PORTBASE®

Serial-to-Ethernet Device Server

User Guide Version 1.1

Device Networking Experts
SystemBase
Since 1987

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Contents

1 Overview

Portbase-3010/3020/3040/3080/3160/3161 series (Hereinafter referred as Portbase) is a multi-functional device server which connects RS232/422/485 devices (serial devices) such as printers, modems and other peripheral devices to the network.

Main Features

- Portbase transforms RS232/422/485 signals to Ethernet signals, and transmits them to the remote site.
- With virtual COM port driver, existing applications can be used with no changes.
- With the SNMP client function embedded, integrated device management is possible.
- With the Portview, program designed especially for Portbase, status monitoring and error detection can be done easy and quick.

Applicable Fields

- Monitoring and controlling factory devices such as F/A, PLC and System Monitoring
- Interconnection of POS(Point of Sale)-related devices (bar-code reader, printer, cash register, credit card authorization terminal, etc.)
- Data collection and distribution between host computer and serial devices
- Remote monitoring fields such as gas meter inspection and tap water usage inspection
- Controlling machineries and doorways used in Building Automation System(BAS)
- Remote system connection in kiosk, ATM, etc.
- Medical and inspection equipment control
- Monitoring, controlling and data collection/distribution of any serial devices

1. Package Components

The Portbase package consists of

- Portbase unit
- Power cable(for 3010F/3020F/3040/3080/3160/3161) or DC adapter(for 3010/3020)
- Direct LAN Cable
- Portbase CD including software and documents

  Redirector: It is a network COM port driver which enables serial ports of Portbase to operate in the same way as the local COM port of the PC.
  (Refer to Chapter 4. COM Port Redirector for details on installing and using the redirector)

  Portview: It is a program that enables you to monitor the communication status of Portbase in real time. Portview displays the data input/output through each serial port as well as the communication status of Portbase from remote PCs under the Windows environment.
  (Refer to Chapter 5. Management with Portview for details on installing and using the program)

- Portbase CD structure

ACROBAT	Acrobat Reader for reading user guides
Manual	Portbase 2xxx/3xxx User Guide in English and Korean
Portview	Portbase management software files
Redirector_2K	COM Port Redirector for Windows 2000/XP
Redirector_98	COM Port Redirector for Windows 98/ME
SNMP	Portbase MIB information for SNMP
Setup.exe	Autorun file for S/W installation and manuals

2. Product Description

- 3010 Models

Front

PWR	Red light when power is on
RDY	Green light when firmware is ready (blinks with errors)
SRL	Green light blinks when serial data is transmitted

Rear

PWR	Socket for DC 5V power supply.
LAN	10/100 Mbps Ethernet RJ-45 (Secondary LAN Port)
WAN	10/100 Mbps Ethernet RJ-45 (Primary LAN Port)
Reset	Hardware reset button (at the bottom of the device)
COM	DB-9 (Female) serial port for RS232/422/485

- 3010M Models

Front

PWR	Red light when power is on
RDY	Green light when firmware is ready (blinks with errors)
SRL	Modem Hook, Modem Data Tx/Rx

Rear

PWR	Socket for DC 5V power supply
PWR SW	Power Switch
Phone/Line	Phone port /RJ-11 PSTN port
WAN	10/100 Mbps Ethernet RJ-45 (Primary LAN Port)
Reset	Hardware reset button (at the bottom of the device)
COM 1	RJ-45 serial port for RS232

- 3020 Models

Front

PWR	Red light when power is on
RDY	Green light when firmware is ready (blinks with errors)
SRL	Green light blinking when serial data is transmitted

Rear

PWR	Socket for DC 5V power supply
LAN	10/100 Mbps Ethernet RJ-45 (Secondary LAN Port)
WAN	10/100 Mbps Ethernet RJ-45 (Primary LAN Port)
Reset	Hardware reset button (at the bottom of the device)
COM 1, 2	RJ-45 serial port for RS232/422/485

- 3010F Models

Front

PWR	Red light when power is on
RDY	Green light when firmware is ready (blinks with errors)
WAN	Green light when 10/100Mbps network connection is detected.
LAN	Green light when 10/100Mbps network connection is detected.
RxD	Red light blinking when serial data is received.
TxD	Green light blinking when serial data is transmitted.
COM	DB-9 (Female) serial port for RS232/422/485

Rear

PWR	Socket for 100-220v AC, 50-60Hz power supply
LAN	10/100 Mbps Ethernet RJ-45 (Secondary LAN Port)
WAN	10/100 Mbps Ethernet RJ-45 (Primary LAN Port)
Reset	Hardware reset button (at the bottom of the device)

- 3020F Models

Front

PWR	Red light when power is on
RDY	Green light when firmware is ready (blinks with errors)
WAN	Green light when 10/100Mbps network connection is detected.
LAN	Green light when 10/100Mbps network connection is detected.
RxD	Red light blinking when serial data is received.
TxD	Green light blinking when serial data is transmitted.
COM 1,2	RJ-45 serial port for RS232/422/485

Rear

PWR	Socket for DC 5V power supply
LAN	10/100 Mbps Ethernet RJ-45 (Secondary LAN Port)
WAN	10/100 Mbps Ethernet RJ-45 (Primary LAN Port)
Reset	Hardware reset button (at the bottom of the device)

- 3040 Models

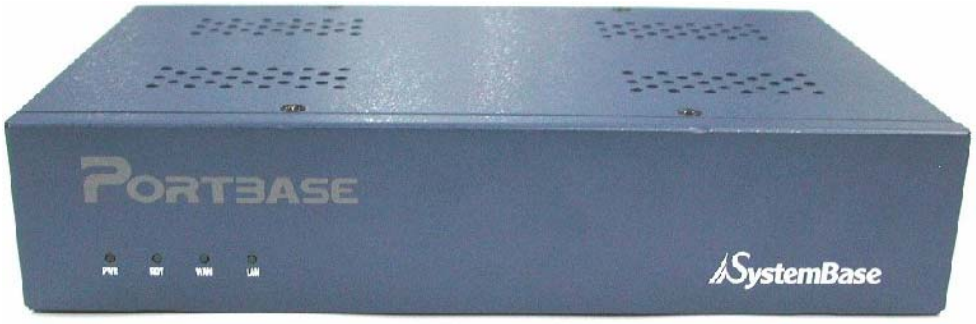
Front

PWR	Red light when power is on
RDY	Green light when firmware is ready (blinks with errors)
WAN	Green light when 10/100Mbps network connection is detected.
LAN	Green light when 10/100Mbps network connection is detected.

Rear

PWR	Socket for 100-220V AC, 50-60Hz power supply
WAN	10/100 Mbps Ethernet RJ-45 (Primary LAN Port)
LAN	10/100 Mbps Ethernet RJ-45 (Secondary LAN Port)
Reset	Hardware reset button
COM	Console serial port for environment setting
Serial	RJ-45 socket for serial ports (RS232/422/485)

- 3080 Models



Front

PWR	Red light when power is on
RDY	Green light when firmware is ready (blinks with errors)
WAN	Green light when 10/100Mbps network connection is detected.
LAN	Green light when 10/100Mbps network connection is detected.

Rear

PWR	Socket for 100-220V AC, 50-60Hz power supply
WAN	10/100 Mbps Ethernet RJ-45 (Primary LAN Port)
LAN	10/100 Mbps Ethernet RJ-45 (Secondary LAN Port)
Reset	Hardware reset button
COM	Console serial port for environment setting
Serial	RJ-45 socket for serial ports (RS232/422/485)

- 3160 Models (Expansion type)

Front

PWR	Red light when power is on
RDY	Green light when firmware is ready (blinks with errors)
WAN	Green light when 10/100Mbps network connection is detected.
LAN	Green light when 10/100Mbps network connection is detected.

Rear

PWR	Socket for 100-220V AC, 50-60Hz power supply
WAN	10/100 Mbps Ethernet RJ-45 (Primary LAN Port)
LAN	10/100 Mbps Ethernet RJ-45 (Secondary LAN Port)
Reset	Hardware reset button
COM	Console serial port for environment setting
Serial	4-port RJ-45 socket for serial ports (RS232/422/485)

- 3161 Models (Fixed type)

Front

PWR	Red light when power is on
RDY	Green light when firmware is ready (blinks with errors)
WAN	Green light when 10/100Mbps network connection is detected.
LAN	Green light when 10/100Mbps network connection is detected.

Rear

PWR	Socket for 100-220V AC, 50-60Hz power supply
WAN	10/100 Mbps Ethernet RJ-45 (Primary LAN Port)
LAN	10/100 Mbps Ethernet RJ-45 (Secondary LAN Port)
Reset	Hardware reset button
COM	Console serial port for environment setting
Serial	RJ-45 socket for serial ports (RS232/422/485)

3. Technical Specifications

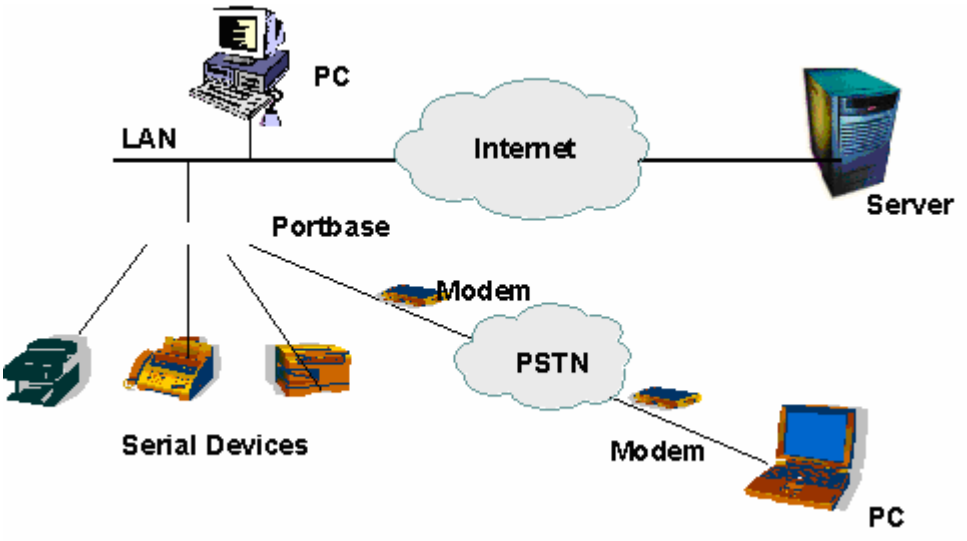
	Portbase-3010M	Portbase-3010(F)	Portbase-3020(F)	Portbase-3040	Portbase-3080	Portbase-3160	Portbase-3161
Number of Serial Ports	1		2	4	8	4 * 4	16
Weight	160g (300g)		160g (310g)	1.15Kg	1.26Kg	3.52g	2.59Kg
Dimensions (W*L*H) mm	105 * 113 * 32 75 * 117* 30 (F)			240 * 150* 50		439 * 234 * 63	
Operating Temperature	0 ~ 50 ° C						
LED	Power, Ready, Serial			Power, Ready, WAN, LAN			
Power	DC 5V Adapter 100-220 VAC(Free Volt) (F)			100 - 220 VAC (Free Volt)			
CPU	32 bit RISC Processor						
SDRAM	8 MB				32 MB		
Flash	4 MB						
WAN	10/100 Mbps Ethernet port						
LAN	No	10/100 Mbps Ethernet port					
Modem	1	No					
Serial Port Type	RS232	RS232/422/485			RS232	RS232/422/485	
Serial Port Speed	Max 230.4 Kbps						
Serial Port Signals	TX, RX, DTR, DSR, CTS, RTS, DCD						
Excessive Voltage Protection	Surge Protector attached to all signal lines						
Supporting Protocols	TCP, UDP, Telnet, ICMP, DHCP, TFTP, HTTP, PPP, SNMP 1/2						
Configuration	Telnet, Web						
Management Tools	SNMP MIB1/2, Portview, Web						

4. Applications

Portbase is applicable to various situations

1) Network Serial Communication

This is is the most common application of Portbase. By connecting a PC and a Portbase to a network, you can use serial equipments connected to the Portbase from remote PCs.



2) Serial Communication Tunneling

You can use the network as if it is a serial cable from your PC.

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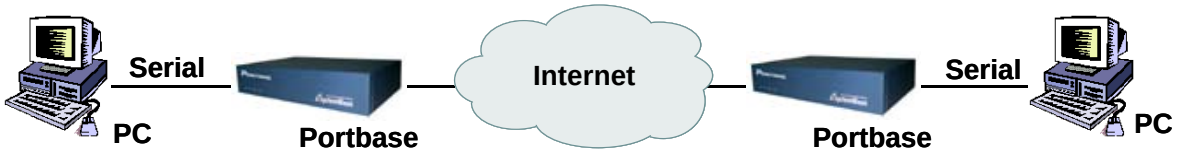
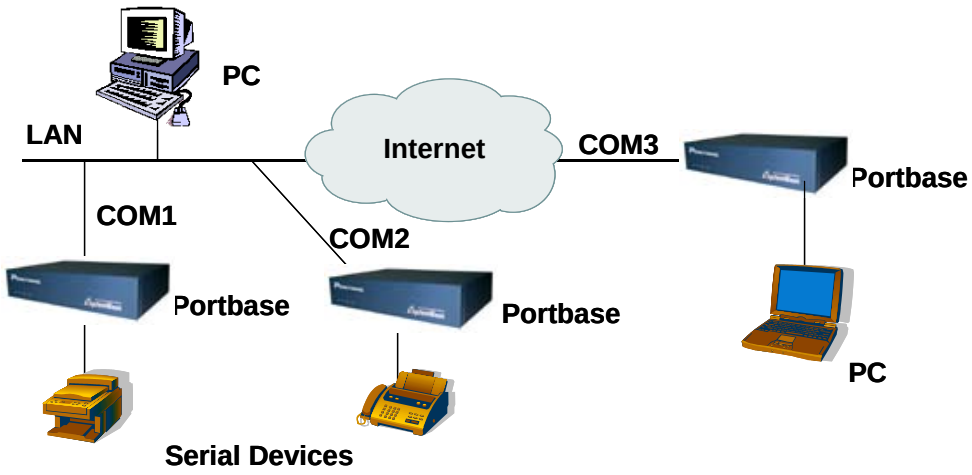


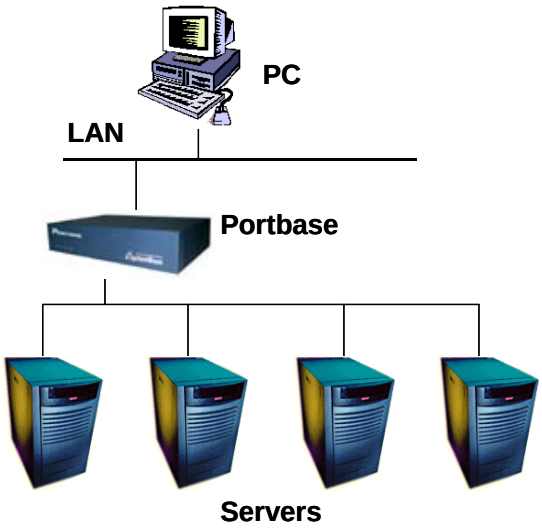
3) Serial Port Redirection

By exploiting redirection feature, serial ports of Portbase connected to the network can be used in the PC as if they belong to the PC.



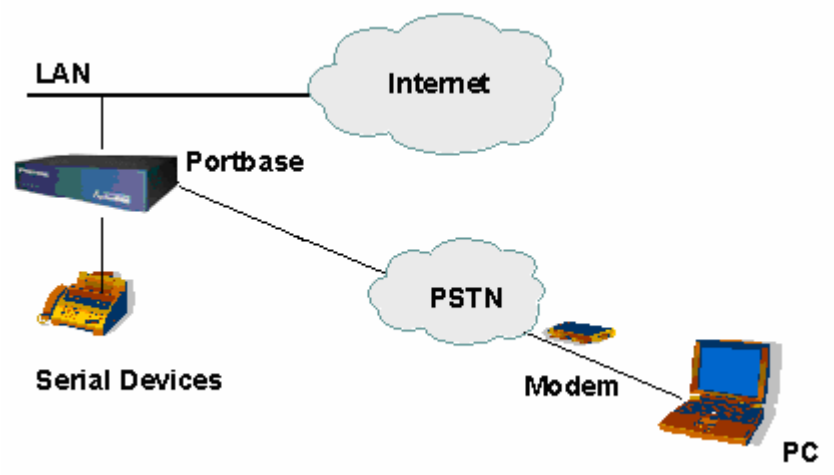
4) Console Server

Console server enables monitoring and controlling of multiple serial devices from one PC. These serial devices can be connected through telnet application, and these may include server, router, UPS, etc.



5) Standalone RAS server(PB-3010M)

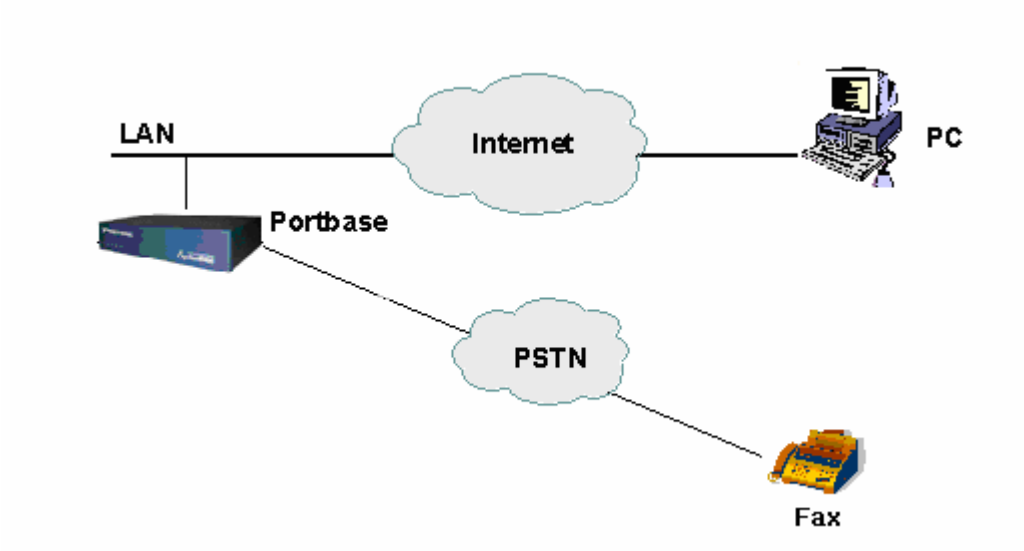
IP address can be assigned with PPP connection on the modem port of PB-3010M.



PPP Applications

1. Connect to the device when network failure occurs in Portbase.
2. Use Portbase as RAS server to get internet access with modem connection.

6) Network Fax Modem



Modem port of Portbase can be used as local modem of PC. With this function, Fax can be sent from the PC.

2 Configuration

Portbase's IP address is initially set to a default address, so it has to be reconfigured appropriately before the first use. You can set the IP address and other operation parameters with Web browser or telnet from PC, using the LAN, serial, or console port.

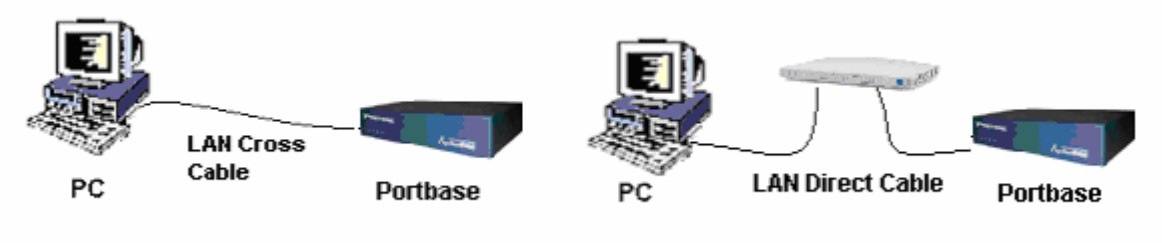
1. Getting Started

1) Configuration using the WAN Port

☞ (This method is most often used)

WAN port connects Portbase to the external network.

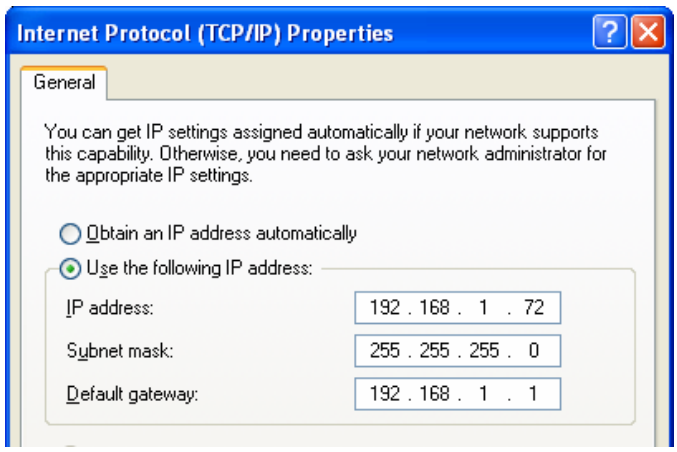
Connect the WAN port of Portbase and PC to the network.



Direct connection

Connection via HUB

Adjust network settings of PC as follows:

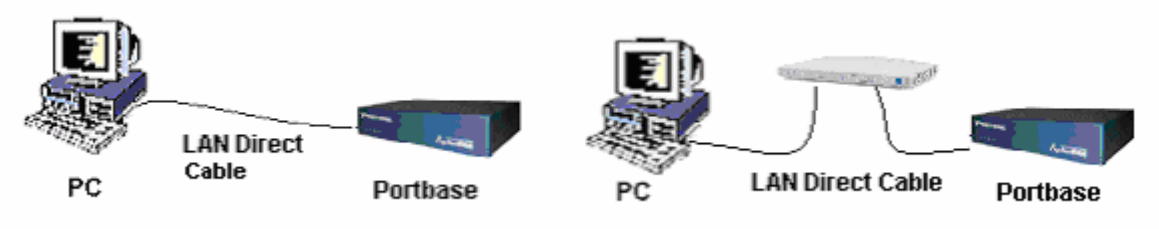


If you want to modify or view other settings of Portbase using a Web browser, refer to 2. Configuration Using Web Browser in this chapter.

If you want to modify or view other settings of Portbase using a telnet connection, refer to 3. Configuration Using Telnet in this chapter.

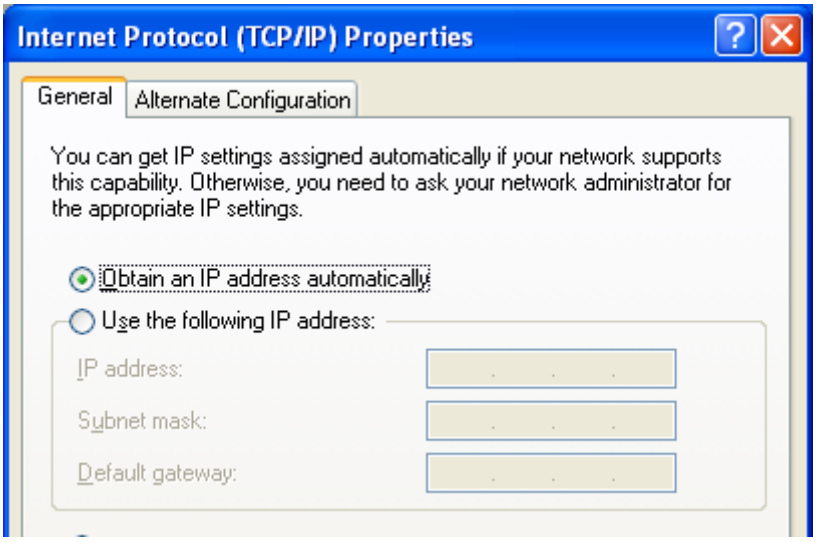
2) Configuration using the LAN Port (except PB-3010M)

LAN port connects Portbase to the internal network, operating as a DHCP server.
Connect the LAN port of Portbase and PC to the network.



Direct connection Connection via HUB

Adjust network settings of PC as follows:



Within 1 minute, Portbase automatically assigns an IP Address to the PC.
(IP address assigned to PC ranges from 10.10.1.2 to 10.10.1.254)

If you want to modify or view other settings of Portbase using a Web browser,
refer to 2. Configuration Using Web Browser in this chapter.

If you want to modify or view other settings of Portbase using a telnet connection,
refer to 3. Configuration Using Telnet in this chapter.

*** Configuring PB-3010M**

- There is only WAN port in PB-3010M. If a user doesn't know the IP address, there is no way to configure via web through the WAN port. To solve this problem, PB-3010M is assigned an IP 10.10.1.1 as an alias of the WAN port. This address will not affect the operation of the actual WAN IP address. Since PB-3010M cannot operate as a DHCP server, user must manually set the IP of PC as any address between 10.10.1.2 and 10.10.1.254.

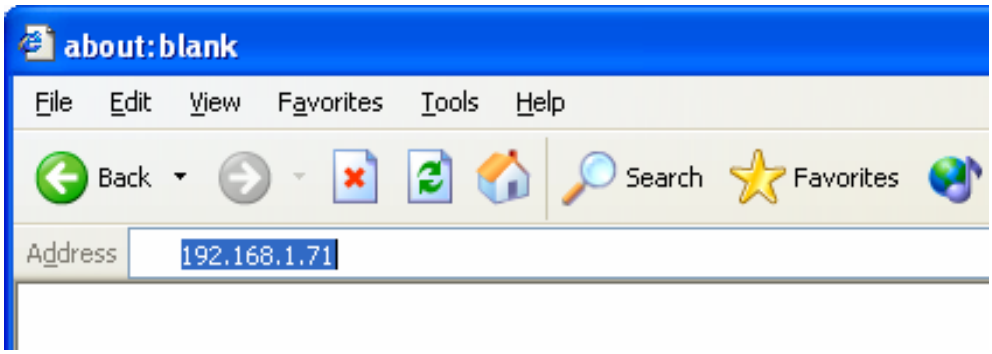
2. Configuration Using Web Browser

Run your Web browser and enter the IP address of either WAN or LAN port of Portbase to connect to Portbase.

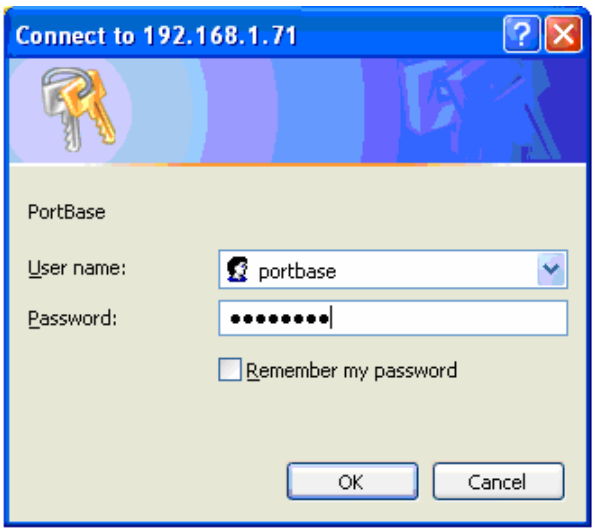
Factory Default IP Addresses of Portbase

WAN Port IP Address : 192.168.1.71

LAN Port IP Address : 10.10.1.1 (DHCP Server)

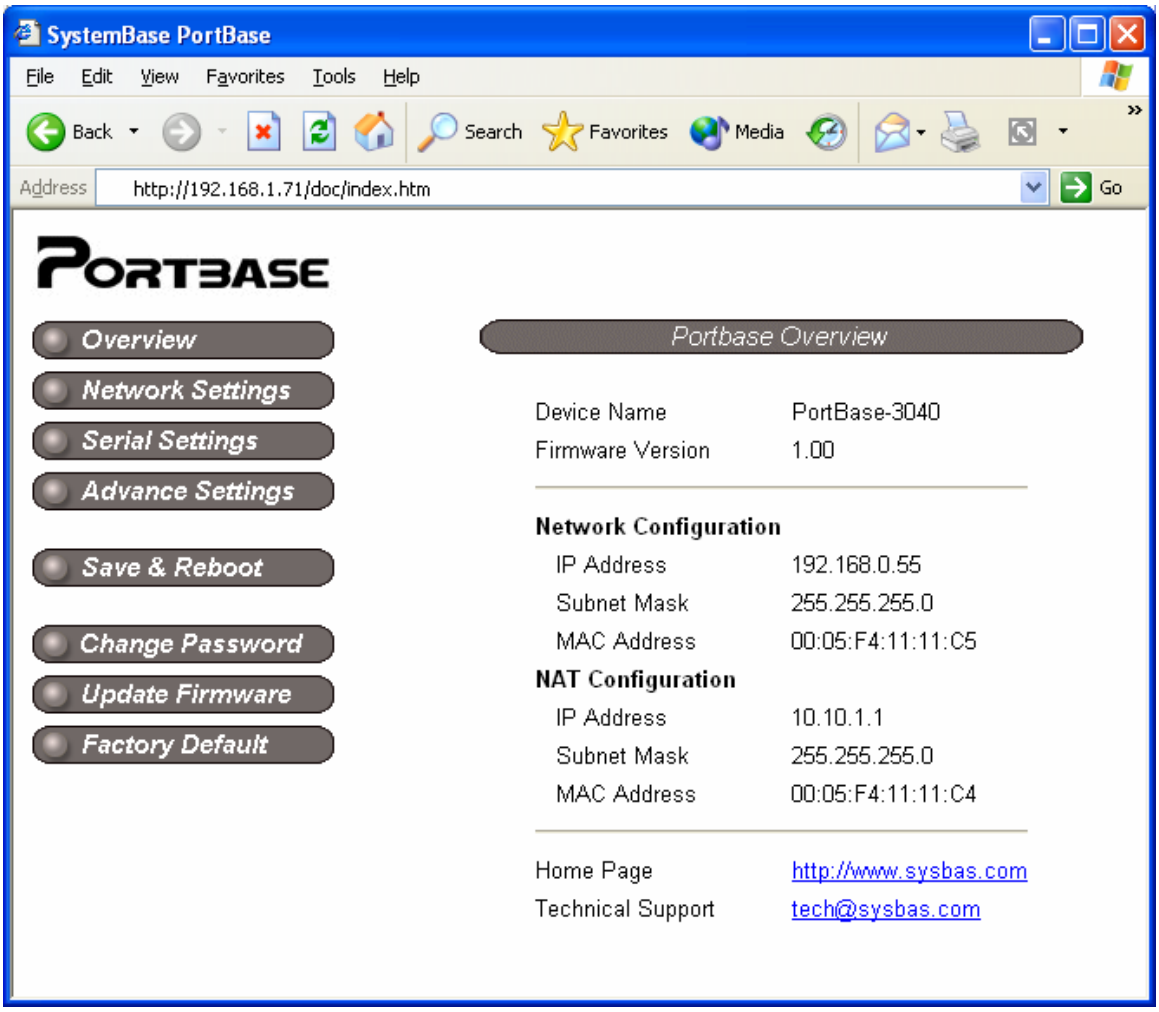


When you are connected to Portbase, the following initialization window appears.



☞ **The default Username and Password : 'portbase', '99999999'(8 consecutive 9s)**

After entering the correct Username and Password, click "OK" to warp to the environment setting screen.



Overview : Display product version and the current network status. (shown above)

Network Settings : Configure network connection settings.

Serial Settings : Configure communication environment and the detailed operation parameters for the serial ports.

Advanced Settings : Decide whether or not to allow HTTP, FTP, or TELNET service on the WAN / LAN.

Save & Reboot : Save the configurations and reboot Portbase.

Change Password : Set the password for the administrator, used when accessing to Portbase via Web/Telnet.

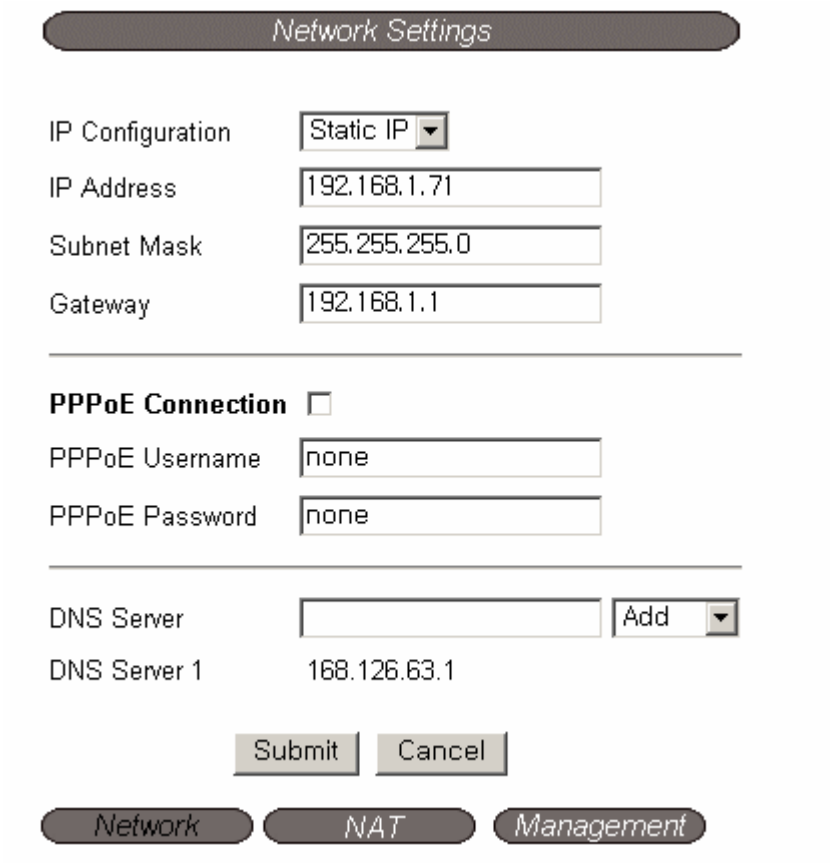
Update Firmware : Update Portbase firmware.

Factory Default : Restore all the factory default settings.

2) Network Settings

Configure the external network environment for Portbase.
There are three sub-sections for the Network Settings page : Network, NAT, and Management.
Network configures the WAN port connection environment.
NAT configures the LAN port operation environment (DHCP Server).
Management configures various parameters used for Portview,
the management program for Portbase.

① Network Settings



- **IP Configuration** (Default: Static IP)
  To achieve the IP to the WAN port from the external DHCP server, set as DHCP.
  If a pre-defined IP is used for the WAN port, set as Static IP.

- **IP Address** (Default: 192.168.1.71)
  Set the IP address when the WAN port is to be set as static IP.
  (Select Disable for the DHCP Client)

- **Subnet Mask** (Default: 255.255.255.0)
  Set the Subnet mask. (When WAN port is used with static IP)

- **Gateway** (Default: 192.168.1.1)
  Set the Gateway address. (When WAN port is used with static IP)

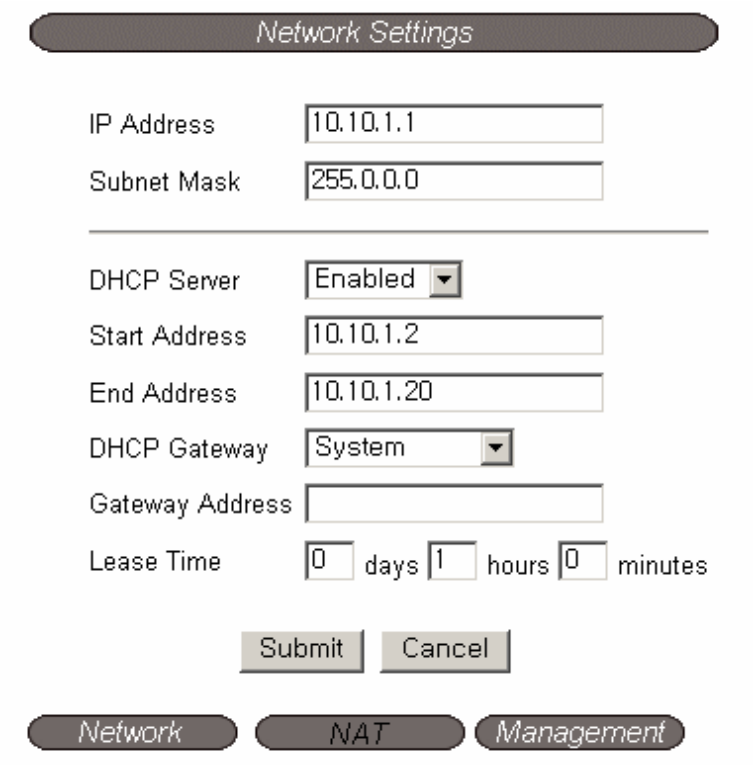
- **PPPoE Connection (Default None)**
  Set this option when network connection is established through xDSL modems.
  When PPPoE Connection is selected, IP Configuration is ignored, be it either DHCP or Static IP.

- **PPPoE Username (Default None)**
  Username to be provided to ISP for PPPoE network connection

- **PPPoE Password (Default None)**
  Password to be provided to ISP for PPPoE network connection

- **DNS Server**
  Register the Domain Name Server (DNS). Upto 5 DNS can be registered.
  Using the Add, Delete option, DNS can be added or deleted.

② NAT (except PB-3010M)



- **IP Address** (Default: 10.10.1.1)
  Set the IP address of the LAN port.

- **Subnet Mask** (Default; 255.255.255.0)
  Set the Subnet Mask for the LAN port.

- **DHCP Server** (Default: Enabled)
  Determine if the LAN port would operate as the DHCP server.

- **Start Address** (Default: 10.10.1.2)
  When the LAN port operates as the DHCP server, set the starting IP address to assign to the DHCP clients via the LAN port.

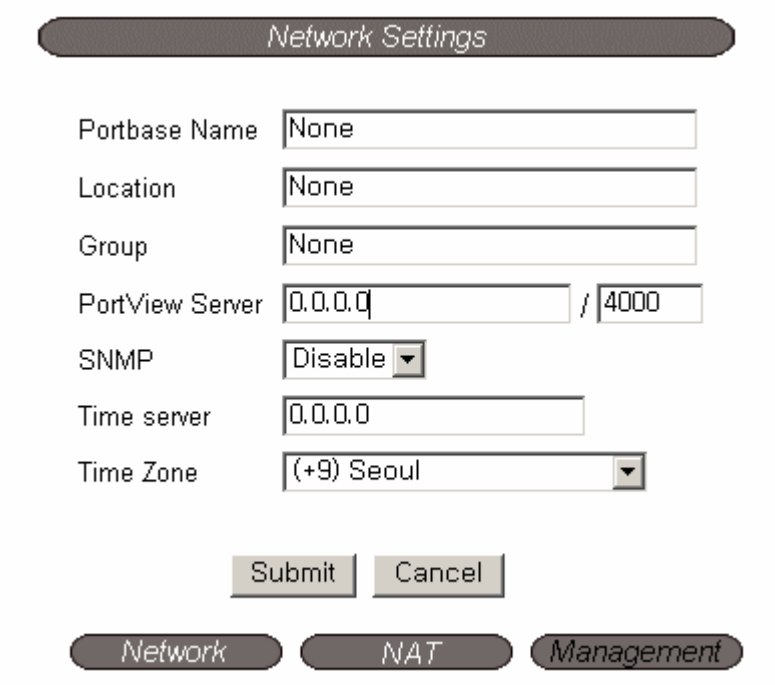
- **End Address** (Default: 10.10.1.20)
  When the LAN port operates as the DHCP server, set the last IP address to assign to the DHCP clients via the LAN port.

- **DHCP Gateway** (Default: System)
  Determine if the gateway for the DHCP clients will be Portbase itself or the external Gateway.
  If this option is set as 'System', the LAN port would operate as the Gateway.
  If this option is set as 'User Defined', enter the Gateway Address for the DHCP clients to the 'Gateway Address' field

- **Gateway Address** (Default: 0.0.0.0)
  If the DHCP Gateway is set as User Defined, set the external Gateway IP address.

- **Lease Time** (Default: 1 day)
  Set the IP address lease time for the DHCP clients.

③ Management



If multiple devices are installed and managed together, integration in management is necessary.
Also, it is the case the when the device reports an erroneous status, figuring out the reason for the failure becomes a time-consuming job.

To solve this inefficiency and provide better solution, Portbase provides a Network Management System software, Portview.
Portview provides integrated Portbase management, status information for each device, and the Data Scope feature. (Refer to Chapter 5. Management with Portview for more information.)

- **Portbase Name** (Default: None)
  Set the name for Portbase. 32 Characters at maximum. (Default: None)

- **Location** (Default: None)
  Set the location name for Portbase. 32 Characters at maximum. (Default: None)

- **Group** (Default: None)
  Set the group name for Portbase. 32 Characters at maximum. (Default: None)

- **PortView IP Address** (Default: 0.0.0.0 / 4000)
  When Portbase management software Portview is used,
  Set IP address and the socket number of the server PC on which Portview is installed.
  (Refer to Chapter 5. Management with Portview for further information.)

- **SNMP** (Default : Disable)
  When standard SNMP server manages Portbase,
  determine if SNMP Agent service will be used or not.
  MIB-II (RFC 1213): System, Interface, IP, ICMP, TCP, UDP
  MIB-I (RFC 1317): Serial Interface

- **Time Server** (Default: 0.0.0.0)
  Set the Time Server to provide correct time in the region and the country in which Portbase is located. Portbase has a default Time Server registered. Other Time Servers can be registered if needed.

- **Time Zone** (Default: Seoul)
  When the default Time Server registered in Portbase is activated, select the region and the country in which Portbase is located.

3) Serial Settings

Set the communication and operation environment for each serial port.

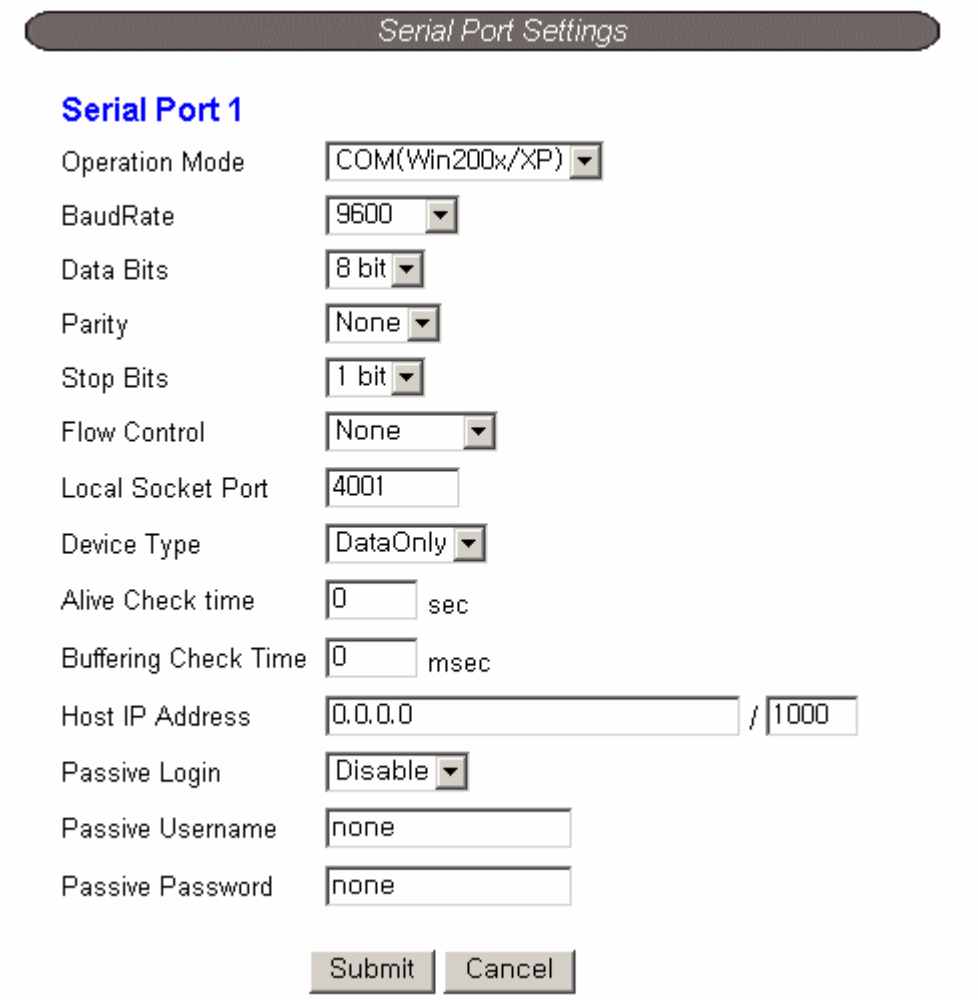
First, current settings of all ports are shown on the screen. Settings of all serial ports available for individual Portbase model (3010 to 3161) will be displayed.

Serial Port Settings

1	COM(Win200x/XP)		Local Socket	4001	Device Type	Dataonly	Flow None
	Baudrate	9600	Data Bits	8	Parity	None	Stop Bits 1
	Host IP	0.0.0.0	Host Port	1000	Buffering	0 msec	Alive Time 0 sec
	Login	Disable	Username	none	Password	none	
2	COM(Win200x/XP)		Local Socket	4002	Device Type	Dataonly	Flow None
	Baudrate	9600	Data Bits	8	Parity	None	Stop Bits 1
	Host IP	0.0.0.0	Host Port	1000	Buffering	0 msec	Alive Time 0 sec
	Login	Disable	Username	none	Password	none	
3	COM(Win200x/XP)		Local Socket	4003	Device Type	Dataonly	Flow None
	Baudrate	9600	Data Bits	8	Parity	None	Stop Bits 1
	Host IP	0.0.0.0	Host Port	1000	Buffering	0 msec	Alive Time 0 sec
	Login	Disable	Username	none	Password	none	
4	COM(Win200x/XP)		Local Socket	4004	Device Type	Dataonly	Flow None
	Baudrate	9600	Data Bits	8	Parity	None	Stop Bits 1
	Host IP	0.0.0.0	Host Port	1000	Buffering	0 msec	Alive Time 0 sec
	Login	Disable	Username	none	Password	none	
5	COM(Win200x/XP)		Local Socket	4005	Device Type	Dataonly	Flow None
	Baudrate	9600	Data Bits	8	Parity	None	Stop Bits 1
	Host IP	0.0.0.0	Host Port	1000	Buffering	0 msec	Alive Time 0 sec
	Login	Disable	Username	none	Password	none	
6	COM(Win200x/XP)		Local Socket	4006	Device Type	Dataonly	Flow None
	Baudrate	9600	Data Bits	8	Parity	None	Stop Bits 1
	Host IP	0.0.0.0	Host Port	1000	Buffering	0 msec	Alive Time 0 sec
	Login	Disable	Username	none	Password	none	
7	COM(Win200x/XP)		Local Socket	4007	Device Type	Dataonly	Flow None
	Baudrate	9600	Data Bits	8	Parity	None	Stop Bits 1
	Host IP	0.0.0.0	Host Port	1000	Buffering	0 msec	Alive Time 0 sec
	Login	Disable	Username	none	Password	none	
8	COM(Win200x/XP)		Local Socket	4008	Device Type	Dataonly	Flow None
	Baudrate	9600	Data Bits	8	Parity	None	Stop Bits 1
	Host IP	0.0.0.0	Host Port	1000	Buffering	0 msec	Alive Time 0 sec
	Login	Disable	Username	none	Password	none	

01 02 03 04 05 06 07 08

If you want to configure each port, click on the port number button at the bottom of the page. Then the setting page for the selected port will appear.



- **Operation Mode** (Default: COM(Win200x/XP))
  Select the operation protocol which the serial ports would use.

  → **Disable**
  Do not use this port.

  → **COM(Win2000/XP)**
  Use the serial ports of Portbase as the COM ports of Windows 2000/XP/2003 operated PC. (Both the data and the signal line information of the serial port can be controlled.)

→ **COM(Win98/ME)**

Use the serial ports of Portbase as the COM ports of Windows 98/ME operated PC. (Both the data and the signal line information of the serial port can be controlled.)

→ **TCP Server**

Portbase works as a socket server, waiting for the client connection on the network.
Socket number for awaiting connections can be set in 'Socket Number' field.
All data between the socket and the serial port is transferred untouched after the socket connection is established.

→ **TCP Client**

Portbase acts as a socket client in this mode. It tries to connect to the server IP address and the socket number assigned when a certain server waits for connection on the network.
All data between the socket and the serial port is transferred untouched after the socket connection is established.

→ **TCP Server(M)**

Portbase works as a server, accepting upto 5 simultaneous connections from socket clients.
Data transmitted from Portbase is broadcast to each socket client.

→ **UDP Server**

Portbase works as a UDP server, waiting for UDP connection from the client on the network.
Socket number for awaiting connections can be set in 'Socket Number' field.
Once a UDP packet is received to the socket that waits for the connection, the data is transmitted to the serial port. The data input from the serial port is put into UDP packets, which eventually are sent to the client.

→ **UDP Client**

When the data is input to the serial port, UDP packets are sent using the preset IP address and the socket number of the server.

→ **X-Console**

X-Console is a console management server provided by SystemBase. This mode is used when X-Console is linked to Portbase for better management and performance.

This protocol only works with the X-Console software. All data is encrypted by the SEED method during communication.

For more information, visit the company website, http://www.sysbas.com/ and refer to the X-Console page under Products section.

→ **Internal Modem** (Only in PB-3010M)

Use the port as the modem port for PPP connection or console login

- **Baud Rate** (Default: 9600)
  Set communication speed. (150bps ~ 230Kbps)

- **Data Bits** (Default: 8)
  Set the number of bits in each character size. (7,8)

- **Parity** (Default: None)
  Set parity bit check scheme. (None, Even, Odd)

- **Stop Bits** (Default: 1)
  Set the number of stop bits. (1, 2)

- **Flow Control** (Default: None)
  Set the flow control scheme. (None, RTS, Xon)

- **Local Socket Port** (Default: 4001~4004)
  Set the socket number for the port.
  Software makes use of this value for the network socket communication.
  Port 1 → 4001, Port 2 → 4002, Port 3 → 4003, Port 4 → 4004 …

- **Device Type** (Default: DataOnly)
  Set the signal line check method for the device to be connected to the given serial port.
  If the mode is set to DataOnly, only Txd, Rxd, and Gnd signal lines are used in inter-device communication.

  If the mode is set to Modem, all modem signals except RI(Ring Indicator) are asserted, tested, and used in communication.

- **Alive Check Time** (Default: 0 sec)

After a certain amount of time passes without any communication after the socket connection between the given serial port and the server is established, automatically disconnect the socket connection.
If the value is set to 0, this function is disabled.
(Only applies to TCP Client, TCP Server, TCP Server(M) operation modes.)

- **Buffering Check Time** (Default: 0 msec)
  This option needs to be set when consecutive data from the given serial port needs to be transmitted to socket at once.

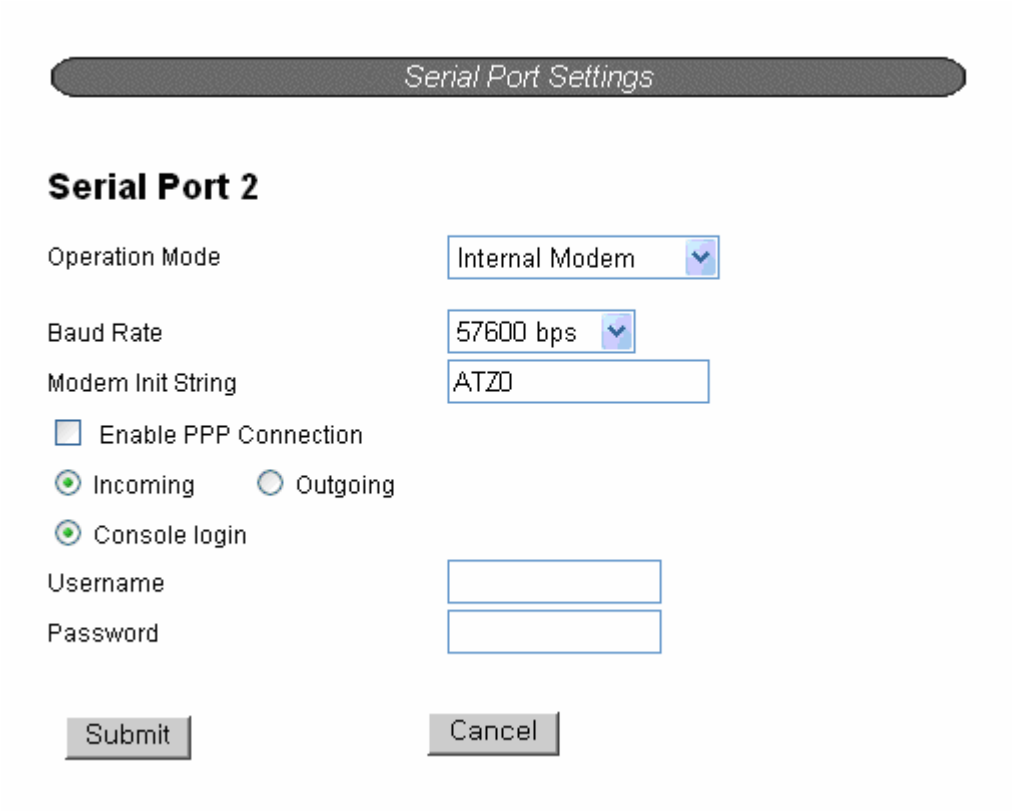
  If 100 bytes of character string is to be transmitted from the serial device and the buffering value is set to '10', Portbase waits up to 10 msec for each byte-to-byte interval until the entire 100 bytes are received. After the 100 bytes are entirely received, it transmits this data to the server as one packet, using the socket. If the buffering value is set to '0', however, data transmission is done in received byte-scale as multiple packets sent to the server.

- **Host IP Address** (Default: 0.0.0.0 / 1000)
  When the Operation Mode is set as TCP Client, set the IP address and the socket number to connect to.

- **Passive Login** (Default: Disable)
  When the Operation Mode is set as TCP Server, ask for the username and password when the client tries to connect.

- **User/Password** (Default: None)
  When the Operation Mode is set as TCP Server, set the username and password to ask for.

- **Modem Port Settings** (Only in PB-3010M)



Use the modem port as an incoming port.

- **Baud Rate**

  Set the speed of the modem port.

- **Modem Init String**

  Set the modem initialization character.

- **Enable PPP Connections**

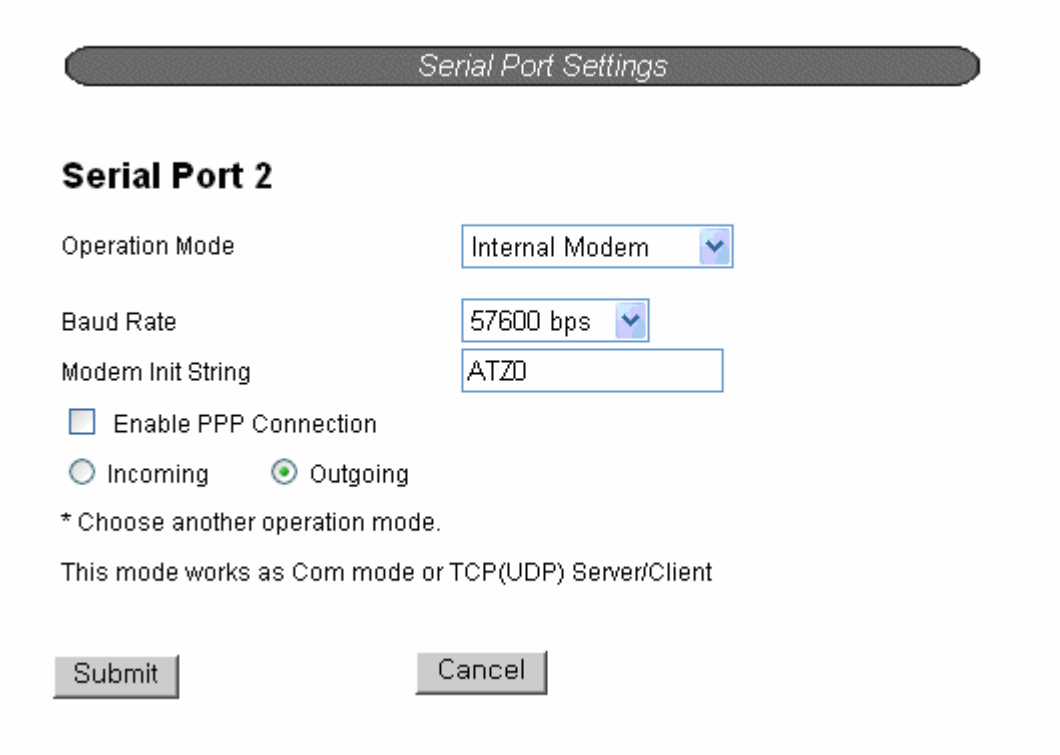
  Use the modem port for the PPP connection

- **Username**

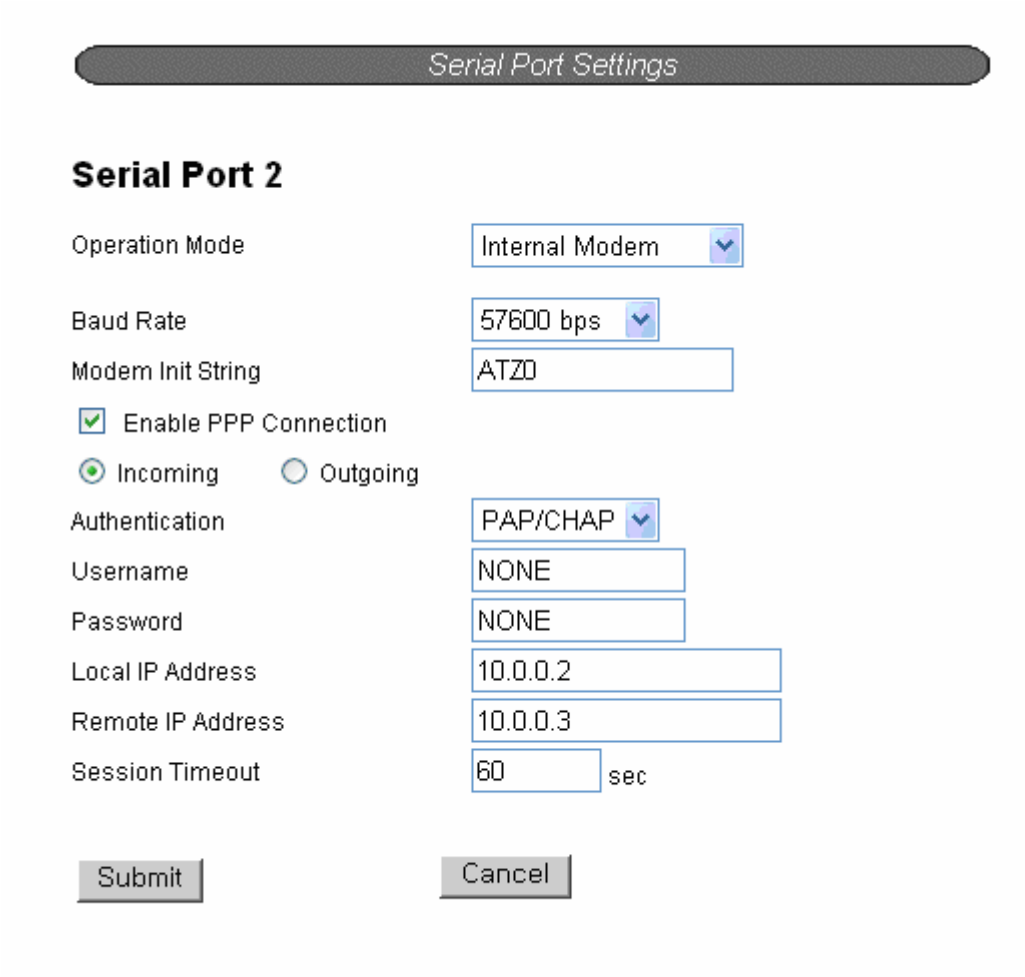
  Set the username for console login.

- **Password**

  Set the password of the user for console login.



- Use the modem port as an outgoing port.
  With this mode, user can control the modem via network.
  User have to select other network modes (COM/TCP/UDP) of his choice by selecting different operation modes.



Use the modem port as a PPP Server port.

- **Authentication**

  Select an authentication type.

- **Username**

  Set the username for PPP connection.

- **Password**

  Set the password of the user for PPP connection.

- **Local IP Address**

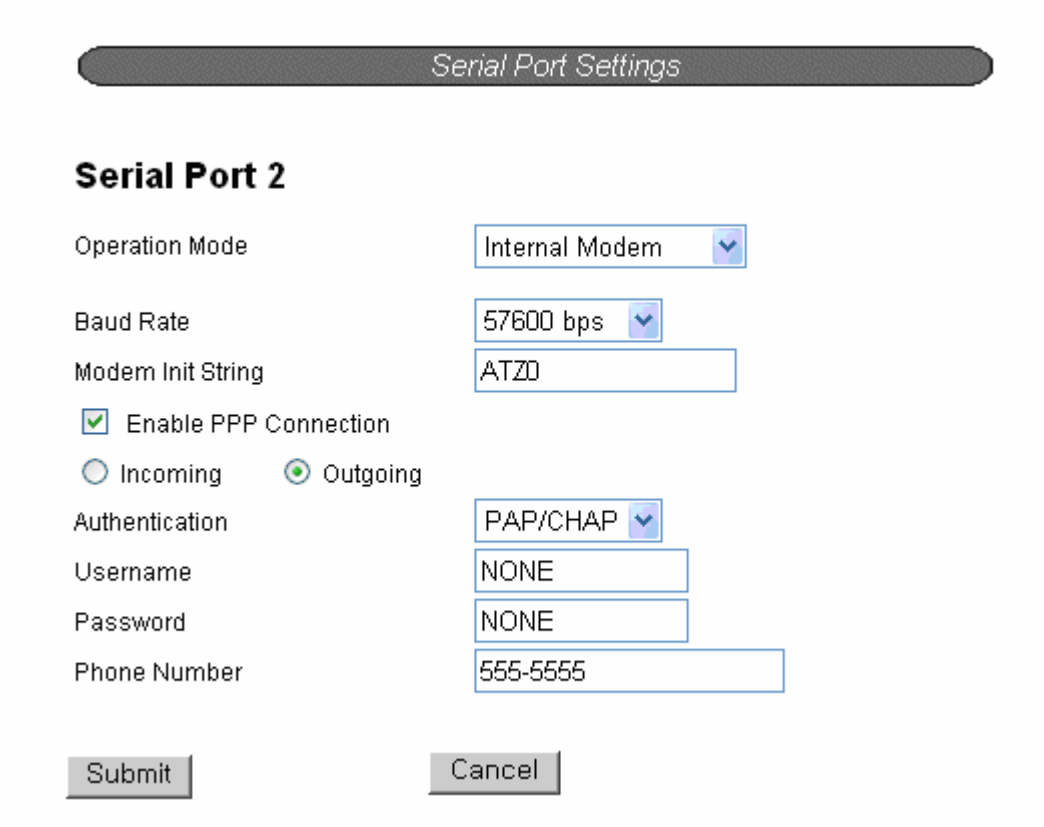
  Set a local IP address to be assigned by PPP connection.

- **Remote iP Address**

  Set a remote IP address to be assigned by PPP connection.

- **Session Timeout**

  Set a timeout value for PPP connection termination.



Use the modem port as a PPP Client port.

- **Authentication**

  Select an authentication type.

- **Username**

  Set the username for PPP connection.

- **Password**

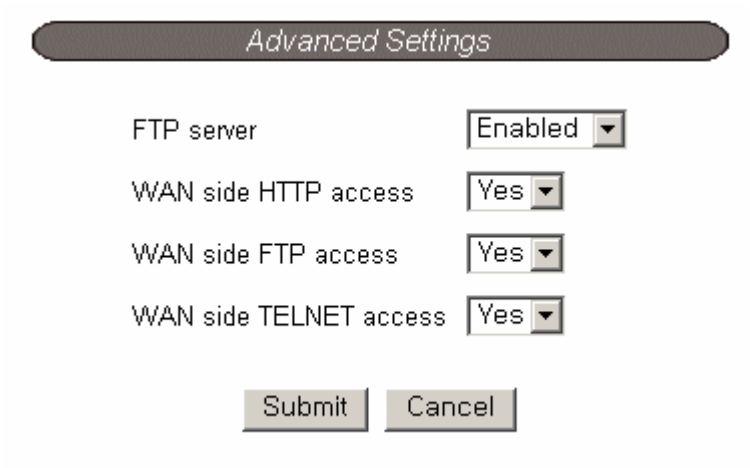
  Set the password of the user for PPP connection.

- **Phone Number**

  Set the phone number of the PPP server.

4) Advanced Settings

Set the operation modes and the connection restriction for the server (FTP, HTTP, TELNET) running in Portbase



- **FTP server** (Default: Enabled)
  Determine if the FTP server will be used in Portbase.

- **WAN side HTTP access** (Default: Yes)
  Determine whether the Client request for the Portbase HTTP server through the WAN port will be accepted or denied.

- **WAN side FTP access** (Default: Yes)
  Determine whether the Client request for the Portbase FTP server through the WAN port will be accepted or denied.

- **WAN side TELNET access** (Default: Yes)
  Determine whether the Client request for the Portbase TELNET server through the WAN port will be accepted or denied.

5) Save & Reboot

This option saves changes to the Flash memory and restarts the system to let the changes to take place in the operation.

'Save & Reboot' reboots Portbase after saving changes to Flash memory.

'Reboot Only' option just reboots Portbase without saving changes. This option can be used to rollback the changes you've mistakenly made.

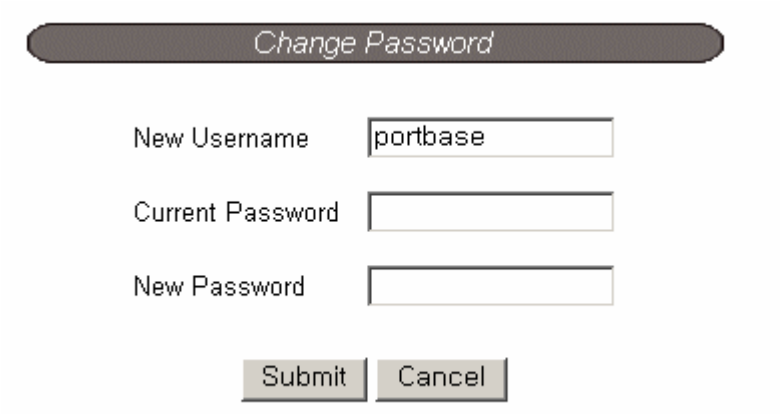
6) Change Password

Change the username and password for the administrator, who can change environment settings of portbase.

The administrator uses the username and password when connecting via Web or Telnet.

The default username is 'portbase' and the default password is '99999999' (8 consecutive 9's)

When you enter the new password, it has to be longer than 8 characters using the alpha-numeric characters.

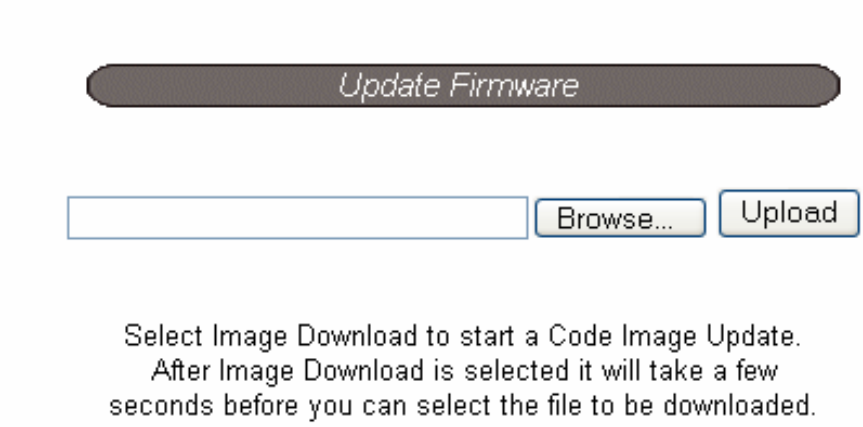


7) Firmware Update

Firmware is an operating system embedded in Flash memory of Portbase.

The recent firmware for Portbase can be found and downloaded in the website of SystemBase, http://www.sysbas.com/.

Set the location of the firmware file to update, using the 'Browse…' button.



The selected firmware will be transferred to Portbase when you click 'Upload'.

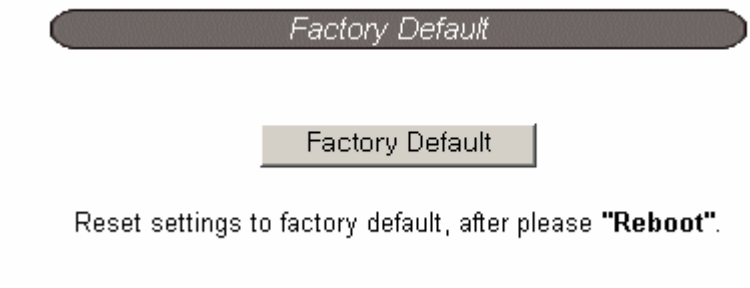
After the transmission is complete, Portbase will be automatically restarted to operate with the new firmware.

8) Factory Default

Restore all the configuration parameters to the factory default values.

Clicking on 'Factory Default' button will delete all the current settings and change these settings to the initial status.

If you want to use Portbase with the default settings, Portbase must be restarted by using 'Save & Reboot' menu.



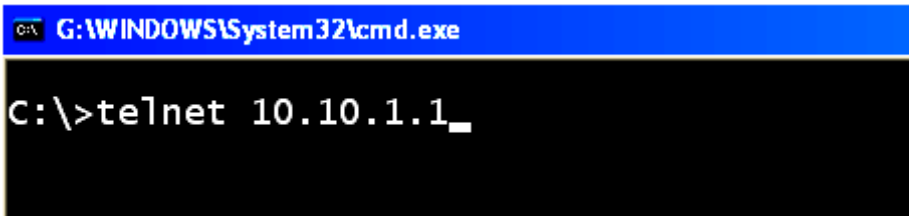
3. Configuration Using Telnet

Run the telnet application and enter the IP address of either WAN or LAN port of Portbase to connect to Portbase.

Factory Default IP Addresses of Portbase

WAN Port IP Address : 192.168.1.71

LAN Port IP Address : 10.10.1.1 (DHCP Server)



☞ **The default Username and Password : 'portbase', '99999999'(8 consecutive 9s)**

Environment parameters can be configured with 'SET' command.

※Don't forget to enter " " (quotation marks) in each command.

1) View Environment Settings

set "view"

This command shows Portbase environment settings.

2) Configuration Help

set "help"

Display configuration help for Portbase.

3) Save Environment Settings

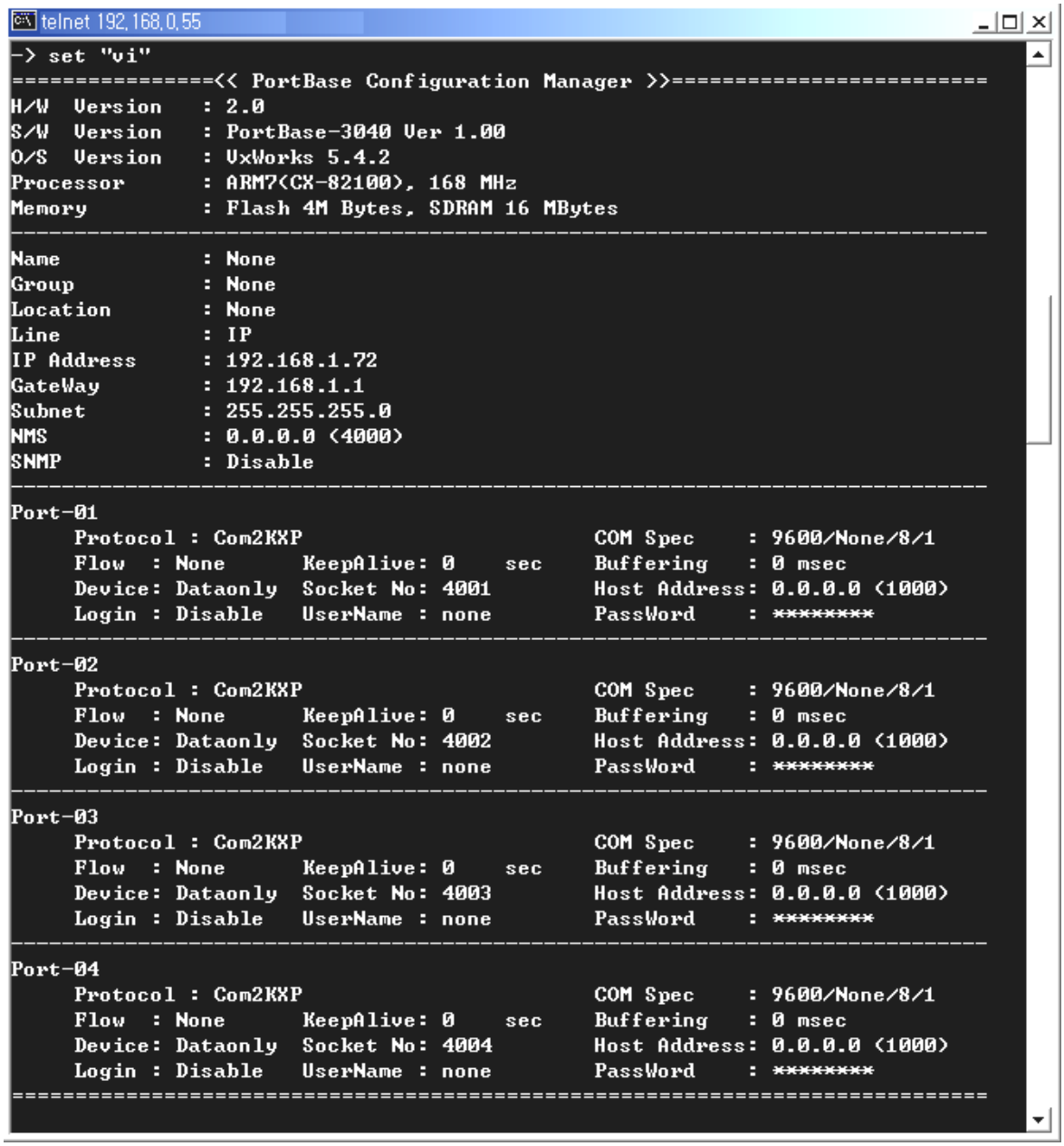
set "save"

You ***must*** run this command in order for changes to be applied.

4) Reboot

set "reboot"

Restart Portbase.



5) Network Environment Configuration

Configure detailed network environment parameters of Portbase.

Don't forget to enter **set "save"** command to save current configurations.

- **set "line <Line Type>"**

  Portbase supports two types of network connection types (IP and DHCP).

  Set IP type: **set "line IP"**

  Set DHCP type : **set "line dhcp"**

  Set PPPoE type : **set "line pppoe"**

- **set "ip <IP Address>"**

  Set IP address of Portbase.

  (This command only works when Line Type is set to IP.)

- **set "mask <Subnet Mask>"**

  Set subnet mask address of Portbase.

  (This command only works when Line Type is set to IP)

- **set "gateway <Gateway Address>"**

  Set Gateway address.

  (This command only works when Line Type is set to IP)

- **set "snmp <Enable/Disable>"**

  When standard SNMP server manages Portbase,

  determine if SNMP Agent service will be used or not.

- **set "nms <Portview IP Address>"**

  When Portbase management software Portview is used,

  set server IP address on which Portview is installed.

  (Refer to Chapter 5. Management with Portview for further information.)

- **set "name <Portbase Name>"**

  Set the name for Portbase. 32 Characters at maximum. (Default: None)

- **set "group <Group Name>"**

  Set the group name for Portbase. 32 Characters at maximum. (Default: None)

- **set "location <Location Name>"**

  Set the location name for Portbase. 32 Characters at maximum. (Default: None)

6) Serial Port Environment Configuration

Operation environment for each serial port can be configured.
In order for changes to take place, the command **set "save"** must be given after the configuration is finished.

The notation <X, / ALL/ X-X> to be mentioned below designates the port that certain configuration is to be applied to. If X is 1, it means the port number 1. ALL means all ports of Portbase. X-X option is given when a range of ports needs to be specified.

- **set "port <x/ all/ x-x> socket <Number of Sockets>"**
  Set socket number for the assigned port.
  Software makes use of this socket number for network communication.
  Port 1 -> 4001, 2 → 4002, 3 → 4003, 4 → 4004 …

- **set "port <x/ all/ x-x> speed <300~230400>"**
  Set the communication speed of the given serial port.

- **set "port <x/ all/ x-x> parity <none/odd/even>"**
  Set the parity check scheme of the given serial port.

- **set "port <x/ all/ x-x> char <7/8>"**
  Set the number of character bits of the given serial port.

- **set "port <x/ all/ x-x> stop <1/2>"**
  Set the number of stop bits of the given serial port.

- **set "port <x/ all/ x-x> flow <none/rts/xon>"**
  Set the flow control method of the given serial port.

- **set "port <x/ all/ x-x> signal <dataonly/modem>"**
  Set the signal line check method for the device to be connected to the given serial port.
  If the mode is set to DataOnly, only Txd, Rxd, and Gnd signal lines are used in inter-device communication.
  If the mode is set to Modem, all modem signals except RI(Ring Indicator) are asserted, tested, and used in communication.

- **set "port <x/ all/ x-x> protocol <disable/com2kxp/com98/tcp_server/tcp_client/tcp_mserver/udp_server/udp_client/xconsole>"**
  Set operation mode of the given serial port.

  → **disable**
  Do not use this port.

  → **com2kxp**
  Use the serial ports of Portbase as the COM ports of Windows 2000/XP/2003 operated PC. (Both the data and the signal line information of the serial port can be controlled.)

  → **com98**
  Use the serial ports of Portbase as the COM ports of Windows 98/ME operated PC. (Both the data and the signal line information of the serial port can be controlled.)

  → **tcp_server**
  Portbase works as a socket server, waiting for the client connection on the network.
  Socket number for awaiting connection can be set in 'Socket Number' field.
  All data between the socket and the serial port is transferred untouched after the socket connection is established.

  → **tcp_client**
  Portbase acts as a socket client in this mode. It tries to connect to the server IP address and the socket number assigned when a certain server waits for connection on the network.
  All data between the socket and the serial port is transferred untouched after the socket connection is established.

  → **tcp_mserver**
  Portbase works as a server, accepting upto 5 simultaneous connections from socket clients.
  Data transmitted from Portbase is broadcast to each socket client.

  → **udp_server**
  Portbase works as a UDP server, waiting for UDP connection from the client on the network.

Socket number for awaiting connections can be set in 'Socket Number' field.
Once a UDP packet is received to the socket that waits for the connection, the data is transmitted to the serial port. The data input from the serial port is put into UDP packets, which eventually are sent to the client.

→ **udp_client**
When the data is input to the serial port, UDP packets are sent using the preset IP address and the socket number of the server.

→ **xconsole**
X-Console is a console management server provided by SystemBase.
This mode is used when X-Console is linked to Portbase for better management and performance. This protocol only works with the X-Console software. All data is encrypted by the SEED method during communication. For more information, visit the company website, http://www.sysbas.com/ and refer to the X-Console page under Products section.

→ **ppps (Only in PB-3010M)**
Use the port as a modem port for PPP server

→ **Modem (Only in PB-3010M)**
Use the port as a modem port for console login.

→ **Modem (Only in PB-3010M)**
Use the port as a modem port for PPP client

- **set "port <x/ all/ x-x> keepalive <0 ~ 32767>"**

Determine if disconnection and reconnection is required when no communication takes place after the socket connection between the given serial port and the server.
If the value is set to 0, this function is disabled. Scales are in seconds.
(Only applies to tcp_server, tcp_client, and tcp_mserver operation modes)

- **set "port <x/ all/ x-x> buffering <0 ~ 32767>"**

This option needs to be set when consecutive data from the given serial port needs to be transmitted to socket at once.

If 100 bytes of character string is to be transmitted from the serial device and the buffering value is set to '10', Portbase waits upto 10 msec for each byte-to-byte interval until the entire 100 bytes

are received. After the 100 bytes are entirely received, it transmits this data to the server as one packet, using the socket. If the buffering value is set to '0', however, data transmission is done in received byte-scale as multiple packets sent to the server.

- **set "port <x/ all/ x-x> serverip <IP Address>"**
  Set the IP address of the server to connect when the protocol is used in tcp_client mode.

- **set "port <x/ all/ x-x> serverport <Number of Sockets>"**
  Set the socket number of the server to connect when the protocol is used in tcp_client mode.

The following commands only operate in PB-3010M.

- **set "port <x/ all/ x-x> ppps"**
  Use the modem port for PPP server

- **set "port <x/ all/ x-x> pppl"**
  Use the modem port for console login
  When in this mode, system commands can be used by connecting to Portbase.

- **set "port <x/ all/ x-x> pppc"**
  Use the modem port for PPP client

- **set "port <x/ all/ x-x> pppauth <none,papchap>"**
  Set the authentication mode.

- **set "port <x/ all/ x-x> console username <Username>"**
  Add a user for console login.

- **set "port <x/ all/ x-x> console password <Password>"**
  Set a password of the user for console login.

- **set "port <x/ all/ x-x> pppusername <Username>"**
  Add a user for PPP connection.

- **set "port <x/ all/ x-x> ppppassword <Password>"**
  Set a password of the user for PPP connection.

- **set "port <x/ all/ x-x> ppplocalip <IP Address>"**

  Set the local IP address to be assigned by PPP connection.

- **set "port <x/ all/ x-x> pppremoteip <IP Address>"**

  Set the remote IP address to be assigned by PPP connection.

- **set "port <x/ all/ x-x> modeminitstring <modem init string>"**

  Set the modem initialization character.

3 Setup and Connections

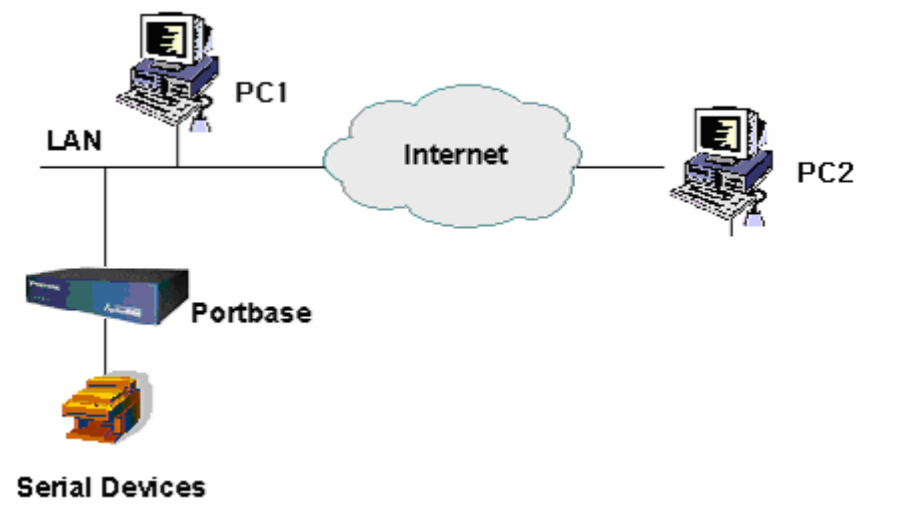
This chapter is an easy and simple guide for Portbase setup and connections.
As mentioned earlier, Portbase has factory default IP addresses. So before the first use, the user should customize the IP address and environment parameters.

1. Connecting Portbase to the Network

WAN port connects Portbase to the external network.
Connect the WAN port of Portbase and PC to the network as shown below.

This example assumes that Portbase uses the default IP address, **192.168.1.71,** and that PC1 and PC2 have the given network settings.

	PC 1	PC 2
IP Address	192.168.1.10	192.168.2.10
Subnet Mask	255.255.255.0	255.255.255.0
Gateway Address	192.168.1.1	192.168.2.1



2. Connecting PC to Portbase

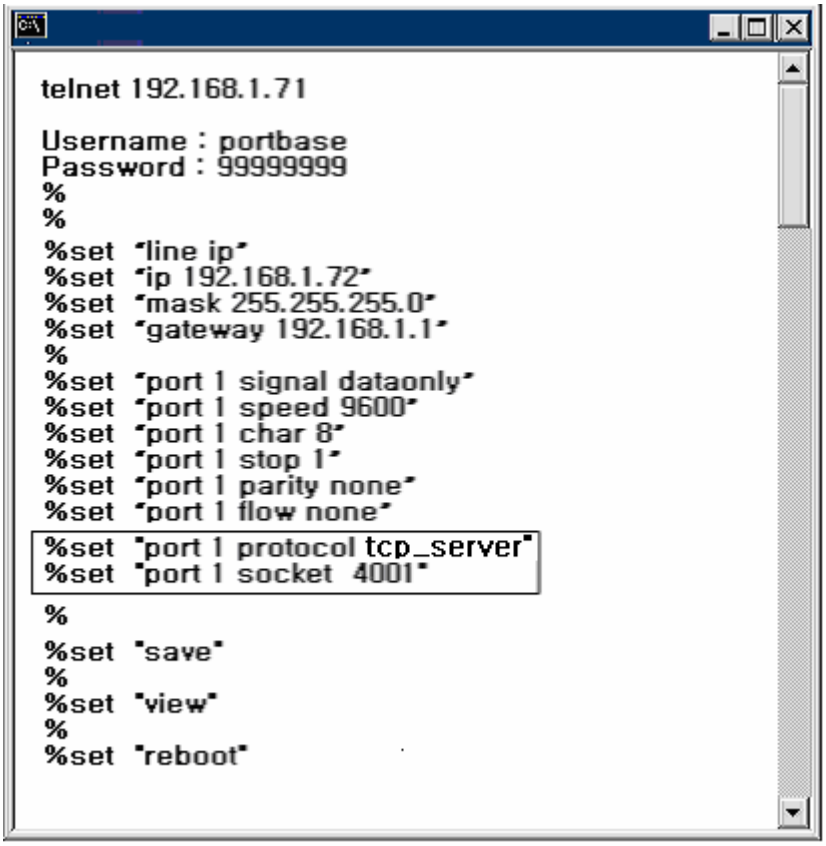
This type of connection is used when the PC needs to collect data from the open socket of Portbase directly. When the connection is established, full-duplex communication is possible.

From either PC1 or PC2, telnet application, serial communication program, or socket program can be used to connect to Portbase. When the connection is established, communication with the serial devices connected to Portbase is possible.

The following example describes configuration using a telnet connection. The first serial port of Portbase is used in this example.

If you need more information about the network settings, refer to Chapter 2. Configuration. Related sections in that chapter are 1. Getting Started – 1) Configuration Using the WAN Port and 3. Configuration Using Telnet.

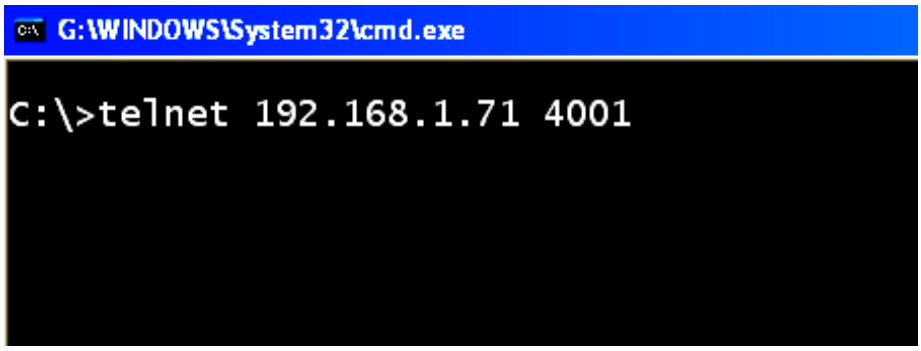
※Don't forget to enter " " (quotation marks) in each command.



All environment settings are completed by the set of commands above.

With the command **set "view"**, you can view new settings, and with the command **set "reboot"**, Portbase is restarted so that new settings are affected.

From a telnet program in PC1 or PC2, you can connect to the serial device attached to the first serial port of Portbase by the following telnet command.



After the connection is established, data inserted by the telnet program is transferred to the serial device attached to the first serial port of Portbase. All data transmitted by the serial device is printed on the telnet program screen.

If the COM port Redirector is installed and the serial ports of Portbase are used as the COM ports in PC1 or PC2, the command **set "port 1 protocol tcp_server"** listed above must be changed to **set "port 1 protocol com2kxp".** The first serial port of Portbase needs to be registered as the user-defined COM port of PC1 or PC2 after the Redirector is installed. (For more information on installing the Redirector, refer to Chapter 4. COM Port Redirector.)

3. Connecting Portbase to PC

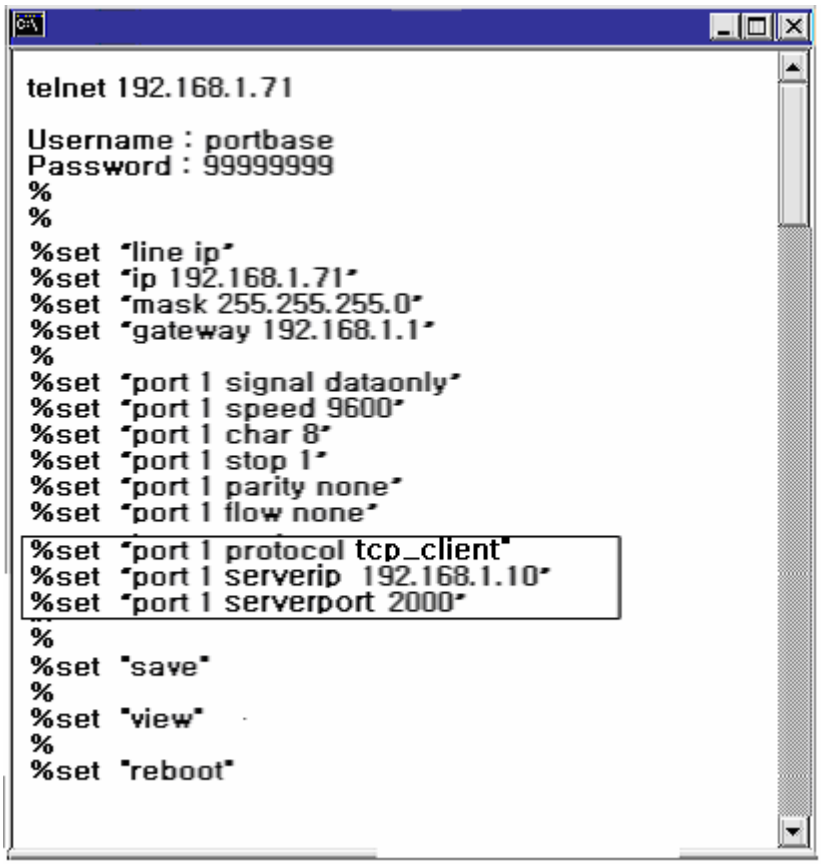
This method is used when Portbase needs to transmit data to the server PC.
When the connection is acknowledged, full-duplex communication is possible.

Portbase needs to be connected to the server program of either PC1 or PC2, so that communication with the serial devices attached to Portbase is possible.

The following example describes configuration using a telnet connection. The first serial port of Portbase is used in this example.

If you need more information about the network settings, refer to Chapter 2. Configuration. Related sections in that chapter are 1. Getting Started – 1) Configuration Using the WAN Port and 3. Configuration Using Telnet.

※Don't forget to enter " " (quotation marks) in each command.



All environment settings are completed by the set of commands shown.
With the command **set "view"**, you can view new settings, and with the command **set "reboot"**, Portbase is restarted so that new settings are affected.

When Portbase is restarted, the first serial port of Portbase tries to establish connection to socket 2000 in the server, PC1. This action is defined by the commands received beforehand.

In the PC1, a server program waiting for the connection to socket 2000 must be running.

After the connection is acknowledged, data input by the server program is transferred to the serial device attached to the first serial port of Portbase. And of course, all data sent from the serial device is transferred to the server program. All these data transmission is accomplished via network.

4

COM Port Redirector

1. Redirector Introduction

Redirector is a network COM port driver, enabling serial ports of Portbase to operate the same way as the local COM ports of PC.
Upto 255 COM ports can be registered in one PC if Redirector is used.

1) Supported Hardware

- Portbase 3010 / 3010F / 3020 / 3020F / 3040 / 3080 / 3160 / 3161

2) Supported Operating Systems

- COM Port Redirector for Windows 98/ME
- COM Port Redirector for Windows 2000/XP/2003

3) System Requirements

PC system requirement for running Redirector is as follows.

- CPU : Pentium 100 MHz or higher
- Memory : 16 Mb or more
- CD-ROM : Faster than 4X
- Network : 10M Ethernet or higher

2. Installing Redirector

Before installing Redirector, operation environment setting needs to be done for Portbase.

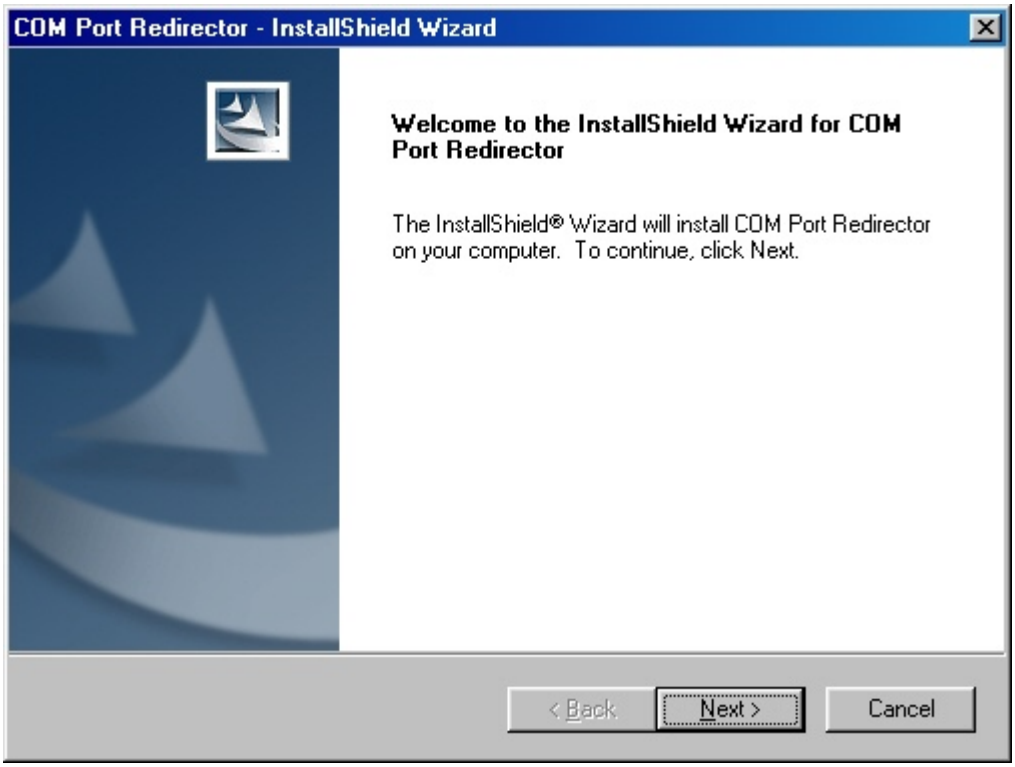
Refer to Chapter 2. Configuration if you want to configure operating environment.

1) Installing under Windows 98/ME

1) Insert the Portbase CD into the PC to install Redirector in.

2) Upon insertion, the setup program will auto-start. Select "**English**".

3) On the option screen, select **"Install Redirector (WIN98/ME)".** Then Redirector installer will be started automatically.



4) Follow the instructions from the installer. When Redirector is run after installation, Redirector Manager icon will appear in the system tray.

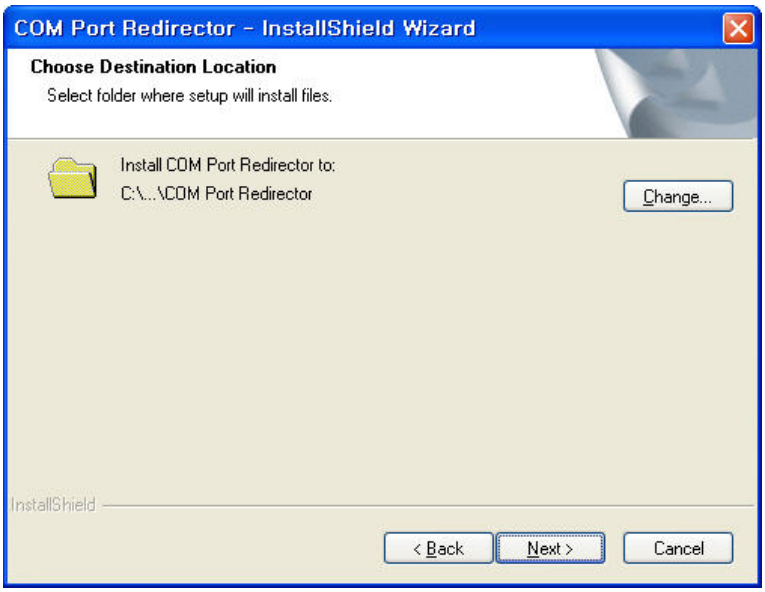
2) Installing under Windows 2000/XP

1) Insert the Portbase CD into the PC to install Redirector in.

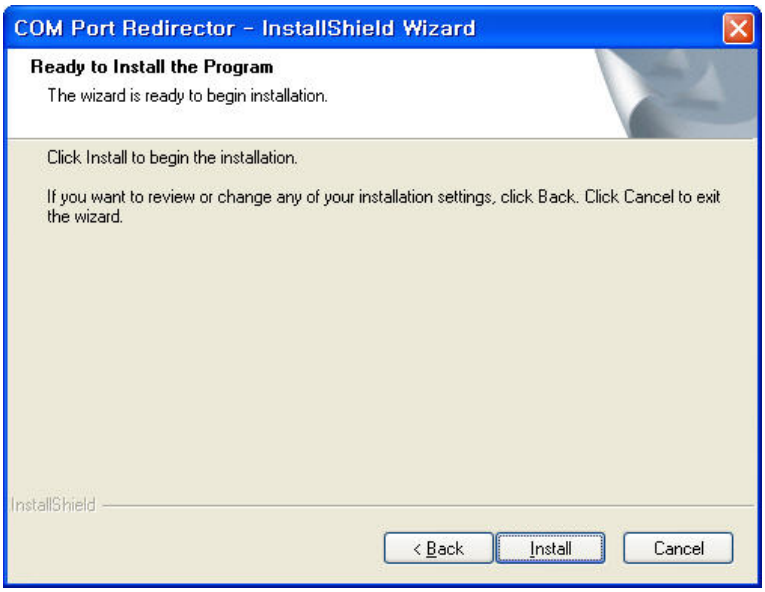
2) Upon insertion, the setup program will auto-start. Select "**English**".

3) If you select **"Install Redirector for WIN2K/XP",** the Install Wizard for COM Port Redirector will appear on the screen automatically.

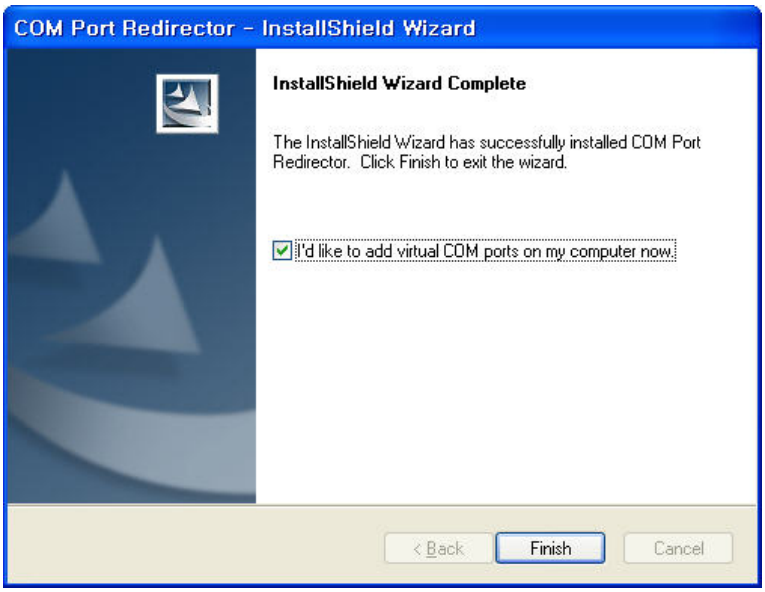
4) Click “Next”



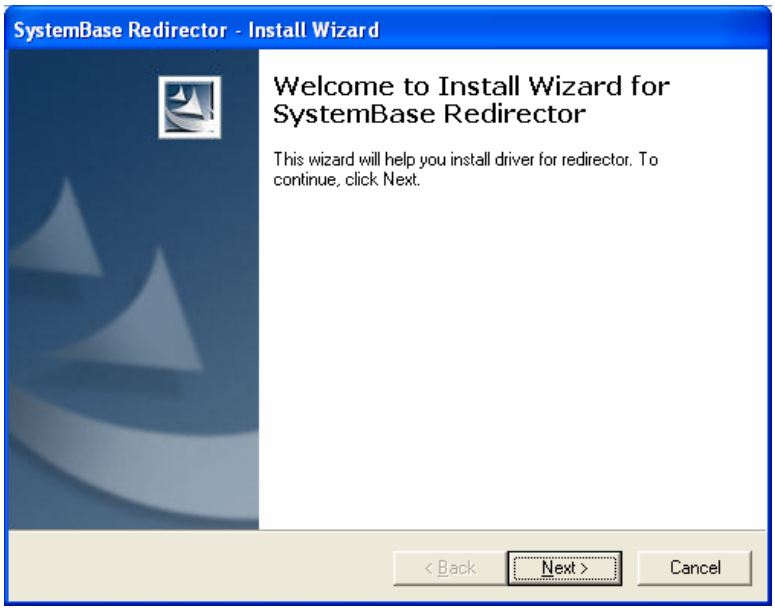
5) Choose destination location and click “Next”.



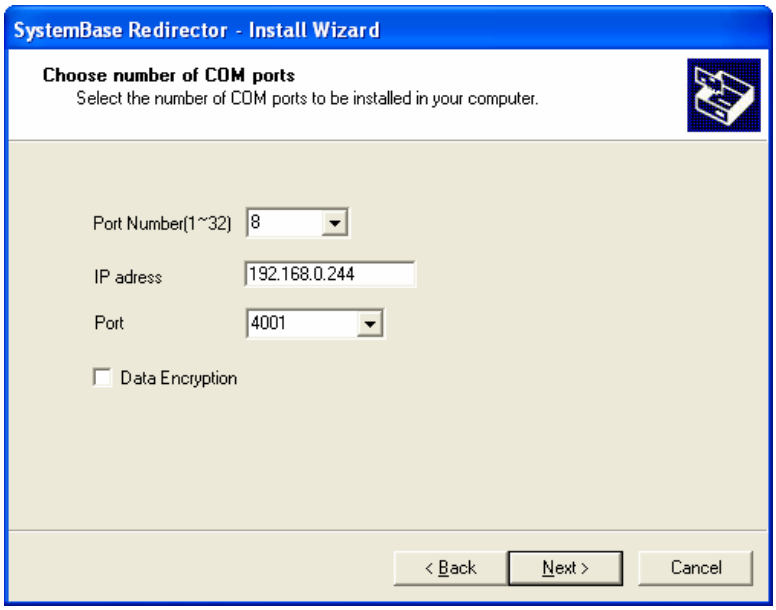
6) Click “Install” to begin the installation.



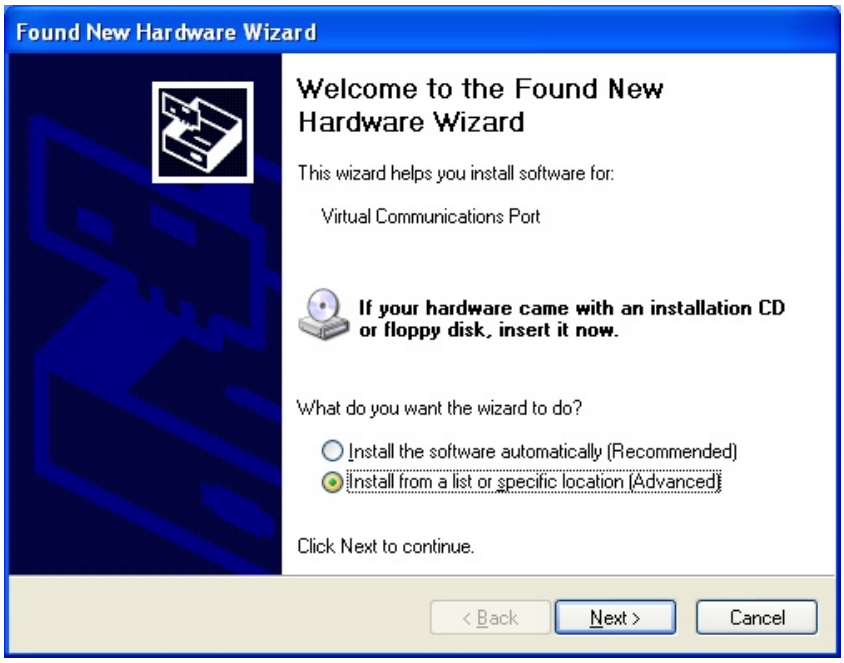
7) When the installation is complete, you can either add virtual COM ports right away or later. If you want to add ports right away, check the option “I’d like to add virtual COM ports on my computer now” and click “Finish”. Then the port installer will start.



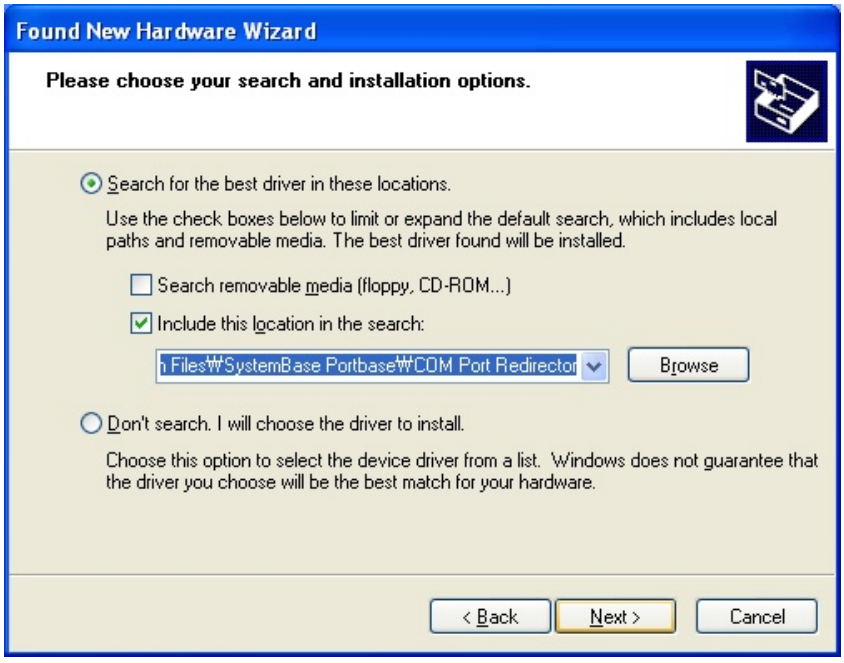
8) When the Install Wizard runs, click “Next”



9) Select how many COM ports you’d like to install and insert the IP address of Portbase that virtual ports will be connected to. Finally, assign the port number that the first COM port will connect to, and click “Next”. When multiple ports are installed, port numbers are assigned following the first port. Available port numbers are between 4001 and 4032, and port numbers can be modified after the installation as well. Using the Install Wizard, up to 32 COM ports can be installed at once.



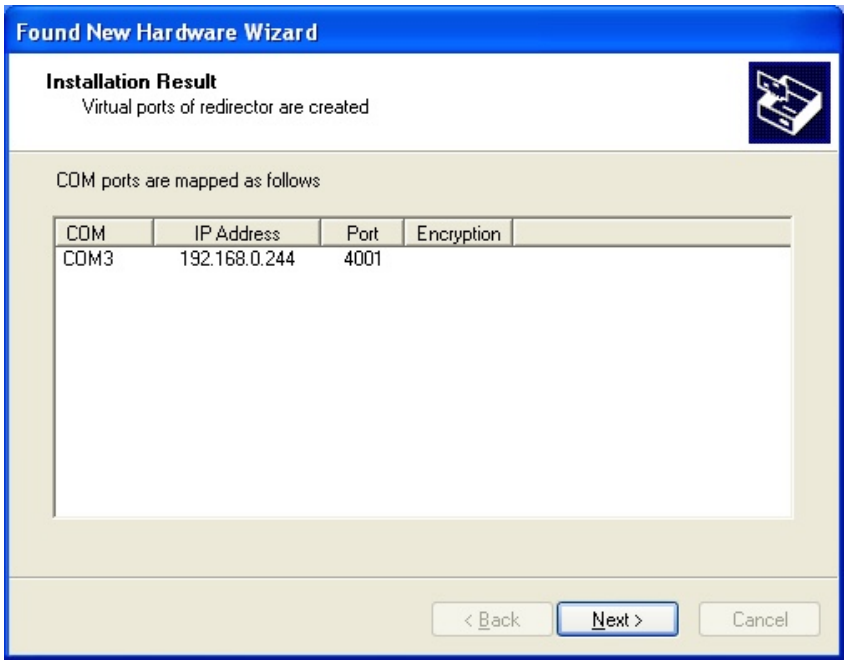
10) Windows XP or Windows 2003 Server Edition asks for the location of the driver while installing. Windows 2000 skips this process and installs automatically, so skip to step 14).



11) Select “Search for the best driver in these locations.” and check “Include this location in the search:” Click “Browse” to assign the location of your COM Port Redirector. The default location is “C:₩Program Files₩SystemBase Portbase₩COM Port Redirector”. Click “Next”.

12) Warning on the Windows compatibility test might be displayed. Just click “Continue” for installation. Your system will not be affected by any means.

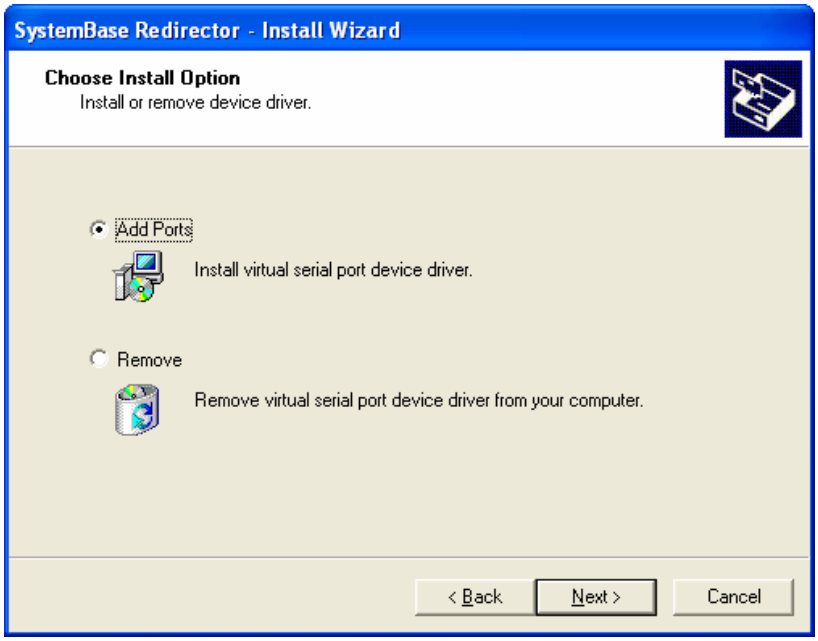
13) Click “Finish” to complete port installation, and this process will repeat until all ports are installed.



14) After the installation of the last port, the Installation Result window is displayed.
Installation process is completed when you click “Next”.
The Installation Result window shows the list of installed COM ports and the IP address and port number of Portbase.

→ If you want to install additional COM ports later on, you need to run the installation wizard again. Run 'Start' → 'All Programs' → 'SystemBase Portbase' → 'COM Port Redirector' → 'Add or Remove Ports'. When the wizard detects existing ports installed, the following screen shows up.

→ When you select "Remove" option, all virtual ports will be removed. Be careful when selecting this option.

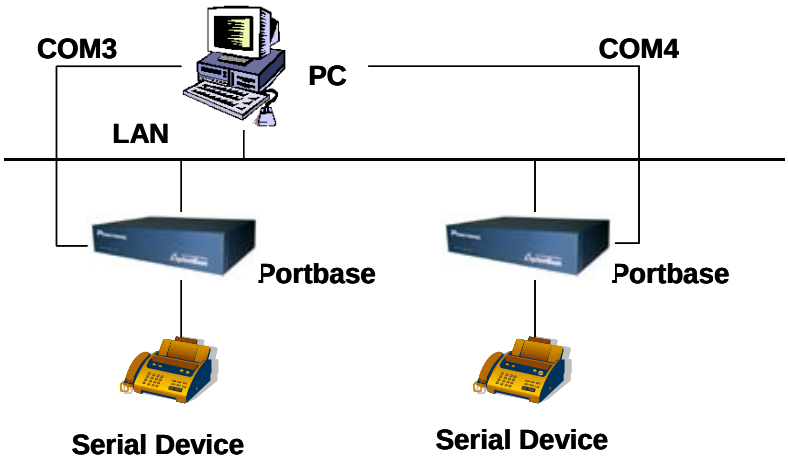


Choose "Add Ports" if you want to install additional COM ports.
The remaining steps are identical to installing new ports.

3. Using Redirector

With COM Port Redirector, you can use serial ports in Portbase from the remote site as if they belong to your own PC. These ports operate just like COMx console ports in your PC.

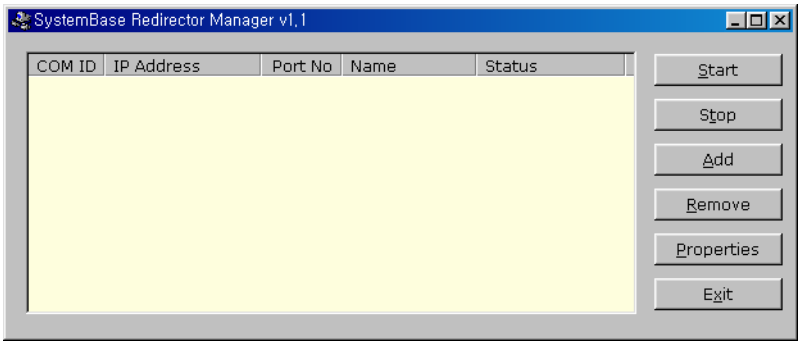
The following figure describes how the communication between the PC with Redirector installed and the serial devices attached to Portbase is done via network.



1) Using Redirector in Windows 98/ME

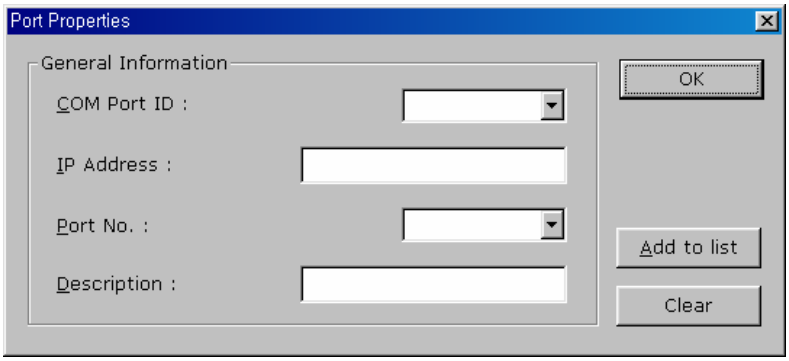
1) Configure Redirector

To run the Redirector Manager, double-click the Redirector Manager icon from the system tray, or select Start → Program → SystemBase Portbase→ Redirector.



2) Register COM ports.

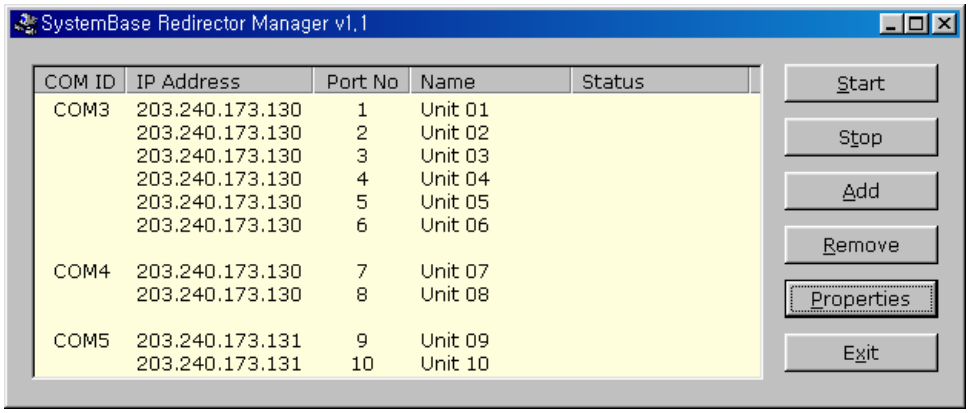
- When you click “Add” from the main menu, general information about the COM ports to install will be displayed



- Enter the COM Port ID(COMx), IP address of Portbase, Port Number (1 to the maximum number of ports), and the description or the port name (16 bytes maximum).

- Multiple IP addresses and port numbers can be registered to one COM port.

- When all the information is provided, you can click “OK” to add a new port, shown in the next figure.



- Nothing is displayed under the Status tab if the Redirector service did not start for each port.

- By repeating the steps shown above, multiple serial ports can be registered as a candidate for connecting to one COM port.

- If you like to remove a port, click on the port to remove and click “Remove”.

3) Starting / Stopping the Service

From the Redirector Manager main screen, select ports to start Redirector service.

- Selected ports will be highlighted.
- Click one more time to unselect any selected port.
- Only one serial port for each COM port can be selected.
- After selecting all the ports desired, click “Start” to activate the Redirector service.
- Certain information will be displayed for Status tab once the service is activated for ports.
- The list of conditions to be displayed for Status tab is as follows.

Ready : Virtual serial port is set by Redirector on the PC, and is waiting.

Connecting : The connection between Portbase and the virtual serial port set by Redirector on the PC is on processing.

Connected : The connection between Portbase and the virtual serial port set by Redirector on the PC is established.

Disconnected : The connection between Portbase and the serial port in the PC is lost.

COM Opened : Portbase doesn't operate even though the serial port in the PC is open.

Reconnecting : The virtual serial port set by Redirector on the PC is reconnecting to Portbase.
(If any kind of unexpected error causes disconnection, reconnection is attempted to a certain port and a port number at constant intervals.)

Switching : Multiple IPs are assigned to one port and IP changes real-time.

- Upon selecting a port and clicking "Stop", the Redirector service for that port is terminated.
- Once the service is terminated, Status tab for that port will be empty.
- Information such as the COM port number, IP address and Port number is shown when the service is performed. Once the service is terminated, these information automatically disappears from the screen.
- The service for one COM port can be started by either the "Start" button or the application program which handles Redirector actions. Regardless of the service-activating source, it is always the last action performed that achieves the higher priority.
- If you click "Exit", all the Redirector services for all ports are over, system tray icon disappears, and Redirector quits.
- If any COM port is on service when the "Exit" button is pressed, message box indicating that the port is in use pops up and the service is not terminated.
- If Redirector is restarted, the Redirector service may either be resumed automatically or not. This is determined by the previous configuration (the Tray icon configuration).

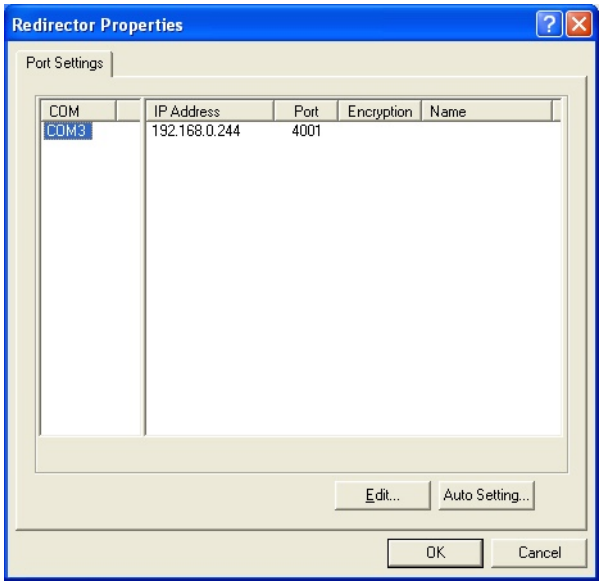
2) Using Redirector in Windows 2000/XP

1) If Redirector is not installed in your system, install Redirector. (Refer to 2.Installing Redirector in this chapter for more information)

2) If Redirector is installed in Windows 2000/XP, virtual driver is loaded on the system automatically when the PC boots.

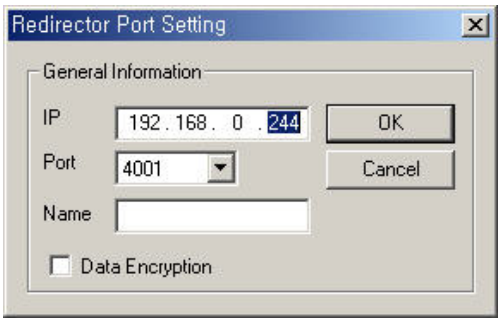
3) With the configuration program, you can identify that virtual COM ports are created. Alternatively, you can also check “Ports (COM and LPT)” in Device Manager. (To open the Device Manager, select Start → Setting → Control Panel → System → Hardware → Device Manager)

4) Run the configuration program by selecting Start → All Programs → SystemBase Portbase → COM Port Redirector → Configure Installed Ports



5) If you like to change the IP address and the socket number of Portbase assigned to the virtual COM port, click “Edit”.

6) Enter the IP address, socket number (4001 to 4032) and the port name (32 bytes maximum) that you like to edit. Click “OK” to apply new settings.



7) If you want to enable data encryption for your communication, check “Data Encryption”. (Encryption mechanism used in this option is SEED, a 128-bit symmetric key type block encryption algorithm.)

8) If the user application opens the virtual COM port registered in the system, the Redirector service starts. The connection is established using the IP address and the socket number designated for Portbase.

9) If the user application closes the COM port, the connection with Portbase is lost and the Redirector service is terminated.

4. Uninstalling Redirector

Uninstall process for Redirector is the same for all Windows versions.

- From Windows, select Start → All Programs → SystemBase Portbase → COM Port Redirector → Uninstall COM Port Redirector". Uninstall wizard will guide through the process.

- All pre-installed virtual COM ports are removed when Redirector is uninstalled.

5 Management with Portview

1. Portview Introduction

Portview is the program that enables you to monitor the Portbase communication sutatus in real time. Portview displays the data input/output through each serial port as well as the communication status of Portbase from remote PCs under the Windows environment.

1) Supported Hardware

- Portbase 3010 / 3010F / 3020 / 3020F / 3040 / 3080 / 3160 / 3161

2) System Requirements

PC system requirements for running Redirector are as follows.

- CPU : Pentium 100 MHz or higher
- Memory : 16 Mb or more
- Operating System : Windows 95/98/ME/2000/XP/2003
- CD-ROM : Faster than 4X
- Network : 10M Ethernet or higher

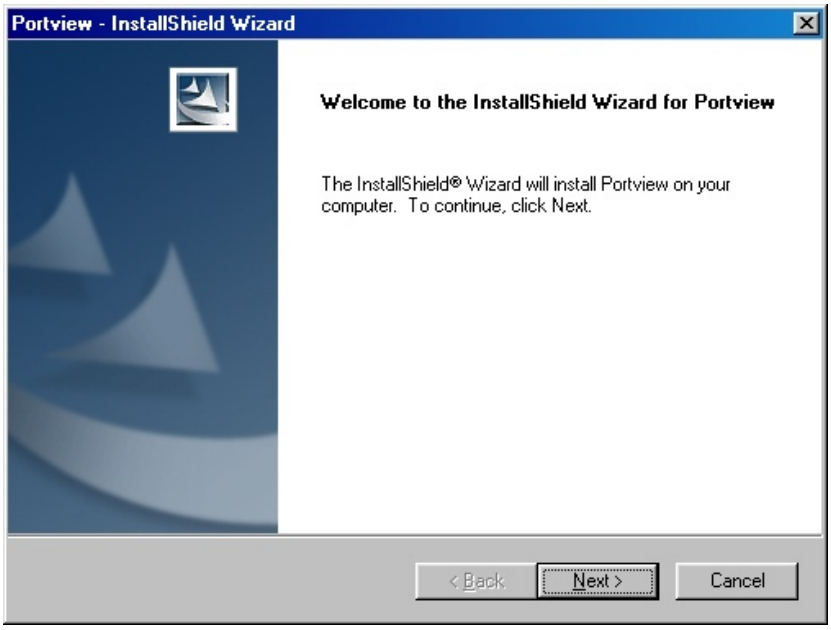
2. Installing Portview

1) Installation

1) Insert the Portbase setup CD to the CD-ROM drive.

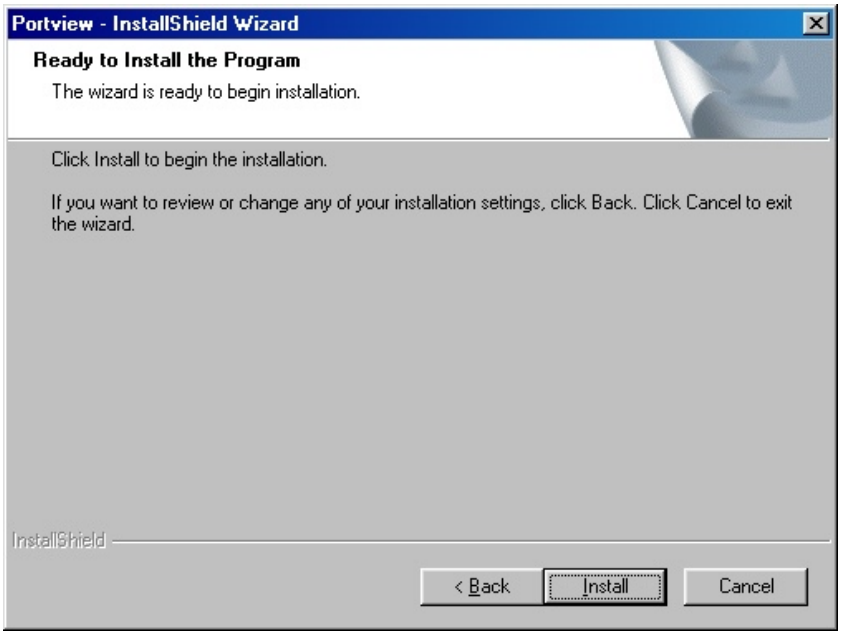
2) Run Setup.exe. (The program is started automatically when you insert the CD.)

3) Select “English”, and then “Install Portview”.

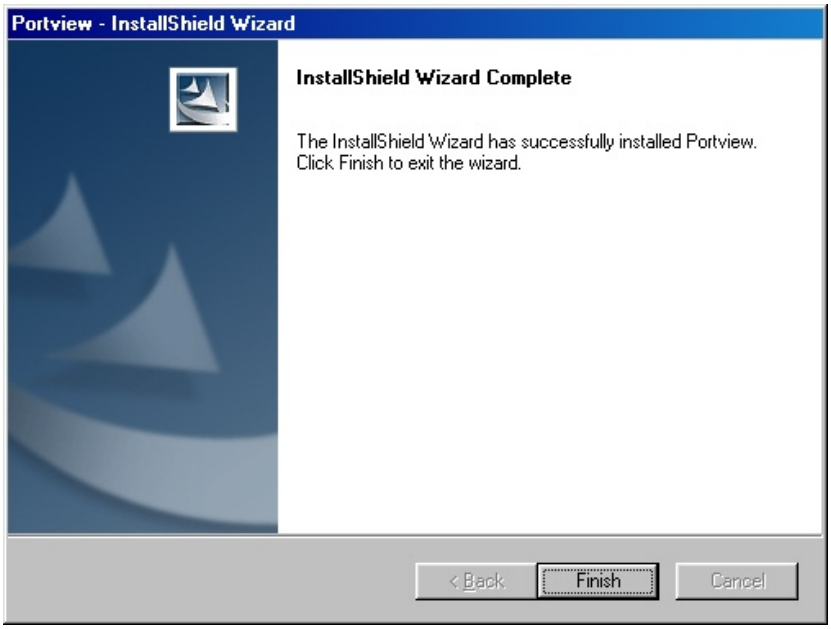


4) Portview install wizard starts. Click “Next” to proceed.

5) Choose destination location, and click “Next”. Default path is C:₩Program Files₩SystemBase Portbase₩Portview



6) Click “Install” to begin installation.



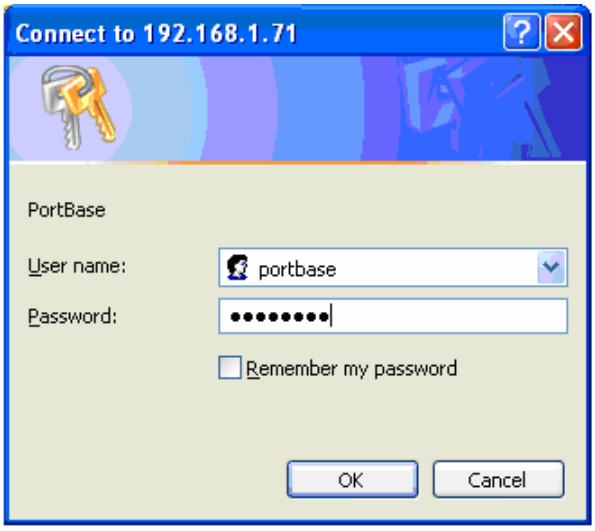
7) Click “Finish” to complete the installation. To run the program, select ‘Start’ → ‘All Programs’ → ‘SystemBase Portbase’ → ‘Portview’ → ’Launch Portview’.

3. Using Portview

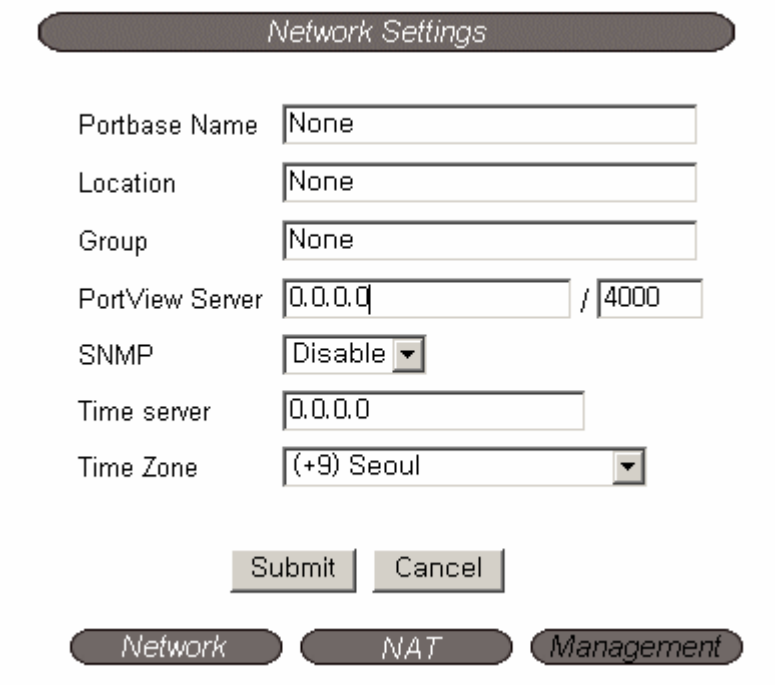
1) Portbase Setting

1) Type the Portbase IP address in the address windows to access the Portbase web site via the web browser.

2) Enter the user name and the password of Portbase.



3) Click on ‘Network Setting’, and click on ‘Management’ button from the page that shows up, among the three button menus available (Network, NAT, and Management).



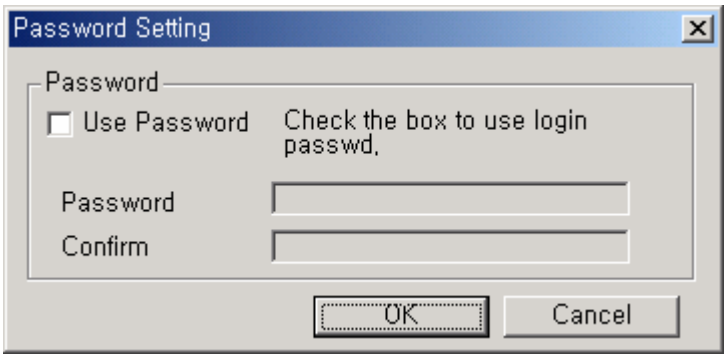
4) Enter the IP address of the PC to execute Portview on, the name of Portbase, the Location that Portbase is in, and the Group in which Portbase belongs to.

5) Click on “Save & Restart” to apply the new setting to Portbase.
(Refer to **Chapter 2. Configuration** for details.)

2) Environment Setting

- Password Setting

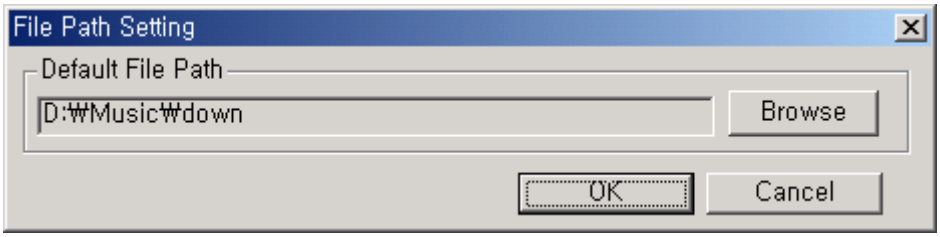
In order to prevent unauthorized access to Portview, click on 'Settings' → 'Password Setting' from the menubar.



Mark "Use Password" box and enter the password, and click on "OK". Afterward, the password window will appear to execute the the Portview.

- Directory Setting

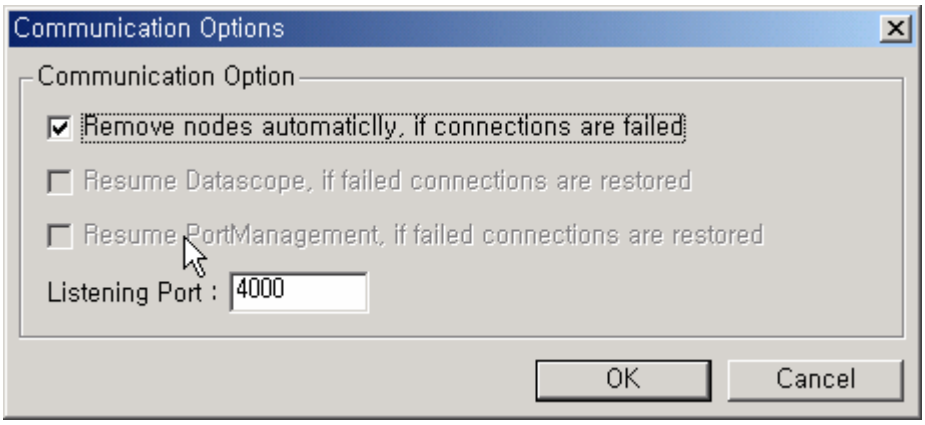
You can set the default directory to save the Portbase log file and the Datascope capture file.



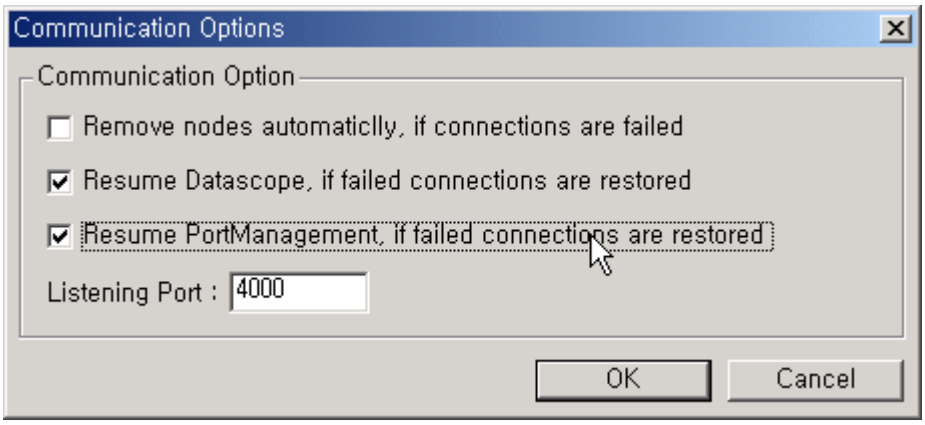
■ Communication Setting

Select whether Portview should keep displaying Portbase after it is disconnected, and set the external connection port.

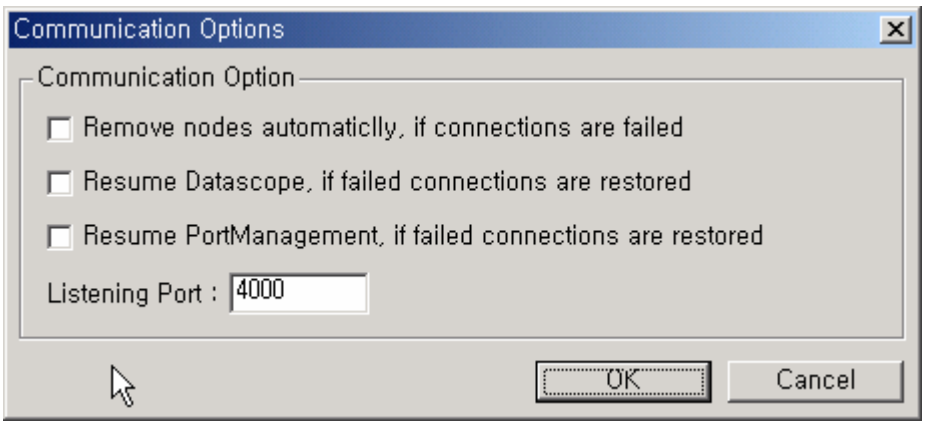
① If you select 'Remove nodes automatically, if connections are failed', the Portbase information disappears as the Portbases are disconnected.



② Select 'Resume Datascope, if failed connections are restored' from communication options menu bar if you want to set Datascope to be automatically executed when the failed Portbases are reconnected. At this time, to automatically display incoming/outgoing data to/from each Portbase port in real time, select 'Resume PortManagement, if failed connections are restored' as well. (Both options are available at the same time)

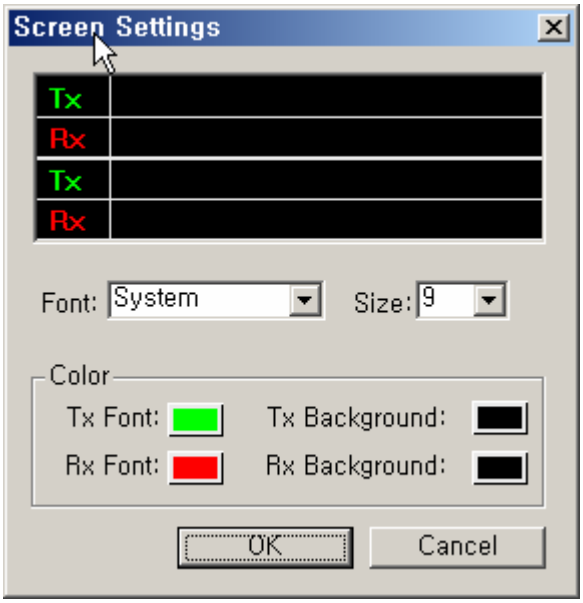


③ Type the socket number for Portbase connection. The default port number is 4000.



■ Datascope Screen Setting

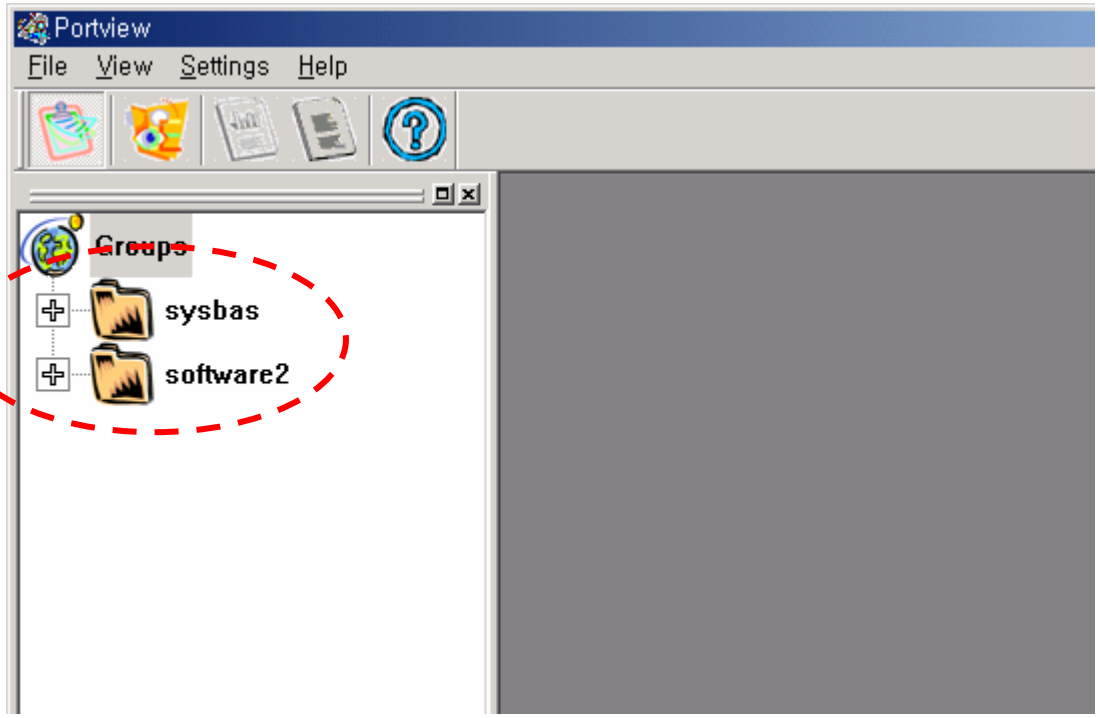
You can change settings of the data input/output monitoring screen.



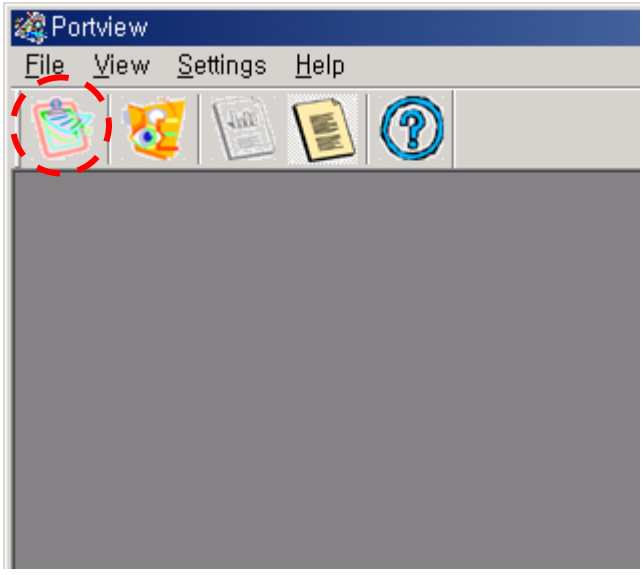
3) Overall Portbase Management

You can manage all the Portbases connected to Portview.

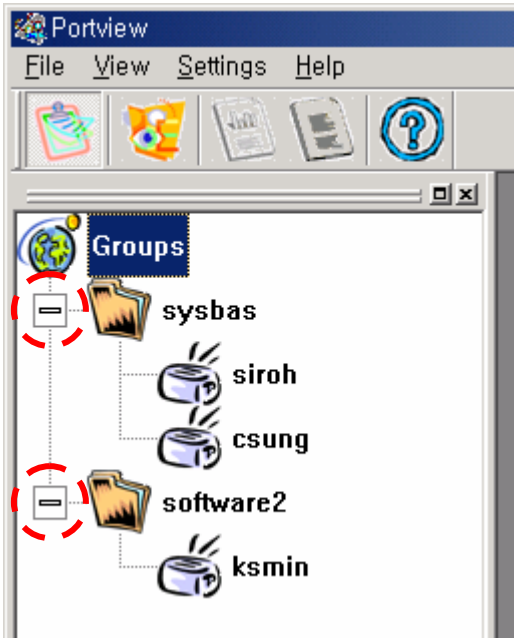
- The Portbases with different group names are displayed as different groups.



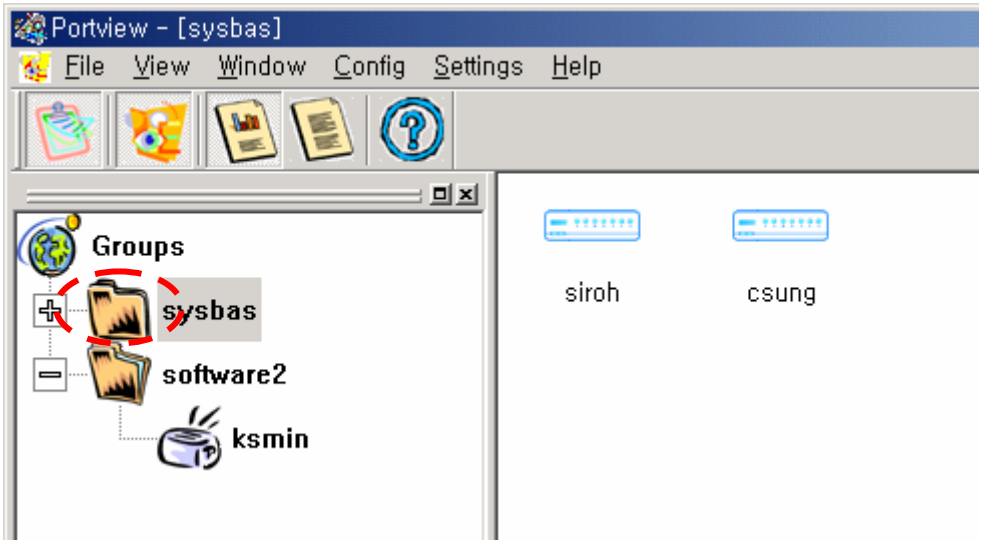
- To close the group tree screen, click on  from the toolbar.



- Click on  to display Portbases of a group.

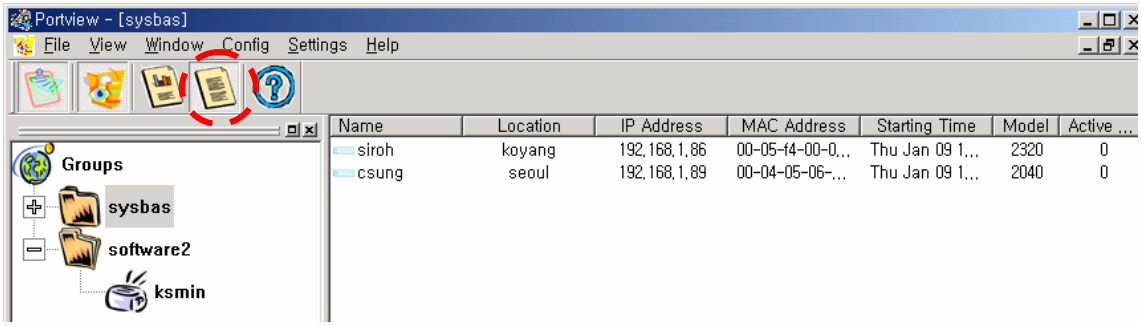


- To display icon screen of a Portbase, click on  .



Because you selected sysbas, the tile becomes “Portview – [sysbas]”.

- In order to display detailed information of a Portbase, click on  .



Detailed information of Portbase is as below.

Name	:	Portbase name
Location	:	Portbase location
IP Address	:	Portbase IP address
MAC Address	:	Portbase MAC address
Starting Time	:	Portbase starting time
Model	:	Portbase model
Active Ports	:	The number of active ports

To return to the Portbase icon screen, click on  .

- To update the disconnected equipment information, click on 'View'->'Refresh Group Tree' from the menu.

- Configuration Setting

  You can set configuration (name, location, group, IP, mask, gateway and etc.) of Portbase using web and telnet. (Refer to **Chapter 2 Configuration** for details.)

  To open web or telnet screen of a Portbase server, select the Portbase on the icon screen or the list screen, and select 'Config' → 'Web Configurator' or 'Telnet from the menu'. (You can select Web or Telnet only after you select a Portbase.)

(Selecting Telnet)

4) Detailed Portbase Management

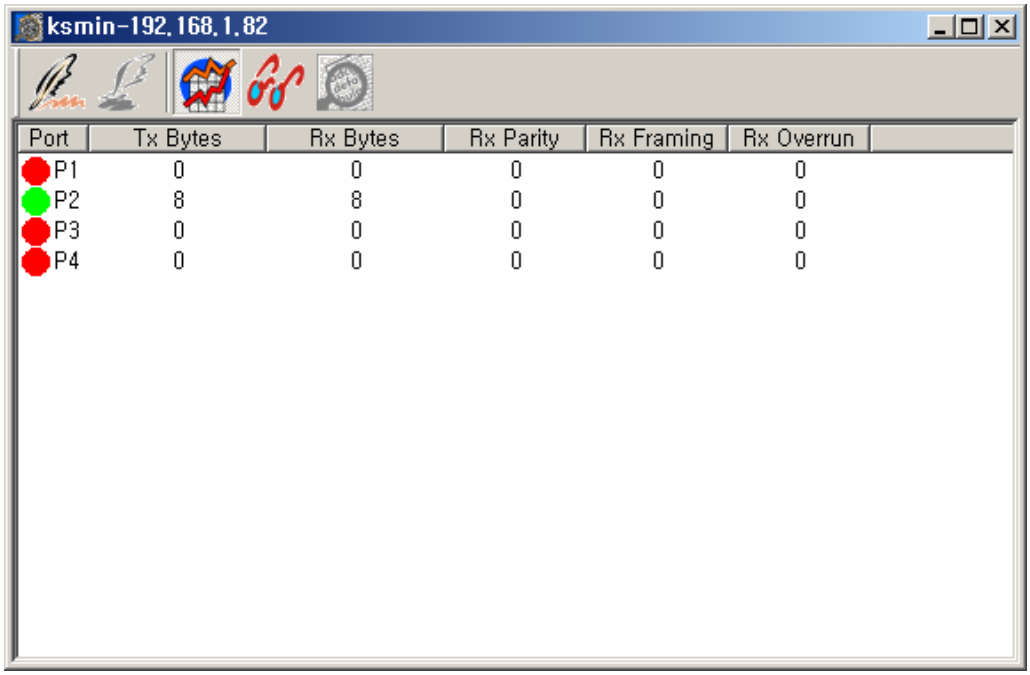
■ Portbase View

Port View screen:

1) Displays data on each Portbase's port..
2) Displays errors on each Portbase's port.
3) Displays environment configuration for each Portbase's port.

① Starting

To run Portbase View, double-click on an equipment on the Group List View or the Portbase List View.



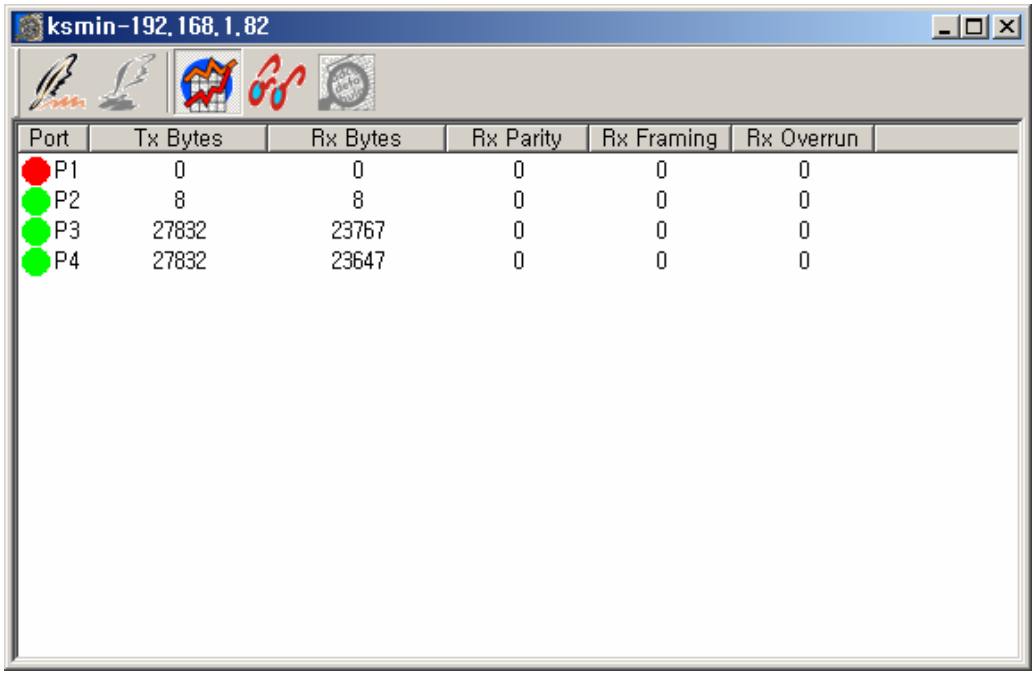
<Initial Portbase View Screen>

② Statistics

You can display input/.output data sizes and errors of all ports of the equipment being monitored.

To see this screen, click on  from the toolbar.

The Ststistics screen is the same as the initial screen.



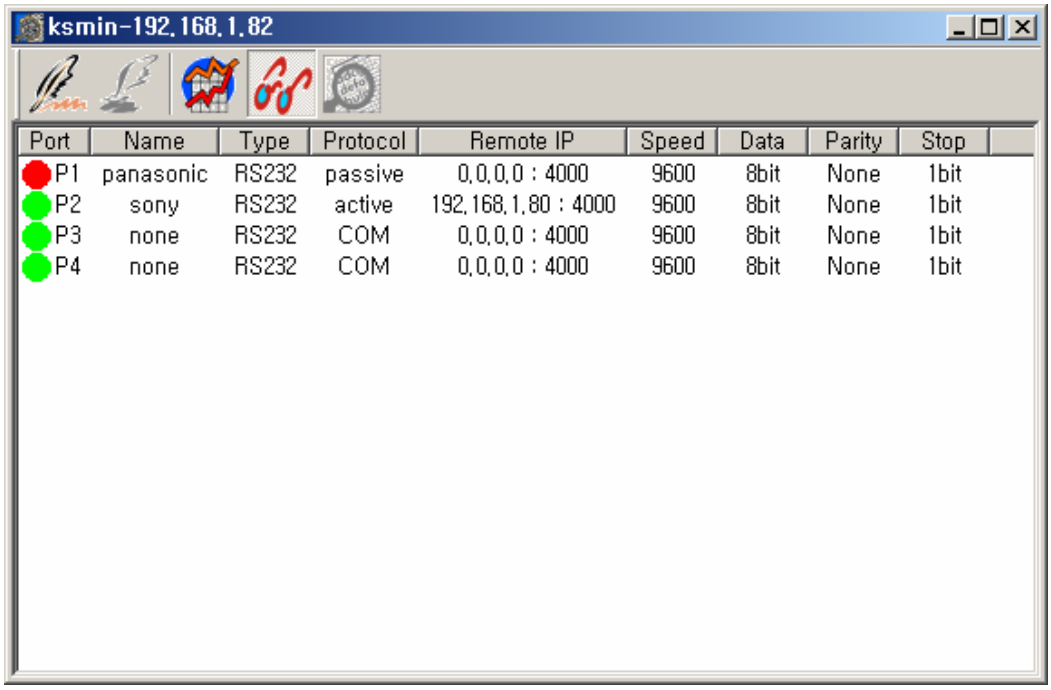
<Statistics Screen>

- Port : Displays port status.
  - : The port is active (Green)
  - : The port is available but not active (Red)
  - : The port is unavailable. (Gray)
- TxBytes : The number of output data bytes through the Portbase port
- RxBytes : The number of input data bytes through the Portbase port
- Rx Parity : The number of parity errors during data reading
- Rx Framing : The number of framing errors during data reading
- Rx Overrun : The number of overrun errors during data reading

③ Settings

You can display settings of all ports.

Click on  from the toolbar.

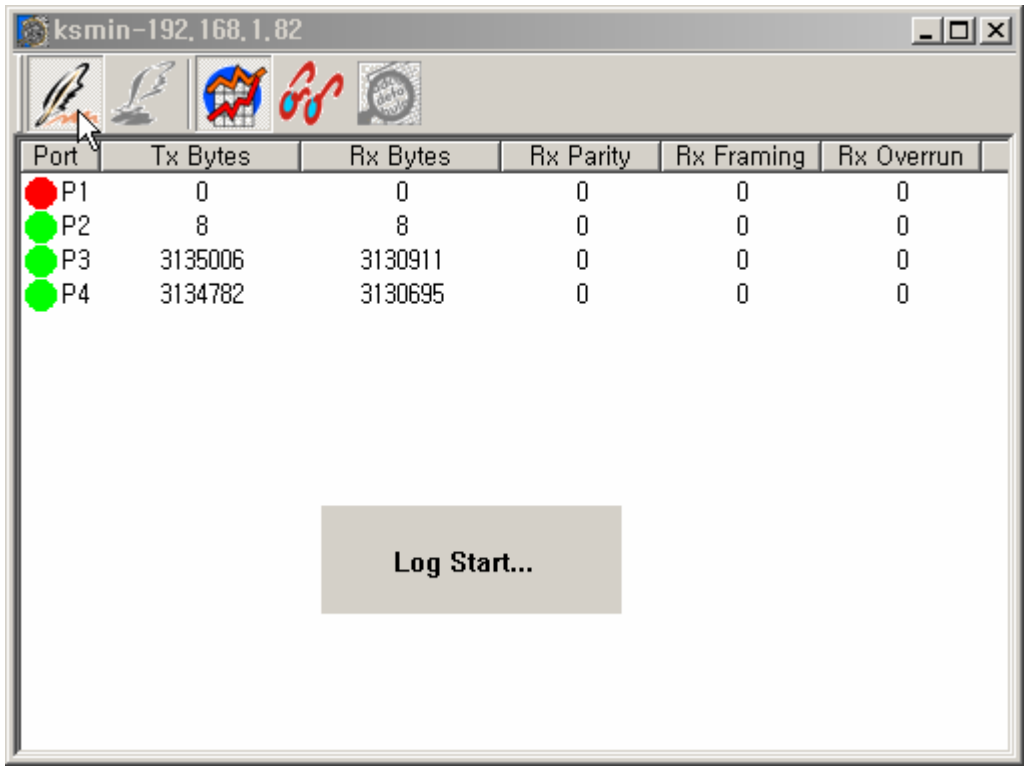


<Settings Screen>

- Port : Port number and status of a Portbase
  - : The port is active (Green)
  - : The port is available but not active (Red)
  - : The port is unavailable. (Grey)
- Name : Port name of the Portbase
- Type : Port type of the Portbase (RS232/422/485)
- Protocol : Protocol of the Portbase (Passive, Active, Telnet, Com, Tty, Link)
- Speed : Baud rate of the Portbase port (150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400)
- Length : The number of bits indicating a character (5, 6, 7, 8)
- Parity Error detection method of making the number of '1's in a bit string to be odd or even by adding a test bit to the given data bit string. (None, Odd, Even)
- Stop The bits added to indicate that a character ends (1, 2)

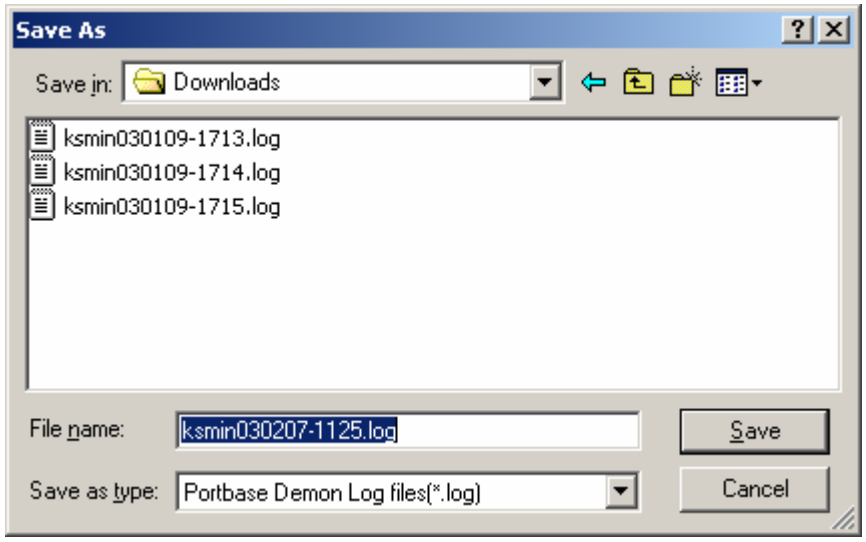
④ Log file saving

You can make log files for port status and execution of program in Portbase. On the Portbase View window, click on  to display the log start message. The port operation status is recorded 
on the log. In order to save the log file, click on



<Log Start Message>

When saving a log file, enter the file name and click on “Save” .



<Log Window>

⑤ Log File

A log file is configured as below.

```
SystemBase Portview Demon Log File - Thu Jan 09 20:26:18 2003

=========  System Configuration  ==========
Name            : ksmin
Group           : software2
Location        : application
IP Address      : 192.168.1.82
MAC Address     : 00-05-F4-00-04-54
=======================================


==========================  Port Configuration  ==========================
No      Status  Type    Protocol        Speed           Remote Server
-------------------------------------------------------------------------
00      Enable  RS232   passive 9600/None/8bit/1bit     0.0.0.0 : 4000
01      Using   RS232   active  9600/None/8bit/1bit     192.168.1.80 : 4000
02      Using   RS232   COM     9600/None/8bit/1bit     0.0.0.0 : 4000
03      Using   RS232   COM     9600/None/8bit/1bit     0.0.0.0 : 4000
=========================================================================
```

<Initial System Configuration>

- Initial system setting

  The red dotted part on the above screen. It contains the default settings.

- Port setting

  The below “Port Configuration” part.

  The port status at the time of log start.

  It has the same items of the “Settings” window of Portbase View.

```
-----------------------------------------------------------
Date            Time            Port    Demon   Status
-----------------------------------------------------------
03/01/09        20:26:27        04      COM     Terminated
03/01/09        20:26:32        04      COM     Started
03/01/09        20:26:34        03      COM     Terminated
03/01/09        20:26:36        02      active  Terminated
```

<Demon Log Screen>

- Demon record

  Records start and end date, time, port and status of the Demon of each port.

  ◆ Date : Year/Month/Date

  ◆ Time : Hour:Min:Sec

- Port : The port where the Demon event has occurred
- Demon : Type of Demon
- Status : Demon starts - Started
  Demon ends - Terminated

- Connection error and reconnection

```
03/01/09        20:26:57        Connection Closed. All Demons were Terminated!
03/01/09        20:27:11        Connection Recovered!

=========  System Configuration  ==========
Name            : ksmin
Group           : software2
Location        : application
IP Address      : 192.168.1.82
MAC Address     : 00-05-F4-00-04-54
=========================================


=========================  Port Configuration  =========================
No      Status  Type    Protocol        Speed           Remote Server
---------------------------------------------------------------------------
00      Disable RS232   passive 9600/None/8bit/1bit     0.0.0.0 : 4000
01      Disable RS232   active  9600/None/8bit/1bit     192.168.1.80 : 4000
02      Disable RS232   COM     9600/None/8bit/1bit     0.0.0.0 : 4000
```

<Connection End Message and Reconnection Message>

The red dotted part shows the disconnecton time and indicates that all the programs are terminated.

The reconnection time and settings are displayed when the connection is restored. (Status at reconnection is Disable.)

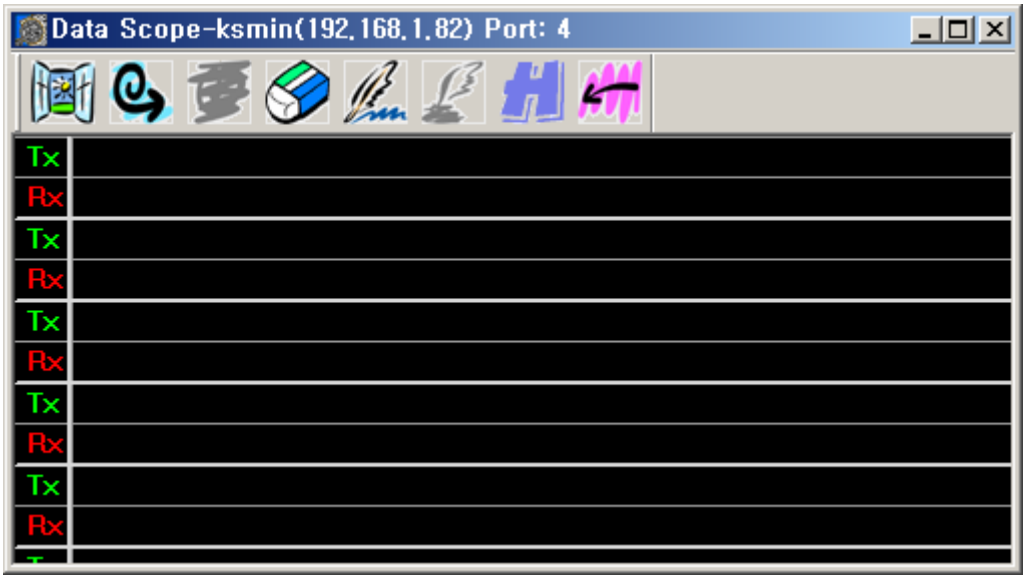
■ Data Scope View

Datascope window:

1) Displays input/output data on a port in ASCII.
2) Displays input/output data on a port in HEX.
3) Saves input/output data on a port.

① Starting data scope view

Select the port you want to see data scope of in the Portbase View window and click on  Or, double-click on the port.



<Data Scope Window>

- Toolbar

 Open : Read the data scope file in ".cap", and display it on a new window.

 Start : Start data scope of the port. The button remains pressed once it is started.

 Stop : Activated while data scope is running. Click this button to stop data scope.

 Erase : Initialize the window.

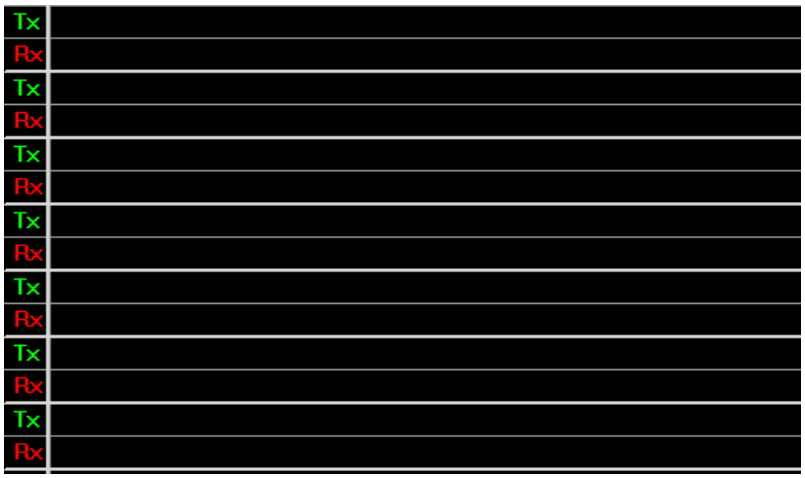
 Capture Start : Write the data scope content on a file. If you click this button the "Capturing" window is displayed.

 Capture Stop : End writing data scope content, and save the file.

	Hexa Code	Display the data scope content in Hexa code. If the button remains pressed, ASCII data is changed into two-digit Hexa code.
	Back	Close the window. (If Capture is active, the file saving window is displayed.)

- Data View

  Input/output data on the port is displayed. If the data type is ASCII, the data is displayed as they are. If you select HEX, they are displayed in hexadecimal. Use scroll bar to see the rest of the data.

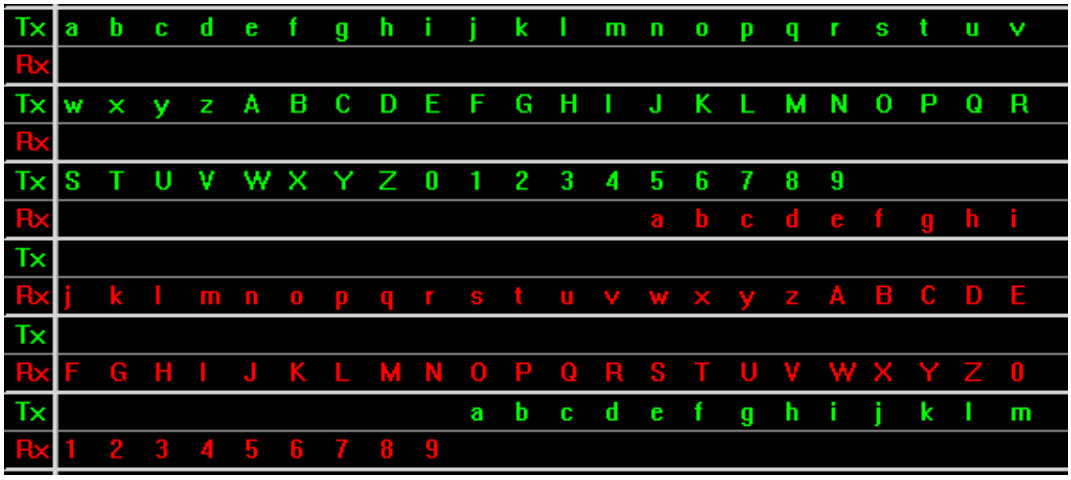


<Data View Window>

② Operation

- Data Scope Starting

  If you click on  and the remote Tx/Rx data is displayed on the screen.

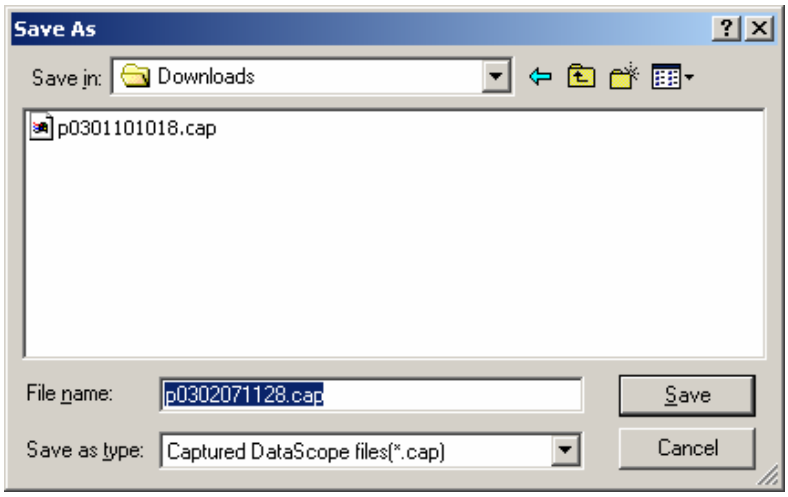


<Data Scope - Ascii>

Tx data is displayed on the upper line and Rx data is displayed on the lower line. The function measures buffering status near the data exchange time to arrange the data. To stop the data scope function, click on 

- File Saving

  If you click on “Capture Start”, the “Capturing” message is displayed and saved. (The Capture Start button is pressed down while the message is saved on a file.) Click on “Capture Stop”. The default file name is “pyymmddhhmm.cap”, and each two digit number indicates year/month/date/hour/minute.



<Saving Data Scope File>

To open a saved file, click on  and select a file. The data is displayed on a new window.

- Data in Hexa code

  In order to view data in hexadecimal format on Data View, click on  Use scroll bar to see the rest of the data.

Tx	61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76
Rx	
Tx	77 78 79 7A 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52
Rx	
Tx	53 54 55 56 57 58 59 5A 30 31 32 33 34 35 36 37 38 39
Rx	61 62 63 64 65 66 67 68 69
Tx	
Rx	6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 41 42 43 44 45
Tx	
Rx	46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 30
Tx	61 62 63 64 65 66 67 68 69 6A 6B 6C 6D
Rx	31 32 33 34 35 36 37 38 39

<Data Scope - Hex>

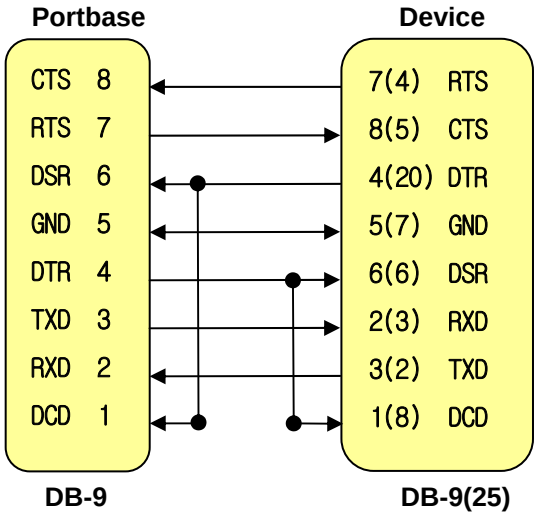
4. Uninstalling Portview

Select ‘Start’ → ‘All Programs’ → ‘SystemBase Portbase’ → ‘Portview’ → ‘Uninstall Portview’.

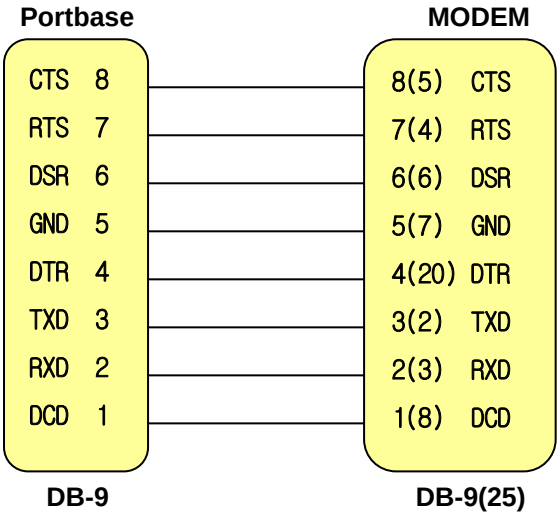
6 Cable Pinouts

1. Portbase-3010 Serial Cable Pinouts

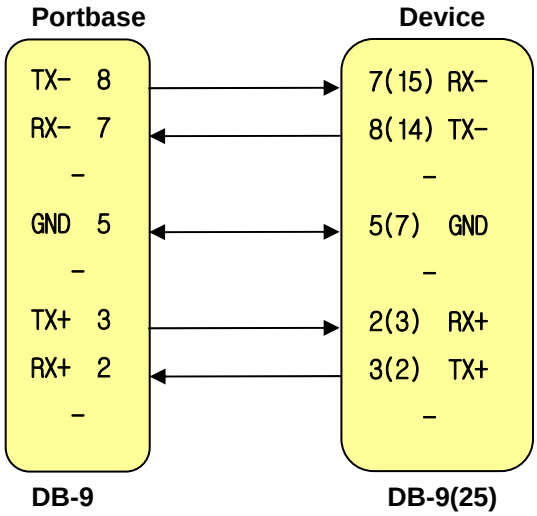
RS232 Cross Cable



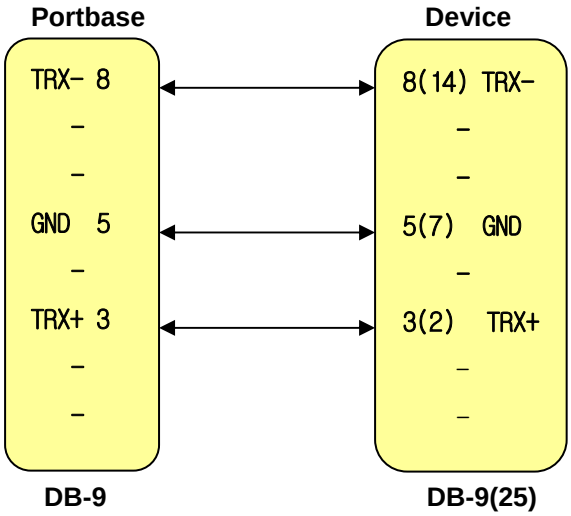
RS232 MODEM Cable



RS422 Cable



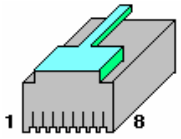
RS485 Cable



※ Cables are not supplied additionally. You need to make cables manually with pinout specifications above.

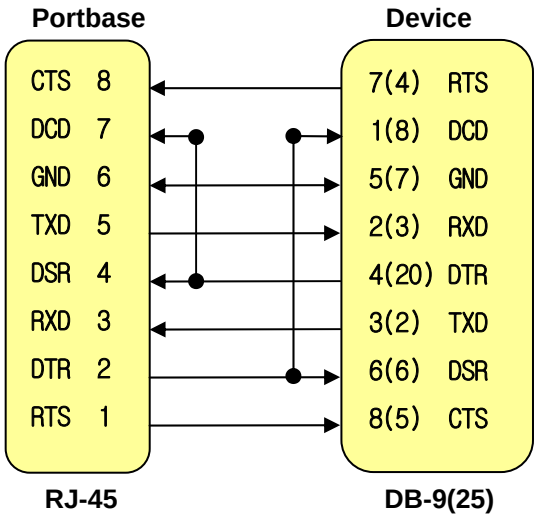
Numbers in parenthesis indicate DB-25 connector pin number.

2. Portbase-3020/3040 Serial Cable Pinouts

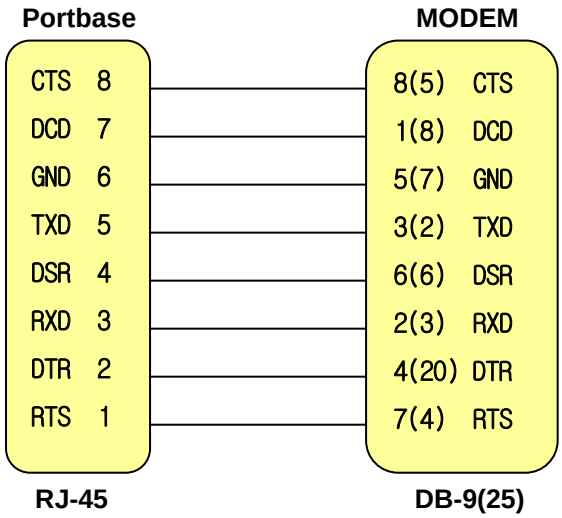


RJ-45 Pin Alignment

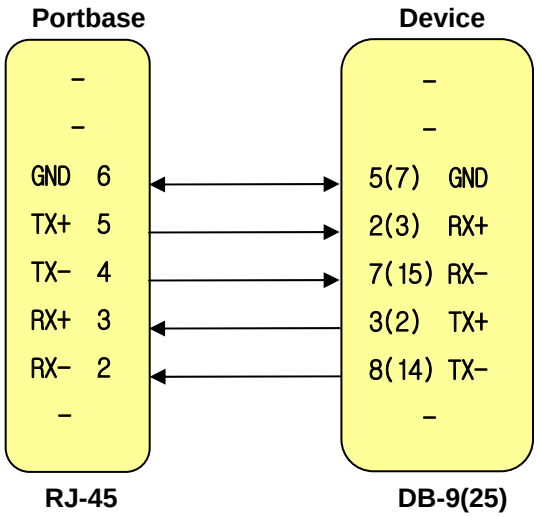
RS232 Cross Cable



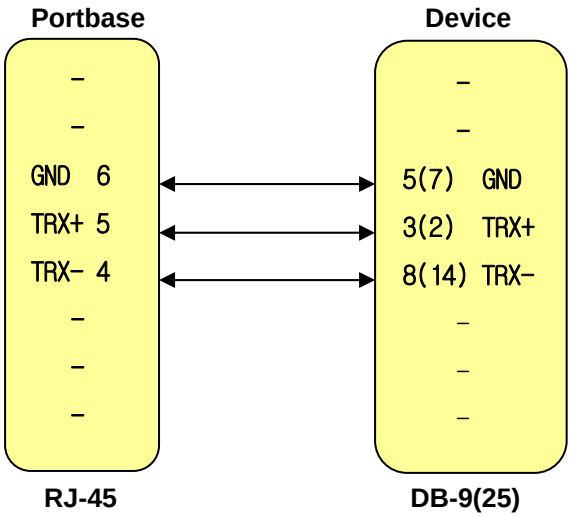
RS232 MODEM Cable



RS422 Cable



RS485 Cable



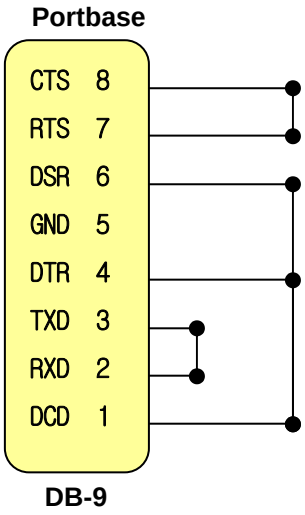
※ Cables are not supplied additionally. You need to make cables manually with pinout specifications above.

Numbers in parenthesis indicate DB-25 connector pin number.

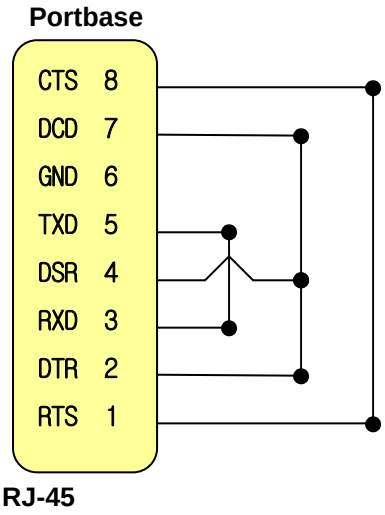
3. Serial Loopback Cable Pinouts

The loopback connector can be used to verify if the Portbase hardware is all right by performing an external loopback test. The loopback connector is plugged in the Portbase's RJ45 serial port to make sure that the Portbase serial port operates normally.

Portbase-3010 (RS232/422) Loopback

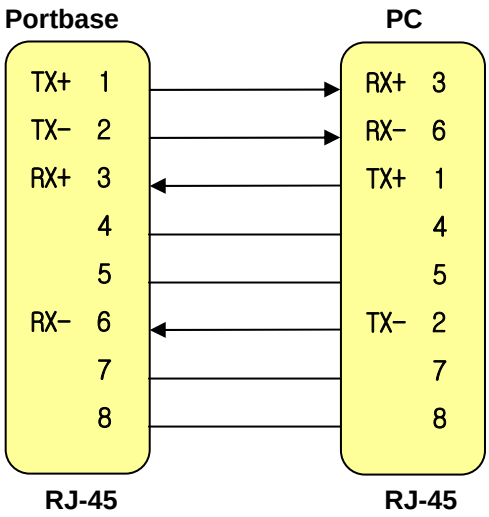


Portbase-3020/3040(RS232/422) Loopback

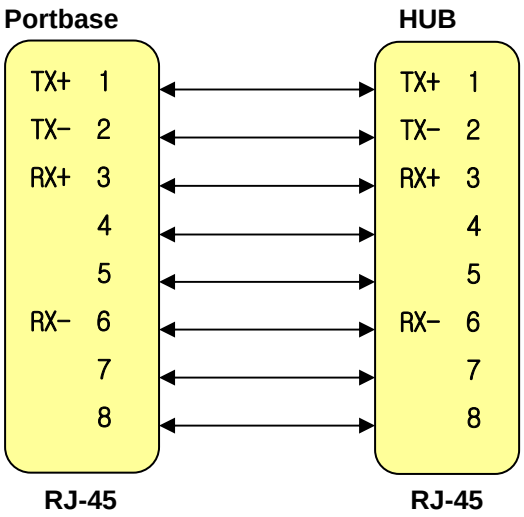


4. LAN Cable Pinouts

LAN Cross Cable



LAN Direct Cable



※ Cables are not supplied additionally. You need to make cables manually with pinout specifications above.

7 Programming Examples

This chapter provides application program examples that communicate through COM ports, TTY ports and sockets to help the user develop a PC based application using Portbase

1. COM Port Communication Program

COM port communication is most generally used serial communication way in the Windows environment.

1) Function Description

CreateFile()---------- Create a communication port.
|
GetCommState() ---------- Get the speed, byte spec of the open communication port.
|
SetCommState() ---------- Set the speed, spec of the open communication port.
|
ReadFile(), WriteFile() --- Read or write data from the open communication port.
|
CloseHandle() ---------- Close the open communication port.

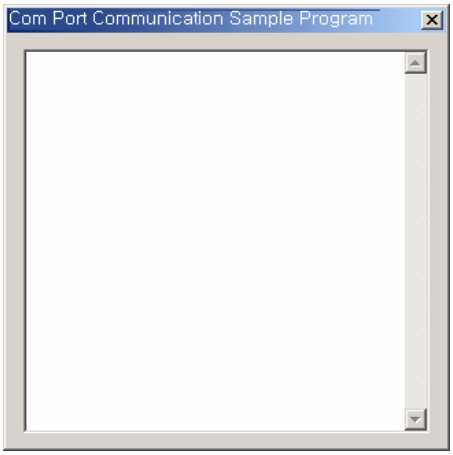
2) Result

Application repeatedly transmits “This is LoopBack Data!” through the COM3 port at 3 second intervals and displays data from COM3 on screen.

3) How to Run

- Plug the loopback connector to the first serial port of Portbase.
- Run Redirector and select Portbase to register the first serial port as COM3.
  (Refer to Chapter 4. COM Port Redirector.)
- If you run the program, the following screen appears and “This is LoopBack Data!“ is repeatedly

displayed on the edit box at 3 second Intervals.



4) Source Code

```
BOOL CExample1Dlg::OnInitDialog()
{
    // Opens the COM3 port.
    hComm = CreateFile("\\\\.\\COM3", GENERIC_READ |
                       GENERIC_WRITE, 0, NULL, OPEN_EXISTING, 0, NULL);
    If(hComm == INVALID_HANDLE_VALUE) { // In case the port is not valid
        AfxMessageBox("  Failed Open !");
        return;
    }

    // Sets the input time.
    COMMTIMEOUTS cto;
    cto.ReadIntervalTimeout = 0;
    SetCommTimeouts(hComm, &cto);

    // Obtains the existing communication specifications.
    GetCommState(hComm, &dcb);

    // Decides the communication Spec of the port.
    dcb.BaudRate = 9600;
    dcb.ByteSize = 8;
    dcb.Parity   = NOPARITY;
    dcb.StopBits = ONESTOPBIT;
```

```
    SetCommState(hComm, &dcb);

    // Sets a timer for transmission.
    SetTimer(1, 3000, NULL);
    // Sets a timer for reception.
    SetTimer(2, 1, NULL);
}

void CExample1Dlg::OnTimer(UINT nIDEvent)
{
     CEdit * pEdt = (CEdit *)GetDlgItem(IDC_edtWINDOW);
     char  WriteData[30] = "This is LoopBack Data !";
     DWORD Writed;

     if(nIDEvent == 1) { // In case data is output to the port.
        // Outputs data to the port.
        WriteFile(hComm, WriteData, strlen(WriteData), &Writed, NULL);
      }

      if(nIDEvent == 2) { // In case data is inputted to the port.
          COMSTAT c;
          char  rbuff[1000];
          DWORD nBytesRead = 0, Error;

          // Clears an error & obtains the length of data to be read.
          ClearCommError(hComm, &Error, &c);

          if(c.cbInQue) {
             ReadFile(hComm, rbuff, c.cbInQue, &nBytesRead, NULL);

             // Outputs data to the edit box.
             rbuff[nBytesRead] = 0;
             pEdt->ReplaceSel(rbuff);
          }
      }
}
```

2. TTY Port Communication Program

TTYxx port communication is most generally used serial communication method under the Linux/Unix environment.

1) Function Description

open() ---------- Open a communication port.
|
read(), write() --- Read or write data from the open communication port.
|
close() ---------- Close the open communication port.

2) Result

Application repeatedly transmits “This is LoopBack Data!” through the ttyS0 port at 3 second intervals and displays data from ttyS0 on screen.

3) How to Run

- Plug the loopback connector to the first serial port of Portbase.
- Run Redirector and select Portbase to register the first serial port as ttyS0.
- If you run the program, the following screen appears and “This is LoopBack Data!“ is repeatedly displayed on the edit box at 3 sec. Intervals.

4) Source Code

```
//Inserts the necessary header files.
#include <stdio.h>
#include <stdlib.h>
#include <time.h>
#include <sys/un.h>
#include <string.h>

int porthandle; // Handle for the socket of RTCP
int readval;    // Variable for saving the returned value of read

void OpenSerial(void);
```

```
  void SendData(void);
  void GetData(void);

//Creates the main function and calls the function.
main (int argc, char *argv[])
{
       time_t tti;
       struct tm *ttm;
       int gettime;
       int gettime2;

       OpenSerial();

       time(&tti);
       ttm = localtime(&tti);
       gettime = ttm->tm_sec;
       gettime2 = ttm->tm_sec;

       while(1){
          time(&tti);
          ttm = localtime(&tti);

          gettime = ttm->tm_sec;// Obtains the present time.
          if (gettime2 > gettime) gettime = gettime + 60;
          if ( gettime - gettime2 > 2) {// Calls the SendData() function every 3
    second.
               SendData();
               gettime2 = ttm->tm_sec;
           }
          GetData();
       }
}

  //Transmits a data packet to the opened socket by creating the data packet.
  //Calls it in the main function every 3 seconds.
  void SendData(void)
  {
       int i;
       char temp[30] = "This is LoopBack Data!”
        // Outputs data to the ttys0.
        write(porthandle, temp, sizeof(temp));
  }

  //Outputs received data on the screen.
  void GetData(void)
  {
       int i;
```

```
        char readbuff[255];

        // Reads data.
        readval = read(porthandle, readbuff, sizeof(readbuff));
        if (readval < 1) return;
        readbuff[readval] = 0;
        printf("%s",readbuff);
}

//Opens the ttys0 port of RTCP connected to Portbase.
void OpenSerial(void)
{
        int i;

        // Opens the ttys0 port.
        porthandle = open(“/dev/ttys0”, O_RDWR | O_NOCTTY |O_NONBLOCK);

        // Outputs an error if the socket port is not valid.
        if (porthandle < 0){
                printf("Can not Open %s\n", ComName);
        }
}
```

3. Windows Socket Program

Basically, the Portbase operates network communication through the socket.
The socket is an effective way to communicate on a network between the client and server.
Programming steps for the socket communication are as follows.
The initial handshaking to support socket communication consists of two methods, Passive and Active.

1) Passive Programming

Set the handshaking method to passive in the Webpage Connection Setting.
Passive handshaking makes the Portbase socket to be on the server side, waiting for a connection request from the outside.

Portbase's sockets 4001 to 400x are firmly connected to serial ports 1 to x respectively. For instance, socket 4002 is conncted to serial port 2.

- The server's waiting sequence for connection requests from client

CAsyncSocket() ------ Create a socket object.
|
Bind() ---------- Announce the program is ready for communication.
|
Listen() ---------- Wait for connection request from client.
|
Receive() ---------- Wait until the client requests a sendto.
|
Send() ---------- Send a HTML file and others in response to the request from client.

2) Active Programming

If you set the handshaking method to active in the Webpage Connection Setting, the socket acts in Active mode.
Active handshaking makes the Portbase serial ports to be on the client side trying to connect to the remote client's IP address and socket number.
If the Portbase has started completely, you can see that sockets 4001 to 400x are automatically connected to serial ports 1 to x.

- Connection Request Order from client to server

  CAsyncSocket() – --- Create a socket object.
  |
  Connect() ------- Request for connection to server.
  |
  Send()- --------- Send a HTML file and others in response to the request from server.
  |
  Receive()------- Wait until the server requests a sendto.

3) Operation Environment

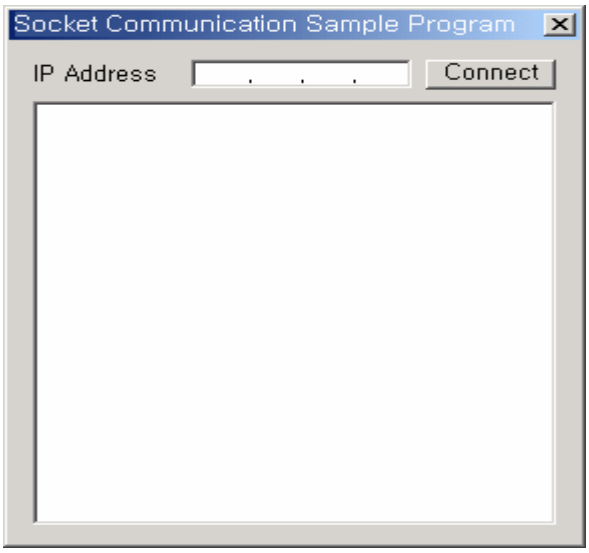
- O/S : Windows 95/98/2000/XP
- Tool : Microsoft Visual C++ 5.0 or higher

4) Result (Active programming)

If the user enters the IP address of a specific Portbase and clicks “Connect”, the message “This is LoopBack Data!” is transmitted at 3 second intervals and the received data will be displayed.

5) How to Run

- Plug the loopback connector to the first serial port of Portbase.
  (The port is connected to the socket 4001.)
- Run the program and the following screen appears.



- Enter the Portbase IP address you want to connect to and click “Connect”.
- If the connection is successfully completed, the message “Connected “will be displayed.
- “This is LoopBack Data!“ is repeatedly displayed at 3 sec. intervals on the edit box.

6) Source Code

Declare the client socket to be connected to the server and the variable to save the IP address entered by the user in SockExamDlg.h as follows.

```
class CSockExamDlg : public CDialog
{
// Construction
public:
	CSockExamDlg(CWnd* pParent = NULL);	// standard constructor

	CAsyncSocket * p;
	CString m_ipaddr;
	   ……..

//Add the Connect button event in the class Wizard, and code as follows.
void CSockExamDlg::OnbtnConnect()
{
     CEdit *pEdt;
     // Finds the IP address.
```

```
    pEdt= (CEdit *)GetDlgItem(IDC_edtIPAddress);
    pEdt->GetWindowText(m_ipaddr);

    // Creates the socket.
    p = new CAsyncSocket;
    p->Create();

    // Requests a connection by the socket number 4001.
    if(p->Connect((LPCSTR)m_ipaddr, 4001) == 0) {
      AfxMessageBox("Connection fail");
      return;
    }
    else AfxMessageBox("Connection success");

    // Sets a timer for transmission.
    SetTimer(1, 3000, NULL);
    // Sets a timer for transmission.
    SetTimer(2, 1, NULL);
}
// Adds a coding for transmitting and receiving data in the timer event routine.
void CSockExamDlg::OnTimer(UINT nIDEvent)
{

    CEdit * pEdt = (CEdit *)GetDlgItem(IDC_edtWINDOW);
    char  WriteData[30] = "This is LoopBack Data !";
    if(nIDEvent == 1) { //In case data is output to the socket.
        p->Send(WriteData, strlen(WriteData));
     }

     if(nIDEvent == 2) { //In case data is inputted from the socket.

       char rbuff[1000];
       int  nBytesRead;

       nBytesRead = p->Receive(rbuff, sizeof(rbuff));

       if(nBytesRead) {
```

```
            // Outputs data to the edit box.
            rbuff[nBytesRead] = 0;
            pEdt->ReplaceSel(temp);
         }

     }
     CDialog::OnTimer(nIDEvent);
}
//Closes the socket when the program is shut down.
BOOL CSockExamDlg::DestroyWindow()
{
       if(!p) p->Close ();
       KillTimer(1);
       KillTimer(2);
       return CDialog::DestroyWindow();
}
```

4. Linux/Unix Socket Program

1) Passive Programming

Set the handshaking method to passive in the Webpage Connection Setting.
Passive handshaking makes the Portbase socket to be on the server side waiting for a connection request from the outside.
Portbase's sockets 4001 to 400x are firmly connected to serial ports 1 to x respectively. For instance, socket 4002 is connected to socket 2.

The server's waiting sequence for connection requests from client

socket() ------ Create a socket object.
|
bind() ------ Announce the program is ready for communication.
|
listen() ----- Wait for connection request from client..
|
read() ------- Wait until the client requests a sendto.
|
write() ------- Send a HTML file and others in response to the request from client.

2) Active Programming

If you set the handshaking method to active in the Webpage Connection Setting, the socket acts in Active mode.
Active handshaking makes the Portbase serial ports to be on the client side trying to connect to the remote client's IP address and socket number.
If the Portbase has started completely, you can see that sockets 4001 to 400x are automatically connected to serial ports 1 to x serial ports.

Connection Request Sequence from client to server

socket() – --- Create a socket object.
|
connect() -- Request for connection to server.

|

write()- --- Send a HTML file and others in response to the request from server.

|

read()----Wait until the server requests a sendto.

3) Operation Environment

- O/S : Linux or Unix
- Tool : Linux or Unix Compiler

4) Result (Active Programming)

If the user designates the IP address of a specific Portbase and starts the program, “This is LoopBack Data!” is repeatedly transmitted at 3 second intervals and received data will be displayed on screen.

5) How to Run

- Plug the first Portbase serial port to the loopback connector. (The port is connected to socket 4001.)
- If you run the program, message “This is LoopBack Data! ” returns and is repeatedly displayed on screen.

6) Source Code

```
//Inserts the necessary header files.
#include <stdio.h>
#include <stdlib.h>
#include <time.h>
#include <sys/un.h>
#include <string.h>

//Inserts the necessary global variable, and declares the function.
int sock;//Variable for saving the socket handle.

void SendData(void);
void GetData(void);
```

```
//Creates the main function and calls the function.
int main(int argc, char *argv[])
{
   char buff[1024];
   int count = 0;
   pid_t pid;
   int ff;
   struct sockaddr_in server_addr;

   if (argc != 2)//Outputs a message if it is not the input format.
   {
        printf("How to run : %s Porter IP \n", argv[0]);
        exit(0);
   }
  //Creates the socket.
  if ((sock = socket(PF_INET, SOCK_STREAM, 0))<0)
  {
     printf("cant open socket!!\n");
     exit(0);
  }
  bzero((char *)&server_addr, sizeof(server_addr));
  //Fills the structure.
  server_addr.sin_family = AF_INET;
  server_addr.sin_addr.s_addr = inet_addr(argv[1]);
  server_addr.sin_port = htons(4001);

 //Connects to the server.
 if (connect(sock, (struct sockaddr *)&server_addr, sizeof(server_addr)) < 0)
 {
    printf("cant connect to server!!\n");
    exit(0);
 }
 while(1)
 {
       SendData();
       sleep(3);
```

```
        GetData();
    }
    close(sock);
}

//Creates the data packet to transmit it to the server.
void SendData(void)
{
     int i;
     char temp[30] = "This is LoopBack Data !";
     // Outputs data with the socket number 4001 of Porter.
     write(sock, temp, sizeof(temp));
}

//Outputs received data on the screen.
void GetData(void)
{
     int readval;
     char readbuff[255];
     // Reads data by the socket number 4001 of Porter.
     readval = read(sock, readbuff, sizeof(readbuff));
     if (readval < 1) return;

     readbuff[readval] = 0;
     printf("%s",readbuff);
}
```

8 SNMP

SNMP(Simple Network Management Protocol) is used by the administrator (SNMP Manager) to monitor and control the operation status of TCP/IP-based network devices (SNMP Agents) from the remote site. To establish communication using SNMP, MIB (Management Information Base) between the Manager and the Agent is necessary.

Portbase supports SNMP MIB-I and II standards.

MIB provided by Portbase (working as an SNMP Agent) is as follows.

- **MIB-II (RFC 1213) : System, Interface, Address Translation, IP, ICMP, TCP, and UDP**
- **MIB-I (RFC 1317) : Serial Interface**

Portbase status information is managed by the SNMP Manager, using Get/Set messages stored in MIB. MIB of Portbase to be registered for the SNMP Manager is stored under the folder 'SNMP' in the Portbase CD.

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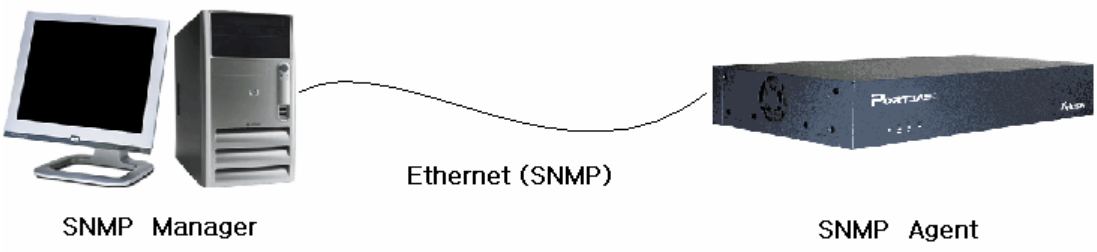

The following functions can be performed with the SNMP applied.

Network Architecture Management

Achieving a map of network hosts is possible, which implies the network architecture.

Performance Management

Many kinds of statistics that are essential to performance analysis can be achieved. These include network usage amount, error count, performance speed, and response time.

Device Management

Error history for each serial port, such as framing error, overrun error, parity error, etc. can be identified. Also, signal line information (DCD, RTS/CTS and DTR/DSR) can be configured and confirmed.