100A Test Board Power Connection	20
[Image 4-4] Network Configuration	20
[Image 4-5] Initialization window to install IIM7100A utility	21
[Image 4-6] Installation folder selection window(1)	22
[Image 4-7] Installation Folder selection window(2)	23
[Image 4-8] Installation start window	23
[Image 4-9] Installing window	24
[Image 4-10] Installation finish window	25
[Image 4-11] "IIM_CfgTool.exe" Initialization Window	26
[Image 4-12] "IIM_PCUtil.exe" Initialization Window	29
[Image 5-1] RS-232 based serial communication system	31
[Image 5-2] Design Step	31
[Image 5-3] Step 1 Network Configuration	32
[Image 5-4] "IIM_CfgTool.exe" Initialization Window	34
[Image 5-5] Board Results List after Running "Find Board"	35
[Image 5-6] Initial Setup Value of Located Boards	36
[Image 5-7] Board A Sample Setup	38
[Image 5-8] Board B Sample Setup	39
[Image 5-9] Ping test	40
Hardwired Internet Connectivity Wizard (WIZnet, Inc.)	5



[Image 5-10]"IIM_PCUtil.exe" Program Window41	
[Image 5-11] "IIM_PCUtil.exe" Connection Window	42
[Image 5-12] Step 1 Network Configuration	43
[Image 5-13] Step 2 Network Configuration	44
[Image 5-14]"IIM_Pcutil.exe" Program Window	46
[Image 5-15]"IIM_PCUtil.exe" Connection Window(Board B	in
"client mode")	47
[Image 5-16] Step 2 Network Configuration	49
[Image 5-17] Step 3 Network Configuration	50



## Tables

[Table 2-1] IIM7100A Module Specification	10
[Table 3-1] IIM7100A Module Pin Functions	13
[Table 3-2] Serial Pin Description	18



## 1. Read First

#### 1.1. Product Contents

-IIM7100A module

-IIM7100A test board

-User's manual

-IIM7100A test board schematic

- -Adaptor:5V,500mA
- -Serial cable

-LAN cable (cross over cable)

-CD

## 1.2. Product Specification

## 1.2.1. IIM7100A Module

-Processor: 8bit MCU and 32K Flash (64K expandable)
-Memory: 32K Flash (inside MCU), 32K SRAM
-Interface: 2x12 2mm TTL
-Protocol: TCP, UDP, IP, ARP, ICMP, Ethernet MAC
-Power: 3.3V, 150mA

## 1.2.2. IIM7100A Test board

Interface:DB9(RS-232), RJ-45 (transformer embedded)



## 2 Overview

IIM7100A is a gateway module that converts RS-232 protocol into TCP/IP protocol. It enables remote gauging, managing and control of a device through the network based on Ethernet and TCP/IP by connecting to the existing equipment with RS-232 serial interface. In other words, IIM7100A is a protocol converter that transmits the data sent by serial equipment as TCP/IP data type and converts back the TCP/IP data received through the network into serial data to transmit back to the equipment.



[Image 2-1] IIM7100A Test board connected to serial device and PC

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



C itegory	Specification		
Protocol	TCP, UDP, IP, ARP, ICMP, Ethernet MAC		
Network interface	10/100 Base-T Ethernet (Auto detection)		
Serial port	1 RS-232 port (3.3V LVTTL)		
CPU	Atmel T89C51RC2-RLTIL		
	(8bit MCU and 32K Flash)		
Serial line format	8-N-1, 8-O-1, 8-E-1, 7-O-1, 7-E-1		
Serial flow control	None, XON/XOFF, CTS/RTS		
Serial signal	TXD, RXD, RTS, CTS, DTR, DSR, GND		
Software	Remote download and configuration possible		
Transmission speed	1200bps ~ 115Kbps		
Memory	32K Flash (inside MCU), 32K SRAM		
Temperature	10'C ~ 80'C (Operating), -40~85'C (Storage)		
Humidity	10~90%		
Power	3.3V, 150mA		
Connector type	2x12 2mm Pin header array		
Size	50mm x 30mm x 8.85mm		

[Table 2-1] IIM7100A Module Specification

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 3 Hardware Specification

## 3.1. IIM7100A Module (Model number: IIM7100A)



[Image 3-1] IIM7100A Module Frontal View



[Image 3-2] IIM7100A Module Rear View

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



# 3.2. IIM7100A Test board(model number: DKIIM7100A)



[Image 3-3] IIM7100A Test Board





## 3.3. Pin Assignment and Dimension



[lmage	3-41	<b>IIM7100A</b>	Module	Pin	Assignment
Lunaão	• -1		moaaro		,

PIN NAME	Functions	I/O	
RESET	Reset (Active High)	Input	
TXD	RS-232 Data Output	Output	
RTS	RS-232 Request To Send	Output	Optional
DTR	RS-232 Data Terminal Ready	Output	Optional
RXD	RS-232 Data Input	Input	
CTS	RS-232 Clear To Send	Input	Optional
DSR	RS-232 Data Set Ready	Input	Optional
TPRX-	Ethernet Differential Input-	Input	
TPRX+	Ethernet Differential Input+	Input	
TPTX-	Ethernet Differential Output-	Output	
TPTX+	Ethernet Differential Output+	Output	
/LINK_LED	Link LED	Output	
/10_LED	10 Mbps LED	Output	
/100_LED	100 Mbps LED	Output	
/COL_LED	Collision LED	Output	
Status	High: not connected, Low:	Output	

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)

		W	<u>IZnet</u>
	connected		
VCC	3.3V Power	Power	

#### [Table 3-1] IIM7100A Module Pin Functions

- All signal level is 3.3V LVTTL

- A high on RESET pin about minimum 1.2 usec must be applied for proper operation.





[Image 3-5] IIM7100A Module Dimension

Symbol	Dimer sion (mm)		
А	45.7		

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



В	50.0
С	4.0
D	2.0
Е	30.0
F	3.5
G	1.6
Н	1.9
Ι	3.5

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)

## 3.4 Memory map



## Memory Map of IIM7100A



Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 3.5 Miscellaneous (IIM7100A Test Board)

## 3.5.1. Ethernet Interface

- -. TCP/IP and Ethernet MAC : W3100A, Hardwired TCP/IP Chip
- -. Ethernet Physical Layer : RTL8201 (RealTek)
- -. Connector : RJ-45 with transformer

## 3.5.2. Serial Interface



#### [Image 3-6] Serial Pin Assignment of IIM7100A Test Board

PIN Number	Signal	Descrip ion
1	NC	Not Connected
2	RxD	Receive Data
3	TxD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	NC	Not Connected

#### [Table 3-2] Serial Pin Description

- RD, TD, GND : This is all you need if the device don't use hardware handshaking.

- RD, TD, GND, RTS, CTS : If the device use hardware Hardwired Internet Connectivity Wizard (WIZnet, Inc.) 17



#### handshaking



[Image 3-7] Serial Cable

#### 3.5.3. LED

- 1 Power LED: displays power status of IIM7100A
- 2 Link LED: indicates network link is established
- ③ 10 LED: indicates network speed is 10M bps
- ④ 100 LED: indicates network speed is 100M bps
- ⑤ Collision LED: indicates a packet transmitted from the Ethernet controller to the network has collided with another packet



## 4. Installation

#### 4.1. Hardware Connection

#### 4.1.1. Network connection

Connect the IIM7100A test board RJ-45 connector to the Ethernet hub.



[Image 4-1] IIM7100A Test Board Network Connection

#### 4.1.2. Serial Connection

Connect the IIM7100A test board DB9 jack and serial device with RS-232 serial line.





Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 4.1.3. Power Connection

Connect the 5V (500mA) DC power adaptor to the IIM7100A test board. For reference, the power used for IIM7100A is 3.3V.



[Image 4-3] IIM7100A Test Board Power Connection



## 4.1.4. Entire System Connection





## 4.2. Software Installation

#### 4.2.1. Installation Process

The two types of software required to test the IIM7100A are "IIM\_CfgTool.exe" and "IIM\_PCUtil.exe". "IIM\_CfgTool.exe" is the environment setting and management program for the IIM7100A that comes with the IIM7100A Test Board. Another program that comes with the IIM7100A test board is "IIM\_PCUtil.exe", a PC program that monitors and verifies the operation of IIM7100A.

Install IIM7100A.exe on the PC. The installation method of "IIM\_CfgTool.exe" and "IIM\_PCUtil.exe" is described below.



[Image 4-5] Initialization window to install IIM7100A utility

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



This setup program will create a new folder, IIM7100A, two types of program will be installed, called "IIM\_CfgTool.exe" and "IIM\_PCUtil.exe"

覺 Choose Destination L	ocation	×
	Setup will install IIM7100 Applications in the following folder. To install into a different folder, click Browse, and select another folder. You can choose not to install IIM7100 Applications by clicking Cancel to exit Setup.	I
	Destination Folder C:\Program Files\IIM7100 Browse	
	< <u>B</u> ack <u>Next</u> > Cancel	

[Image 4-6] Installation folder selection window(1)

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



[Image 4-7] Installation Folder selection window(2)



[Image 4-8] Installation start window

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)





[Image 4-9] Installing window

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



[Image 4-10] Installation finish window

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 4.2.2. "IIM\_CfgTool.exe" Features



#### [Image 4-11] "IIM\_CfgTool.exe" Initialization Window

1 Board List

Display all IIM7100A in the subnet as MAC address when click "Search" button.

② Direct configuration

When input IP and click 'search', if IIM7100A compatible with the IP is, it appears as Mac address 'Board List'.

 $\ensuremath{\textcircled{}}$  3 Send condition

Keep empty for no send condition or designate condition of serial to Ethernet

- A. Time: Every designated time, serial data converted to Ethernet.
- B. Size: Every designated data size, serial data converted to Ethernet.



C. Char: Every designated character, serial

data converted to Ethernet..(It's available only Hex.)

④ Version

Represent Firmware version

- 5 Debug Mode
  - If this mode is checked, you can monitor the status and socket message of IIM7100A(listen OK, connect fail etc.) through terminal. If not, it's not need to check.

You can download or configure IIM7100A using serial when Debug mode is checked. (Firmware Ver.2.09)

6 DHCP

Set this option to use DHCP mode. First check 'DHCP' mode and push 'set up' button and the results are displayed as MAC address on the board list.

(This takes some time to acquire IP address from DHCP server)

When the results on the board list are selected, IP address, Subnet mask and Gateway are acquired and displayed from DHCP server.

- ⑦ Network Configuration
  - Network information of selected IIM7100A Test Board is displayed. The board's network information can be inserted and revised here.
- 8 Serial Configuration

Serial information of selected IIM7100A Test Board is displayed. The board's serial information can be inserted and revised here.

- 9 Mode Selection
  - A. Not check "Use Client mode only"
    - Set the IIM7100A to operate in the server mode, listens in the specified Listen Port and waits for the client connection.

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



When the data is sent from serial device,

if it's not established connection of socket, try to connect server IP and port, send the data.

B. Check "Use Client mode only"

Set the IIM7100A to operate in the client mode and attempts to connect to the specified IP address and port of the server.

10 Listen port

Set the IIM7100A to operate in the server mode, listens in the specified 'Listen Port' and waits for the client connection.

① Server IP and server port

When tick in (9) 'use Client mode only' and then IIM7100A works as a 'Client mode', you should set the 'Server IP'.

IIM7100A attempts to connect this IP address.

12 Close condition

After established connection of socket, if there is not data transmission within input time in 'Close condition', the connection is closed automatically.

③ Search

Search for operating IIM7100A currently connected to the network, and the results are displayed as MAC address on the board list.

14 Set up

Change the configuration of selected IIM7100A.

When click this button, IIM7100A re-initialize with changed value.

(15) Upload

Upload the firmware through the network.

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 4.2.3 "IIM\_PCUtil.exe" Features

🚵 IIM7100 P	PC Utility	/					
PC Conr	nectior	ı		9	itatus Window—	 	
_● Ser	ial Cor	nection	]				<u> </u>
Р	ort	COM1	•				
Spe	eed	9600					
Pa	rity [	None					
Data	Bit	8					
Stop	Bit	1					
	,						
			Open				
-O Ethe	ernet (	Connect	ion				
Com		la.	.011				
-Seve	er mou + E						
Por	τΙ		Listen				
Clier	nt mod	le					
IP							
Por	+ -		Connect				
101	٠ <u>ا</u>		Connecc				<b>T</b>
					•		
						Clo	ose

#### [Image 4-12] "IIM\_PCUtil.exe" Initialization Window

① Serial Connection

Setting PC's serial port to connect IIM7100A using RS232 port

- ② Ethernet Connection
  - A. Server Mode

When IIM7100A operates in client mode, setting this port number and click "listen". Then "IIM\_PCUtil.exe" listen with PC's IP and this port number. Therefore IIM7100A can connect to "IIM\_PCUtil.exe".

B. Client Mode

When IIM7100A operates in server mode, setting theHardwired Internet Connectivity Wizard (WIZnet, Inc.)29



IIM7100A's IP address and IIM7100A's listen port number and click "connect" Then "IIM\_PCUtil.exe" will connect to IIM7100A.

③ Status Window

Display and transfer data, if IIM7100A.is connected.

 $\textcircled{4} \quad \textbf{Close}$ 

Close the "IIM\_PCUtil.exe" program.

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 5 Test Operation

[Image 5-1] shows configuration of RS-232 based serial communication



system.

#### [Image 5-1] RS-232 based serial communication system

System development method for data transmission and reception with serial equipment through the Ethernet instead of serial communication, in other words the design step can be categorized into 3 steps as described below.





32

## 5.1 Step 1

## 5.1.1 Network configuration

[Image 5-3] shows that information can be transferred between the computer and serial device through the network with two IIM7100A modules with no changes made to the existing serial communication system.



#### [Image 5-3] Step 1 Network Configuration

- ① Connect the computer and IIM7100A test board ("Board A") by using RS-232 as shown in [Image 5-3].
- ② Connect the serial device to a IIM7100A test board ("Board B") also using RS-232.
- ③ Connect Board A and Board B to the hub.
- ④ Connect the computer to the hub (required for environment setting

of the IIM7100A module)



 Set the switch to ON position after connecting power to each Board A and Board B.

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



#### 5.1.2 IIM7100A Environment Setup

① Run "IIM\_CfgTool.exe".

💑 IIM7100 CfgTool Version 2,8		
Board List	Version	Serial Configuration
	🗆 Debug mode 🗌 DHCP mode	Speed 9600 💌
	Network Configuration	Parity None 💌
	IP 0 0 0 0	Data Bit 8
	Subnet 0 0 0 0	Stop Bit 1
	Gateway 0 0 0 0	Flow Ctrl None 💌
Direct Configuration	Channel Configuration Use Client mode only Listen Port Server IP Close Condition Idle Time 0 (* 10ms)	0 Port 0
	Search Set up	Upload Close

## [Image 5-4] "IIM\_CfgTool.exe" Initialization Window

- ② Click "Search" button.
- ③ If two boards are properly connected to the network, "Searching completed" message and MAC address of Board A and Board B will be displayed as shown in [Image 5-5].

	VIZnet
Board List       Version       2.9       Serial Configuration         00:08:DC:10:0E:2C       □ Debug mode       □ DHCP mode       Speed       9600         00:08:DC:10:04:50       □ Debug mode       □ DHCP mode       Parity       None         IP       □       □       □       □       Data Bit       8	
IIM_CfgTool     x     ubnet     0     0     0     stop Bit     1       Searching completed,     appol Configuration     appol Configuration	V V
Imme         0 (*10ms)           Size         0 (1,1024)	
Close Condition Char 00 (Hex) Close Condition Idle Time 0 (*10ms) Search Set up Upload	Close

#### [Image 5-5] Board Results List after Running "Find Board"

④ If one of the MAC addresses displayed on the "Board List" is selected, the current setup values of the selected board will be displayed.

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)

		(WIZ <sub>1</sub>	1et
🍰 IIM7100 CfgTool Version 2,8 👘			×
Board List	Version 2.8	Serial Configuration	
00:08:DC:10:0E:2C	🔽 Debug mode 🛛 🗖 DHCP mode	Speed 57600 💌	
	Network Configuration	Parity None 💌	
	IP 0 0 0	Data Bit 8	
	Subnet 0 0 0 0	Stop Bit 1	
	Gateway 0 0 0 0	Flow Ctrl None 💌	
Direct Configuration —	Channel Configuration		
	🗖 use Client mode only		
Send Condition	Listen Port 0		
Time 0 (*10ms)	Server IP 0 0 0	0 Port 0	
Size 0 (1~1024)	Close Condition		
Char 00 (Hex)	Idle Time 0 (* 10ms)		
()	Search Set up	Upload Close	

#### [Image 5-6] Initial Setup Value of Located Boards

(5) To modify the setup values, press "Set up" after designating the IP address, etc., then the inserted values will be setup at the board and message box showing "Setting up completed!" will be displayed.

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## [Example] Setting Board A and Board B

## (1) Setting Board A (Server)

1) Network Configuration

Insert following values in the board network configuration

IP Address	192.168.0.10
Subnet	255.255.255.0
Gateway	192.168.0.1

2) Serial Configuration

Select following values in the board serial configuration

(These values is example, so you should adjust Speed and Parity according to your serial devices).

Speed	57600
Parity	None
Data bit	8
Stop bit	1
Flow	None

**3)** Channel configuration

Select server mode, that is, not check 'use Client mode only', and set listen port at 3000 and Click "Set up" button.

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



💑 IIM7100 CfgTool Version 2,8		>
Board List	Version 2.8	Serial Configuration
(00:08:DC:10:0E:2C) (00:08:DC:10:04:50)	☑ Debug mode	Speed 57600
	Network Configuration	Parity None 💌
	IP 192 168 0 10	Data Bit 8
	Subnet 255 255 255 0	Stop Bit 1
J	Gateway 192 168 0 1	Flow Ctrl None
Direct Configuration	Channel Configuration	
- Send Condition	Listen Port 3000	
Time 0 (*10ms)	Server IP 0 0 0	D Port 0
Size 0 (1~1024)	Close Condition	
Char 00 (Hex)	Idle Time 0 (* 10ms)	
	Search Set up	Upload Close

[Image 5-7] Board A Sample Setup

## (2) Setting Board B (Client)

1) Network Configuration

Insert following values in the board network configuration

IP Address	192.168.0.11
Subnet	255.255.255.0
Gateway	192.168.0.1

2) Serial Configuration

Select following values in the board serial configuration.

(These values is example, so you should adjust Speed and Parity according to your serial devices).

Speed	57600
Parity	None
Data bit	8
Stop bit	1
Flow	None

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



#### 3) Channel configuration

Select client mode, that is, check 'use Client mode only', and insert Board A's IP address and port number. Click "Set up" button.

💑 IIM7100 CfgTool Version 2,8		
Board List	Version 2.9	
(00:08:DC:10:0E:2C) (00:08:DC:10:04:50)	✓ Debug mode     □ DHCP mode     Speed     57600	-
	Network Configuration Parity None	-
	IP 192 168 0 11 Data Bit 8	-
	Subnet 255 255 0 Stop Bit 1	•
	Gateway 192 168 0 1 Flow Ctrl None	•
Direct Configuration	Channel Configuration	
Send Condition	Listen Port 0	
Time 0 (*10ms)	Server IP 192 168 0 10 Port 3000	
Size 0 (1~1024)	Close Condition	
Char 00 (Hex)	Idle Time (*10ms)	
	Search Set up Upload Cl	ose

[Image 5-8] Board B Sample Setup

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



6 Conduct ping test on the computer to see

whether Board A and Board B are properly connected to the network.

◎명령 프롬프트	
Microsoft Windows 2000 [Version 5.00.2195] (C) Copyright 1985–2000 Microsoft Corp.	<u>^</u>
C:\>ping 192.168.0.10	
Pinging 192.168.0.10 with 32 bytes of data:	
Reply from 192.168.0.10: bytes=32 time=10ms TTL=64 Reply from 192.168.0.10: bytes=32 time<10ms TTL=128 Reply from 192.168.0.10: bytes=32 time<10ms TTL=128 Reply from 192.168.0.10: bytes=32 time<10ms TTL=128	
Ping statistics for 192.168.0.10: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 10ms, Average = 2ms	
C:\>ping 192.168.0.11	
Pinging 192.168.0.11 with 32 bytes of data:	
Reply from 192.168.0.11: bytes=32 time<10ms TTL=64 Reply from 192.168.0.11: bytes=32 time<10ms TTL=64 Reply from 192.168.0.11: bytes=32 time<10ms TTL=64 Reply from 192.168.0.11: bytes=32 time<10ms TTL=64	
Ping statistics for 192.168.0.11: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 0ms, Average = 0ms	
C:\>	
	-

[Image 5-9] Ping test

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 5.1.3 Confirming Operation

1) When using "IIM\_PCUtil.exe"

- ① Disconnect the UTP cable for IIM7100A environment setup.
- ② Run "IIM\_PCUtil.exe" program on the computer. Program window will be displayed as shown as [Image 5-10].
- ③ Select "Serial Connection" as shown in [Image 5-10].
- ④ Set the values of the tabs of the "Serial Part" menu identical to the serial setup value as set by "IIM\_CfgTool.exe" and click "Open" button.

💑 IIM7100 PC Utility	
PC Connection	- Status Window
🕞 Serial Connection	
Port COM1	
Speed 57600	
Barity None	
Stop Bit  1	
Open	
C Ethernet Connection	
Sever mode	
Port Listen	
Client mode	
IP	
Port Connect	
	Close

[Image 5-10]"IIM\_PCUtil.exe" Program Window

⑤ Press reset button of each Board A and Board B and wait for about 2~3 seconds (time required for initialization)



⑥ Text will be displayed on the "Status Window" as shown in [Image 5-11].

💑 IIM7100 PC Utility		
PC Connection Port COM1 Speed 57600 Parity None Data Bit 8 Stop Bit 1 Close	Status Window ** COM1 opened ** IIM7100 Ver. 02.09 > broad socket : OK listen : ok	
C Ethernet Connection Sever mode Port Listen Client mode IP Port Connect	व	×.
		Close

#### [Image 5-11] "IIM\_PCUtil.exe" Connection Window

- Transmit data from the serial device to PC. For example, Scan some bar codes with the scanner which is connected to Board B.
- ⑧ Verify whether the data transmitted by the serial device is accurately displayed ion the status window as shown in [Image 5-11].

2) When using existing PC program

Run the existing program instead of "IIM\_PCUtil.exe" program. The remaining process is identical to 1).



## 5.2 Step 2

## 5.2.1 Network Configuration

[Image 5-12] shows the change of existing PC application program to Ethernet communication program after removal of Board A from Step 1.



Serial

[Image 5-12] Step 1 Network Configuration

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



#### [Image 5-13] Step 2 Network Configuration

- ① Remove Board A from the computer as shown in [Image 5-13].
- ② Connect the serial device to Board B by using RS-232.
- ③ Connect Board B to the hub.
- ④ Connect the computer to the hub.
- **(5)** Connect power to Board B.

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



#### 5.2.2 IIM7100A Environment Setup

In this Step 2 test, Board B will be connected to PC(the IP of author's PC that will work this time as a server is here 192.168.0.45). And the board B was set in "client mode" as the below. So, you must change Board B' server IP into the IP of the system where you are working(In order words, you should set the "server IP" part with your PC's IP or your system's IP where IIM7100A\_Config Tool and IIM7100A\_PCUtil are running. In the below, Author's IP of PC where the two programs are running is 192.168.0.45).

💑 IIM7100 CfgTool Version 2,8		
Board List	Version 2,9	Serial Configuration
4 00:08:DC:10:04:50	Debug mode DHCP mode	Speed 57600 💌
	- Network Configuration	Parity None 💌
	IP 192 168 0 11	Data Bit 🛛 🖉
	Subnet 255 255 255 0	Stop Bit 1
	Gateway 192 168 0 1	Flow Ctrl None 🔻
Direct Configuration	Channel Configuration Cuse Client mode only Listen Port 0 Server IP 192 168 0 4 Close Condition Idle Time 0 (*10ms)	5 Port 3000
	Search Set up	Upload Close

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 5.2.3 Confirming Operation

- 1) When using "IIM\_PCUtil.exe"
  - ① Run the "IIM\_PCUtil.exe" program on the computer.
  - ② Select "Ethernet Connection" and write port number shown in [Image 5-14].

💑 IIM7100 PC Utility		
PC Connection	_ Status Window	
© Serial Connection		<u> </u>
Port COM1	** Listen socket **	
Speed 9600 -		
Parity None 💌		
Data Bit 🛛 🖉		
Stop Bit 1		
Open		
🕞 Ethernet Connection ————		
Sever mode		
Port 3000 Close		
- Client mode		
Port Connect		
	र	
	c	lose

#### [Image 5-14]"IIM\_Pcutil.exe" Program Window

③ As shown in [Image 5-14], set the port number identical to the IP of Board B(client) in the server mode part and click "Listen" button.

<u>Note</u> : If Board B was set as "server mode", which is different from the previous setting, set the write server(then, Board B)'s IP address in "IP" text window of Client mode part and server's port number and click "Connect" button of client mode part.

Press reset button of Board B and wait for about 2~3 seconds
 Hardwired Internet Connectivity Wizard (WIZnet, Inc.)
 46



(time required for initialization).

- (5) Text will be displayed on the "Status Window" as shown in [Image 5-16].
- 6 Send data from the serial device.
- ⑦ Verify whether data sent by the serial device is accurately displayed in the Status Window as shown in [Image 5-15] or [Image 5-16].

💑 IIM7100 PC Utility		_ 🗆 X
PC Connection Port COM1 Speed 9600 Parity None Data Bit 8 Stop Bit 1	Status Window ** Listen socket ** ** Accept socket **	×
Open • Ethernet Connection Sever mode Port 3000 Close		
Client mode	त	V
		Close

## [Image 5-15]"IIM\_PCUtil.exe" Connection Window(Board B in "client mode")



💑 IIM7100 PC Utility		_O×
PC Connection	- Status Window	
© Serial Connection		A
Port COM1	** Connect socket **	
Speed 9600 🔽		
Parity None		
Data Bit 🛛 🖉		
Stop Bit 1		
Open		
• Ethernet Connection		
-Sever mode		
Port Listen		
Client mode		
IP 192.168.0.11		
Port 3000 Close		
		<b>V</b>
		F
		Close

[Image 5-16]"IIM\_PCUtil.exe" Connection Window(Board B in "Server mode")

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 5.3 Step 3

#### 5.3.1 Network Configuration

[Image 5-18] shows that information can be transferred between the computer and device ultimately through the Ethernet network by removing Board B in Step 2 and embedding the module on the existing RS232 serial device.



Serial









#### [Image 5-17] Step 3 Network Configuration

- Remove Board B from the serial device connection and embed it on-board to the serial device as shown in [Image 5-18].
- ② Connect computer to the hub.
- ③ Connect the new serial device with Board B to the hub.

#### 5.3.2 Confirming Operation

The process is identical to Section 5.2.3 with the exception that IIM7100A test board is installed onto the serial device (refer to Section 5.2.2). The purpose of this step is to describe a new product integrating the serial device and IIM7100A Module, and the executing method is identical to Section 5.2.2.

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



## 6 Firmware Uploading

## 6.1 When using "IIM\_CfgTool.exe" program

① Run IIM\_CfgTool.exe and click "Search" button.

② If the board is properly connected to the network, "Searching completed" message and MAC address will be displayed on the "Board List" as shown in [Image 6-1].

💑 IIM7100 CfgTool Version 2,8		_ 🗆 X
Board List	Version 2.9	Serial Configuration
4 00:08:DC:10:0E:2C	🔽 Debug mode 🛛 🗖 DHCP mode	Speed 57600 💌
	Network Configuration	Parity None 💌
	IP 192 168 0 10	Data Bit 8
	Subnet 255 255 255 0	Stop Bit 1
	Gateway 192 168 0 1	Flow Ctrl None 💌
Direct Configuration	Channel Configuration	
Send Condition	Listen Port 3000	
Time 0 (*10ms)	Server IP 0 0 0	0 Port 0
Size 0 (1~1024)	Close Condition	
Char 00 (Hex)	Idle Time 0 (* 10ms)	
	Search Set up	Upload Close

[Image 6-1] Board Search Window

③ Select board for upload and click "Upload" button.

Caution : Before upload through Ethernet, you should set the network information of IIM7100A first by IIM\_CfgTool program as shown in [Image 6-1]



④ When the window as shown in [Image 6-2] is displayed, select file for upload and click "Open" button

열기				? ×
찾는 위치(!):	🔁 Test 💌	🗢 🔁	💣 🎟 -	
App0209, bin				
파일 이름( <u>N</u> ):	App0209, bin		열기((	2)
파일 형식( <u>T</u> ):	Binary Format, Intel Hexa Format (*,bin)*,h	€ ▼	취소	

#### [Image 6-2] Open dialog box for uploading

Caution : Do not upload any other file except IIM7100A application firmware file.

Firmware uploading	×
Loading complete. Push Start	
Start	

[Image 6-3] Firmware uploading window

(5) A dialogue box titled "Firmware uploading" will be displayed as shown in [Image 6-3]. Press "Start" button to start uploading the firmware file to flash memory of IIM7100A module.

6 When uploading is complete, a message box with "Uploading Success" will be displayed as shown in [Image 6-4].



IIM_CfgT	ool	×
⚠	Uploading Succe	ss!
[	확인	

#### [Image 6-4] Uploading Complete

## 6.2 When doing serial upload

If current firmware version is higher than ver.2.09, you should check Debug mode.

- ① Connect IIM serial port and computer serial port by using the serial cable.
- 2 Run terminal emulator such as the hyper terminal
- ③ Set JP4 of IIM7100A test board to [CONFIG] and switch on the IIM7100A power
- ④ Press 'c' on the keyboard to start the firmware upgrade mode.
- 5 Enter file size (bin file size) and press enter key.
- 6 After selecting text file send, select bin file for transmission to transmit the file, update the firmware and complete the firmware update, then a new firmware will be running.

Caution

-. Be careful to upload firmware as text file type in Hyper Terminal. (Transfer > Send Text File)

Hardwired Internet Connectivity Wizard (WIZnet, Inc.)



-. Don't turn off or reset the DKIIM7100A while

firmware uploading is finished. You should wait and see until "OK" message is displayed on the screen.

🗞 Serial - 하이퍼터미널	
파일(E) 편집(E) 보기(⊻) 호출(C) 전송(I) 도움말(H)	
	1_
IIM7100c	
File size >> 17785	
Transfer File !	
연결 0:00:29 ANSIW 57600 8-N-1 SCROLL CAPS NUM 1캡 에코	

[Image 6-5] Hyper Terminal Window

## 7. Serial Configuration

You can setup IIM7100A's configuration easily by sending a text configuration file through serial.

The contents of configuration file have following meanings.

(File size is 88 bytes. This is for firmware v2.8)

AA : Reserved 0008DC100048 : MAC address 01 : Mode (Server mode : 01, Client mode : 00) D3AB890A : IP address FFFFF00 : Subnet mask Hardwired Internet Connectivity Wizard (WIZnet, Inc.) 54



D3AB8901 : Gateway address

0000 : Port number (Client)

00000000 : Server IP address

0000 : Port number (Server)

FE : Serial speed (bps)

(FF:115200, FE:57600, FD:38400, FA:19200, F4:9600, E8:4800,

D0:2400, A0:1200)

08 : Serial data size (08: 8 bit), (07: 7 bit)

00 : Parity (00: No), (01: Odd), (02: Even)

01 : Stop bit

00 : Flow control (00: None), (01: XON/XOFF), (02: CTS/RTS)

00 : Delimiter char

0000 : Delimiter size

0000 : Delimiter time

0000 : Delimiter idle time

00 : Debug code (00: ON), (01: OFF)

02 : Software major version

08 : Software minor version

00 : DHCP option (00: DHCP OFF, 01:DHCP ON)

Downloading procedure of configuration file

a. Connect between IIM7100A and Test PC with serial cable

b. Run terminal emulator program (e.g. Hyper terminal) on Test PC (Speed: 57600 bps)

c. Set JP4 of IIM7100A test board to [CONFIG] and switch on the IIM7100A power

d. Press 's' on the keyboard.

d. "Transfer Config File!" message will be shown. Then, transfer prepared configuration file by ASCII (text) mode.