



Promi-MSP™

Appendix

Version 2.0 Q3/2005

by Bluetooth

Enabling Wireless Serial Communications

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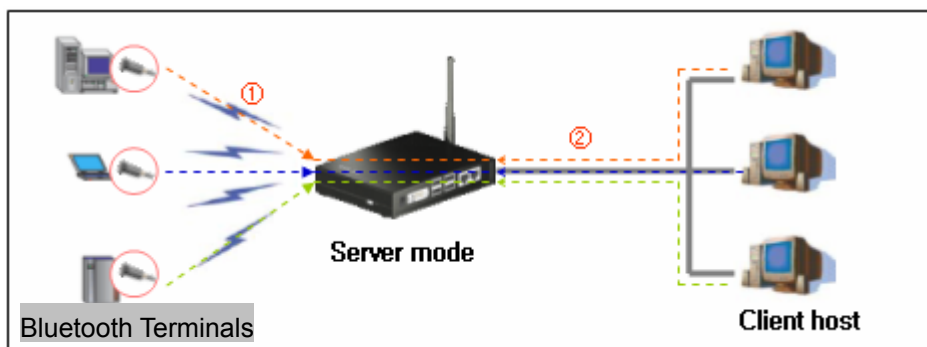
1. Operation Mode

With Promi-MSP™, users may configure the mode of operation to meet each applications. Total 6 kinds of different modes can be selected. By selecting the appropriate Mode, users may minimize cost for developing new solution.

1.1 Server Mode

In Server Mode, Promi-MSP will act as TCP server. If a Bluetooth terminal is connected to Promi-MSP, corresponding TCP port for the Bluetooth terminal will wait for connection for as Host. The Host may connect to the terminal via this port of Promi-MSP.

Please refer to the drawing below for your better understanding.



<Fig. 1.1.1> Server Mode

If a Bluetooth terminal has been registered to Promi-MSP, the Bluetooth terminal will communicated with Promi-MSP via the designated port.

If not registered, Promi-MSP will assign the variable port no. to connect.

Pre-registered Bluetooth terminals can be distinguished by the different Port numbers at Promi-MSP.

1.2 Client Mode

In a Client mode, Promi-MSP™ will act as a “TCP client”.

When a Bluetooth terminal connects to Promi-MSP, Promi-MSP will request TCP connection to the designated Host. Once TCP connection is completed, Bluetooth terminals and a Host may communicate via Promi-MSP, same as in Server mode.

Only difference from Server mode will be the requesting part of communication is now Promi-MSP. Please refer to the drawing below for your better understanding.

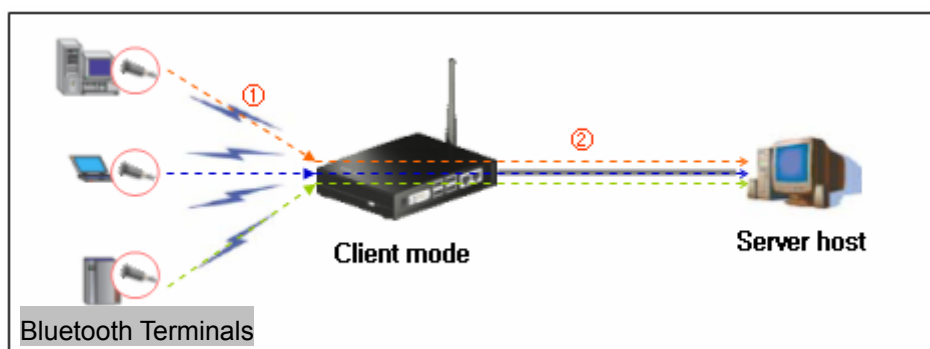


Fig. 1.2.1 Client Mode

1.3 Vertex Mode

Vertex Mode is similar to Server Mode. Only difference is that, in Vertex Mode, data from a Host are sent to all of connected Bluetooth terminals, like a Multi-drop. This mode can be a replacement of RS485/RS422 multi-drop.

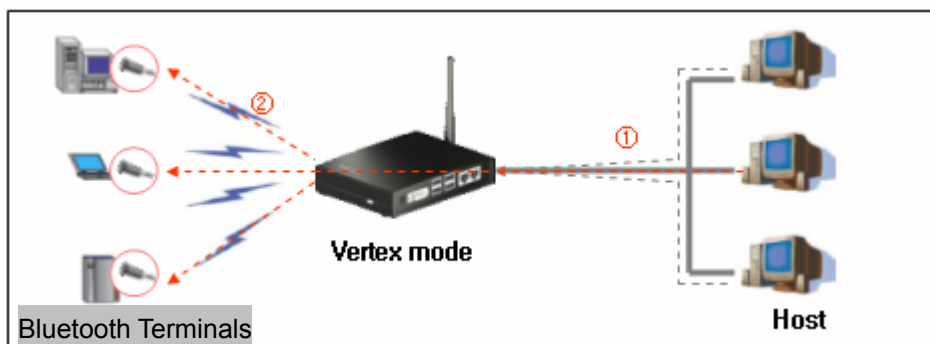
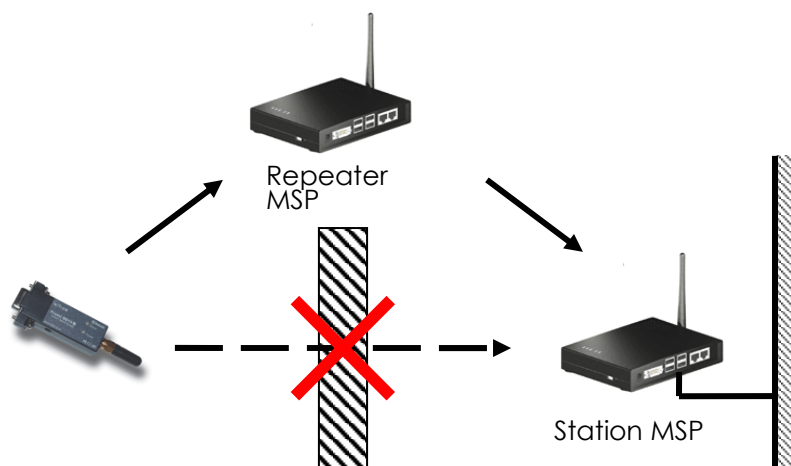


Fig. 1.3.1 Vertex Mode

Default data port number in Vertex mode is 3000. If you need to use other port number, please change the configuration using Promi-MSP software->Advanced configuration.

1.4 Repeater Mode

Promi-MSP in Repeater Mode can be used to function as a Repeater to extend the range of Bluetooth. Please refer to the drawing below.



Multiple Repeater MSPs can be connected to one Station MSP, or Repeater-to-Repeater connections are also possible. Promi-MSP may operate as “Station MSP” while it is either Server/Client/Vertex/Serial Hub/RS232 mode.

1.5 Serial Hub Mode

Serial Hub Mode is to help Bluetooth communication between two Bluetooth terminals.

Only 1:1 cable replacement will be possible with Serial Hub MSP. (Different from Repeater Mode)

As Serial Hub mode does not use TCP/IP network, users do not need to configure network settings.

In Serial Hub mode, Promi-MSP need to pre-configure the two of Bluetooth devices to use Serial Hub MSP. Then Serial Hub MSP will manage this information in its Routing table.

1.6 RS232 mode

If users set Promi-MSP to RS232 mode, Promi-MSP may act as 1:N multi-serial port by its RS232 port. In RS232 mode, Promi-MSP will send data to external serial port, not via network. This RS232 mode uses Multi-drop method, so all of data sent to RS232 port will be delivered to all of connected Bluetooth terminals. So, in RS232 mode, "Polling" method- a master device searches slave devices- is recommended to use.

Users may configure Serial settings in Advance configuration of Promi-MSP software.

Baudrate	1200 ~ 115200 bps
Character size	5,6,7,8 bit
Parity	None, Odd, Even
Stop bit	1 bit, 2 bits
Flow Control	None, XOn/Off, Hardware (CTS,RTS)
DTR/DSR	not used
RI	not used
Auto probe	not supported

As default, Promi-MSP is configured to use its RS232 port for configuration only, to set Promi-MSP to RS232 mode, users need to change the Console switch to data mode. After changing the data mode, please restart Promi-MSP.

2. Control Commands

Promi-MSP can be configured/controlled by Control commands through control TCP port. Prom-MSP software is the GUI version of Control commands for easy use by customers. As all of the control commands, in Promi-MSP software, are listed in the bottom window, users may see and understand how each commands are used.

Using control TCP port, users may develop a software to control Promi-MSP by themselves. This means users do not need to equip expensive Bluetooth development kit but may develop Bluetooth solution to meet each needs by simple commands. Promi-MSP™ is cost-effective and time-saving solution for users.

By using TELET program, users may use Control commands easily. Open shareware TELET software like “PuTTY” can be also used.

PuTTY Download:

<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>

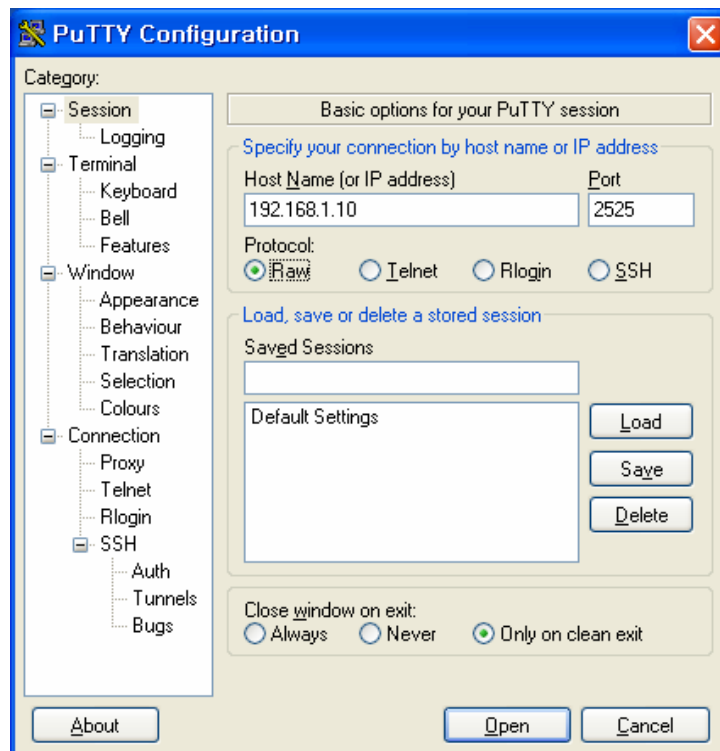
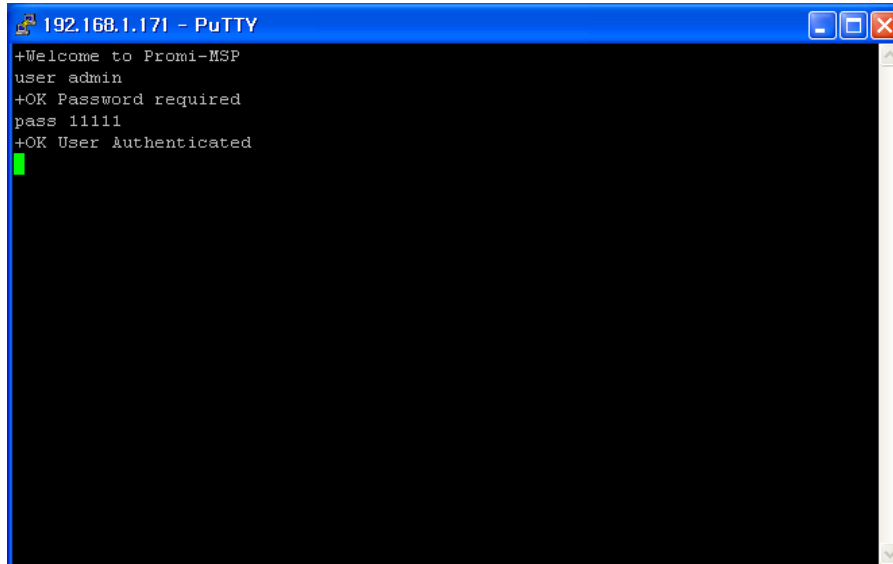


Fig. 2.1.1 PuTTY

Enter 'USER ADMIN' and 'PASS 11111' to access Promi-MSP via Control Commands.



```
192.168.1.171 - PuTTY
+Welcome to Promi-MSP
user admin
+OK Password required
pass 11111
+OK User Authenticated
```

2.1 Basic Commands

USER <username>

: To enter Log in Name

Ex.: **USER admin**
+OK Password required

PASS <password> [new password]

: To enter or change the Password for logging in.

Below Example shows how to change Password from '11111' to '1234'

Ex: **PASS 11111**
+OK User Authenticated
PASS 11111 1234
+OK

QUIT

: To quit the communication with Promi-MSP

Ex.: **QUIT**
+OK
Disconnected

MODE [server|client|vertex|hub|repeater|rs232]

: To check or change the current Operation MODE of Promi-MSP.
If any of Bluetooth devices are connected to Promi-MSP, MODE change is not possible. Before changing the MODE, please drop all of Bluetooth connections first.

Ex.: **MODE**
+OK Server Mode
MODE CLIENT
+OK Client Mode

2.2 Commands for Server Mode

PORT [port no.]

: To configure default PORT number of Server Mode Promi-MSP.
If a Bluetooth terminal, which is not pre-registered by Promi-MSP software (BIND command), port numbers will be assigned automatically by Promi-MSP. Users may check the PORT numbers used by LIST command.

Ex.: **PORT**
+OK PORT 5000
PORT 6000
+OK PORT 6000

BIND <bdaddr|name> <port>

: A static Port no. may be assigned to a designated Bluetooth device via BIND command. A BD address is optional to a user-friendly named.

Response: +OK index|name|bdaddr|port

Ex.: **BIND 00:0B:53:00:00:01 8000**
+OK
BIND Promi-SD 8001
+OK
BIND
0||00:0B:53:00:00:01|8000
1|Promi-SD||8000
+OK

RELE <port no.>

: If users do not need to use a bound port number, RELE command can be used to release the port number.

Ex.: **RELE 8000**
+OK

PRSV <on|off>

: A TCP data port is created as a Bluetooth connection is made. So, when as Bluetooth connection is finished (disconnected), the corresponding TCP port is closed. If users want to open the corresponding TCP port even after disconnection of Bluetooth, PRSV command can be used.

During PRSV is on, users do not need to make TCP connection each time whenever Bluetooth connection is stopped for a while.

Ex.: **PRSV on**
+OK

KATO <time> <probe> <interval>

: To configure 'TCP Keep Alive Time'
When Host, which is communicating (TCP) Promi-MSP, is stopped unintentionally, Promi-MSP cannot aware this unexpected disconnection. Accordingly, Promi-MSP sends packets to check the response and connection status when there is no data communication for certain time.

When there is no data communication for <time>, Promi-MSP will send data packet to check the connection <probe> times, by each <interval>, before to finalize the connection. Below example means when there is no communication for 10 min., Promi-MSP will send checking packets 3 times by 10 seconds interval.

Ex.: **KATO 600 3 10**
+OK KATO 600 3 10

2.3 Commands for Client Mode

SERV <IP Address:Port> [bdaddr|name]

: To assign IP address of Host and port number Client Mode MSP may access. If you enter BD address of Device name of the Bluetooth terminal, you may configure different Host address for each Bluetooth terminals.

Response: index|name|bdaddr|server_IP:port

Ex.: **SERV 192.168.1.11:9000**
+OK
SERV 192.168.1.11:9001 Promi-SD
+OK
SERV
0|Promi-SD||192.168.1.11:9001
+OK 192.168.1.11:9000

DELSERV <bdaddr|name>

: To delete Host information stored by SERV command.

Ex.: **DELSERV Promi-SD**
+OK

REPT <interval>

: When connection to Host is failed, users may configure Retrial period of connection. Unit: millisecond, Default value: 5000 ms
If the value is '0', PromiMSP will not try to connect after first failure.

Ex.: **REPT 3000**
+OK REPEAT every 3000 ms

PSIST <on|off>

: In Client mode, in the event of TCP disconnect, Promi-MSP™ automatically attempts Host PC reconnect when PSIST is set to ON, in the period of pre-defined ms by REPT command.

Ex.: **PSIST ON**
+OK PERSIST on

2.4 Commands for Vertex Mode

VERTEX <port no.> [number of clients]

- : Default VERTEX mode displays current status.
Promi-MSP™ Vertex Mode avails Wireless RS485 multidrop service when assigned at this site.
Port for use and maximum number of wireless multidrop Host Servers are assigned at this site

Ex.: **VERTEX 4000 1**
+OK PORT 4000 MAX 1

2.5 Commands for Serial Hub Mode

ROUTE <add> <src> <dst>
** <src> <dst>**
<ptp|multi|manual>

- : To configure Routing table for Repeater Mode.
Src: BD address of Sender device
Dst: BD address of Receiver device

Response: src > dst

Ex.: **ROUTE**
00:0B:53:12:03:A8 > 00:00:00:00:00:00
00:00:00:00:00:00 > 00:0B:53:12:03:A8
+OK

2.6 Commands for Bluetooth Configuration

BTNAME <name>

: BTNAME command audits or revises Promi-MSP™ Device Names detectable by other Bluetooth devices.
Default BTNAME displays current value.

Ex.: **BTNAME My Promi-MSP**
+OK
BTNAME
+OK My Promi-MSP

PIN <pin-code>

: PIN command revises the Bluetooth PIN code. Max.: 16 bytes, ASCII code only.

Ex.: **PIN 1234**
+OK

SECU <low|high>

: SECU command revises the security level. Low obtains no security; High obtains Enabling Security. Default SECU displays current security level.

Ex.: **SECU high**
+OK
SECU
+OK high

PAIR <on|off>

: For Pairing mode enable/disable. In High security levels, when Pairing mode is set to off, only Bluetooth devices sharing Link Key (see LKEY command) connect with Promi-MSP™ (non-pairable mode)

Ex.: **PAIR off**
+OK
PAIR
+OK off

LKEY

: For auditing currently paired Bluetooth devices sharing Promi-MSP™.
LinkKey.

Response: local bdaddr|remote bdaddr

Ex.: **LKEY**
00:0B:53:20:00:63|00:08:1B:00:52:72
+OK

SCAN [inquiry] [page] [noscan]

: For Promi-MSP™ SCAN mode assignment. INQUIRY set to ON
activates search mode. PAGE set to ON activates connect mode.
Default SCAN displays current status.

Ex.: **SCAN page**
+OK
SCAN
+OK page

STAT

: Displays current Bluetooth device status
If being used, it will show [PENDING].

Response: idx|bdaddr|tx_byte|rx_byte|err_tx|err_rx

Ex.: **STAT**
0|00:0B:53:20:00:63|1710|3513|0|0
+OK

2.7 Commands for Bluetooth Connection Management

LIST

: To see connected Bluetooth device list

Response: idx|dev_id|port|bdaddr|name|tx_byte|rx_byte

Ex.: **LIST**
0|0|5000|00:0B:53:00:00:8A|SDv3b-00008A|0|0
+OK

CONN <bdaddr> [channel]

: Promi-MSP may try to CONNECT to Bluetooth terminals. If you specify a channel, Promi-MSP will try connection directly without SDP (Service Discovery Protocol) process.

Each terminal should be in discoverable/ connectable mode.

Ex.: **CONN 00:0B:53:00:00:8A**
+OK

DISC <idx>

: Promi-MSP may DISCONNECT forcibly by DISC command, giving INDEX value in LIST command.

Ex.: **LIST**
0|0|5000|00:0B:53:00:00:8A|SDv3b-00008A|0|0
+OK
DISC 0
+OK
LIST
+OK

LINKTO <timeout>

: When a Bluetooth terminal is disconnected by turning off its power, Promi-MSP has default time out of 20 seconds in finally disconnecting the connection. You may assign the time out from 1 second up to 30 seconds.

Ex.: **LINKTO 20**
+OK

MAXDT <number of max. connections>

: Assigns maximum Bluetooth devices connectable to Promi-MSP™. Default value is 7. Each additional USB extension module equals 7 Promi-MSP™ connectable Bluetooth devices.

Ex.: **MAXDT 7**
+OK

PINQ <on|off> <interval> <length> <IAC>

: If PINQ (periodic inquiry) is ON, Promi-MSP will inquire nearby Bluetooth devices periodically, by each <interval> seconds, for <length> time. Inquired result can be checked by NGBRH command.
<IAC>: Inquiry Access Code. Users may inquire the device with same IAC code. In Bluetooth specification, there are General IAC (0x9E8B33) and Limited IAC (0x9E8B00).

Ex.: **PINQ on 20 5 0x9E8B33**
+OK

NGBRH

: To see the inquired device list by PINQ command.

Response: bdaddr CoD name

Ex.: **NGBRH**
00:0B:53:00:00:E5 0x001f00 PSDv3b-0000E5
00:0B:53:20:00:79 0x020300 Promi-MSP
+OK

2.8 Other Commands

DUMP [idx] [bin]

: This command can be used for monitoring with a Bluetooth terminal.
[idx]: To select a specific device to monitor. (255 means all of devices)
[bin]: To send the monitored data in binary format.
format: <dir:1><idx:1><length:2><timestamp:4><data... :length>
timestamp: in milliseconds

Ex.: **DUMP**
> line 0 len 4 timestamp 1413986
61 62 63 64 abcd
< line 0 len 4 timestamp 1414056
4F 4B 0D 0A OK..

+OK

HELP

: HELP command displays all control commands available.

Ex.: **HELP**
+OK

VER

: To see software version no. of Promi-MSP

Ex.: **VER**
+OK Ver 1.7

CTRL <port no.>

: Control port default value is '2525'. CTRL command assigns new control port number. Revised control port no. is applied after Promi-MSP™ restart. Default CTRL displays current control port number value.

Ex.: **CTRL 3500**
+OK

CANCEL

: To cancel current operation

Ex.: **CANCEL**
+OK

RSET

: To restore to factory settings.

Ex.: **RSET**
+OK

REBOOT

: To reboot Promi-MSP

Ex.: **REBOOT**
+OK Rebooting...

3. Configuration via WEB

Promi-MSP™ configuration access is available via Telnet or Web browser.

INITIUM provides Web user interface to expedite Promi-MSP™ configure/manage and current status check functions. To access Promi-MSP™ via Web interface, open user web browser and enter the Promi-MSP™ IP address in the address area.

Here is shown the 192.168.0.3 address assigned to Promi-MSP™ in the preceding configuration example.

Enter the default ID: admin, Password: 11111.

The screenshot displays the web configuration interface for Promi-MSP™. On the left is a navigation menu with the following items: MSP Configuration, MODE Configuration, IP Assignment, Network Setting, Status, User/Pass, Restore Factory Setting, and About. The main content area is titled 'Basic Setting' and contains the following fields:

MSP name	Promi-MSP
Max DT	7
Discoverable	<input checked="" type="checkbox"/>
Connectable	<input checked="" type="checkbox"/>
Pairable	<input checked="" type="checkbox"/>
Control port	2525

Below this is the 'Buffering' section:

Buffering	on <input checked="" type="radio"/> off <input type="radio"/>						
Header	0x01	0x61					
Trailer	0x62	?	0x03				

Finally, the 'Security' section contains:

Pin code	1234
Security	Low

At the bottom of the configuration area are 'Apply' and 'Cancel' buttons.

3.1 MSP Configuration

- **Basic Setting**

- (1) MSP name: For user Promi-MSP name revision
- (1) Max DT: For configuring the maximum number of Bluetooth devices connectable to Promi-MSP™. Default maximum is 7.

- (2) Discoverable: When checked, Promi-MSP™ is in INQUIRY mode, discovering in-range Bluetooth devices.
- (3) Connectable: When checked, Promi-MSP™ is in PAGE mode, connecting to Bluetooth devices.
- (4) Pairable: For Pairing mode enable/disable. When in need of high security, set Pairable option to UNCHECKED, enabling High Security. When this option is NOT checked, other Bluetooth devices, except those previously connected to Promi-MSP™, cannot connect to Promi-MSP™, even via PIN code.
- (5) Control port: For control port number entry. Default value is 2525.

- **Buffering**

(1) Buffering: For Buffering function enable/disable

*** Firstly set Header and Trailer, secondly turn on Buffering option.**

(2) Header: For buffer frame header entry. Enter alphabet or HexaCode;

(3) Trailer: For buffer frame trailer entry. Enter alphabet or HexaCode.

- **Security**

(1) Pin code: For Bluetooth Pin code entry

(2) Security: For security level entry

3.2 Mode Configuration

Promi-MSP™ accesses 3 types of operation modes. Select according to user requirement and applications.

The screenshot shows the 'MODE Configuration' window. On the left sidebar, 'MODE Configuration' is selected. The main area is split into three modes:

- Server MODE:** 'Server mode' is selected. 'Base port' is 5000. A list shows 'IGSDv1b-AC 5003'. Below are fields for 'bdaddr/btname' and 'port,no' with 'Add', 'Delete', and 'Clear' buttons.
- Client MODE:** 'Client mode' is unselected. 'IP' is 192.168.1.30 and 'port' is 4000. Two checkboxes are checked: 'Try to connect to server every 5 ms' and 're-connect automatically if link is lost'.
- Vertex MODE:** 'Vertex mode' is unselected. 'Vertex port' is 3000. There is a checkbox for 'Allow TCP connections to vertex port.' and an empty list area.

At the bottom of the window are 'Apply' and 'Cancel' buttons.

- **Server Mode**

- (1) Base port: For Promi-MSP™ Server mode default port configuration
- (2) List: For assessment of currently connected Bluetooth devices
- (3) Bdaddr/btname: Enter address or preferred name of Bluetooth device/s to BIND.
- (4) Port no.: Enter a specific port no. to assign to the Bluetooth device selected in no. (3).
- (5) BIND buttons: Add/Delete/Clear

To delete more than one device from the bound list, press Shift or Ctrl key while using the computer mouse.

- **Client Mode**

In Client Mode, Promi-MSP™ operates as client; Host PC becomes a server.

(1) IP: For network Host Server IP address entry

(2) Port: For Server Host port no. entry

(3) Try to connect to server every ms:

When Promi-MSP™ fails to open a data channel connecting to Host, enter the connection retry frequency. Entering 0 [zero] obtains retry abort.

(4) re-connect automatically if link is lost.

For Host connect retry, if failed. Retry frequency is set in the preceding function.

- **Vertex Mode**

Promi-MSP™ Vertex Mode avails Wireless RS485 multidrop service when assigned at this site.

(1) Vertex port: For Promi-MSP™ Vertex port no. entry.

(2) Allow TCP connections to vertex port:

For entering the number of Hosts connectable to Promi-MSP™.

3.3 IP Assignment

The screenshot shows the 'IP Assign' configuration page. On the left is a navigation menu with the following items: MSP Configuration, MODE Configuration, IP Assignment (highlighted), Network Setting, Status, User/Pass, Restore Factory Setting, and About. The main content area is titled 'IP Assign' and contains the following fields:

Number of IP	25
Start IP	192 . 168 . 2 . 100
Netmask	255 . 255 . 255 . 0
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	

Promi-MSP™ LAP service use renders assignable IP numbers for LAN access service Bluetooth devices configuration. Set IP address and subnet mask Start number; Promi-MSP™ automatically assigns IP to connected Bluetooth devices.

3.4 Network Setting

The screenshot shows the 'Network Setting' configuration page. On the left is a navigation menu with the following items: MSP Configuration, MODE Configuration, IP Assignment, Network Setting (highlighted), Status, User/Pass, Restore Factory Setting, and About. The main content area is titled 'Network Setting' and contains the following fields:

<input type="checkbox"/> use DHCP	
IP address	192 . 168 . 1 . 10
Network mask	255 . 255 . 255 . 0
Gateway	192 . 168 . 1 . 1
DNS	168 . 126 . 63 . 1
	168 . 126 . 63 . 2
MAC	00 : 3f : 8e : 55 : 0c : a1
<input type="checkbox"/> use ADSL	
user	<input type="text"/>
pass	<input type="text"/>
<input type="button" value="Apply"/> <input type="button" value="Cancel"/> <input type="button" value="Reboot"/>	

For user Promi-MSP™ network setting.

- (1) use DHCP: When checked, Promi-MSP™ receives IP address from DHCP server.
- (2) IP address/Network mask/Gateway/DNS: Enter appropriate data to assign

static IP address for Promi-MSP™.

- (3) MAC: Displays MAC Promi-MSP™ address; non-user entry
- (4) [] use ADSL: Select this option when ADSL networking
- (5) User/Pass: Enter ID/password data for ADSL login.

3.5 Restore Factory Setting

To reset to Promi-MSP™ default factory settings, click the 'Restore' button.



4. Internet Access via Promi-MSP

Promi-MSP may operate as Bluetooth AP to access Internet via Bluetooth.

Following 2 standard ways of Bluetooth internet connections are supported.

4.1 LAP

4.2 PAN

4.3 Dial-Up Modem Emulation

5. Technical Support

User manual of Promi-MSP102 series will be updated on to make up the undocumented part and to be much easier guide.

If you have any questions using Promi-MSP series, please contact: info@hantz.com