



MetaDevice

Version 1.0

1

1.

1.1

1.1.1 MetaDevice (Vision)

1.1.2

1.1.3 MetaDevice

1.2 MetaDevice

1.2.1

1.2.2 (Run-Time)

1.2.3

1.3 MetaDevice

1.3.1 Administration

1.3.2

1.3.3 Semantics

1.3.4 Transfers

1.3.5

1.4 MetaDevice

2. MetaDevice

2.1 MetaDevice

2.2

3. MetaDevice

3.1 (Server System)

3.2 (User Interface)

3.3

3.4 (Code Generation)

3.5

2 Server Manager Admin

1. ServerManager

1.1

1.2 DataBase Admin

1.3

- 1.4 Semantics
- 1.5 Transfer
- 1.6 Server Program Deploy

2. ADMIN

- 2.1
- 2.2
- 2.3
- 2.4 /
- 2.5 /
- 2.6

3. (General Property)

- 3.1 Project Name
- 3.2 Location
- 3.3 Daemon Type
- 3.6 Port Number
- 3.7 DB Used
- 3.8 DBMS
- 3.9 DB

4. (Protocol)

- 4.1 Protocol List Panel
- 4.2 Protocol Edit Panel

5. Transfer

- 5.1 Transfer List Panel
- 5.2 Transfer Edit Panel

6. Semantics

- 6.1 Semantics List Panel
- 6.2 Semantics Edit Panel

3 UI Manager

1. UIManager

- 1.1 UIManager
- 1.2

2. MenuBar

3. ToolBar

4. Controls Component Group

- 4.1 PageLinkButton
- 4.2 DeviceDynamicSelector
- 4.3 DeviceSelector
- 4.4 DataReceiveButton
- 4.5 DataSendButton
- 4.6 DataMultiSendButton
- 4.7 InstantDataSendButton

5. Setters Component Group

- 5.1 ComboBoxValueSetter
- 5.2 SpinValueSetter
- 5.3 RotarySwitch
- 5.4 VerticalSliderSwitch
- 5.5 HorizontalSliderSwitch
- 5.6 ImageOnOffButton
- 5.7 InputFieldValueSetter

6. Getters Component Group

- 6.1 RotaryGauge1, RotaryGauge2
- 6.2 VerticalLinearGauge1, VerticalLinearGauge2, VerticalLinearGauge3
- 6.3 HorizontalLinearGauge1, HorizontalLinearGauge2, HorizontalLinearGauge3
- 6.4 SevenSegmentDisplay
- 6.5 LabelValueGetter
- 6.6 TextLabelValueGetter
- 6.7 Graph2D
- 6.8 DataMappingPanel
- 6.9 ImageDisplayValueGetter
- 6.10 ImageOnOffGauge

7. DBAccess Component Group

- 7.1 DBAccess Table
- 7.2 DBAccess Graph

8. Static Component Group

8.1 Static Image

8.2 Static Text

8.3 Static Rectangle

8.4 Static Ellipse

9. FileSetters Component Group

9.1 FileChooserListBox

4

1 .

2.

2.1

2.2

2.3

2.4

2.5

1

1.

▶ MetaDevice (Device)
(Embedded Internet Application) . MetaDevice
(Device) ,
Server Manager (GUI, Graphical User Interface) UI
Manager . Java ,
/ , (Web-based Run-
time)

▶ MetaDevice .
- (Device) TCP/IP 가
- 가
- 가
- API(Application Program Interface) Transfer
- TCP/IP (Ethernet)TCP/IP 가
- Version 1.3
■ : MS Access-2000*, MS-SQL
*MS Access , , 1
■ : MS-Window ()
Windows-2000 Server, Windows NT ()
■ VM : JRE1.3.1_02(International Version), JDK1.3.1_02
■ JDBC Driver: Microsoft JDBC .



137-130 210
: (02) 573-7772
: (02) 573-7710
: support@sena.com
: <http://www.sena.com>

1.1

MetaDevice (Device) (Embedded Internet Application)

,

가 . MetaDevice MetaDevice

Server Manager UI Manager

.

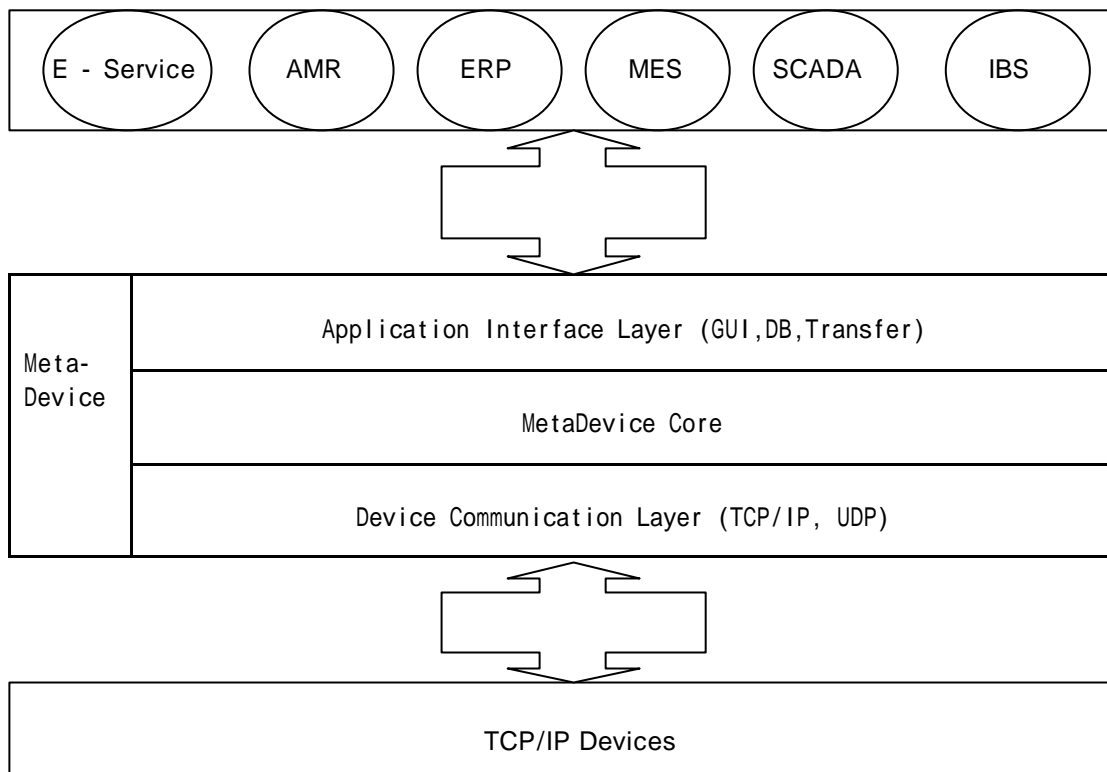
(Device Communication)

가

, MetaDevice , (Built-In Class)

(Procedure)

1.1.1 MetaDevice (Vision)



* E-Service :

1.1.2

- . (GUI, Graphical User Interface)

.
.
/

- .

.
.

- .

(Data Logging)

.
.
.

- . (Device)

.

- .

.

- .

.
.
.

. (Device)

1.1.3 MetaDevice

(Server Manager)

- . General Panel
 - Project Parameter , DataBase Parameter , Server Type
- . Editor
 - User Device : , , , CheckSum
- . Semantics Editor
 - Device Server
- . Transfer Editor
 - Device UI Device Device

(Admin Module)

- Server Manager MDPR File
(, Device , Device Table)

(UI Manager)

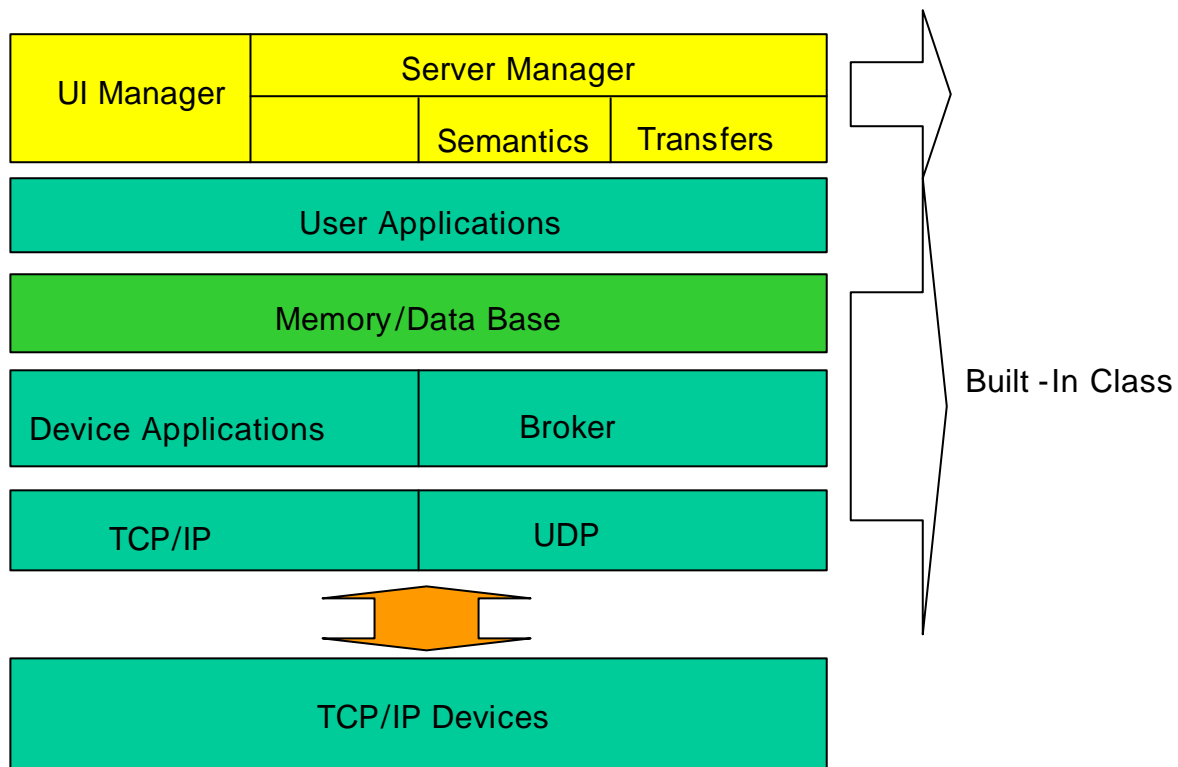
- . Design Panel
 - (Run-Time) Graphic Design Panel
- . Page Hierarchy & Device Information Panel
 - Page Hierarchy :
 - Device Information :
- . Component Panel
 - Controls, Setters, Getters, Statics, File Setter Component Panel
- . Property Panel
 - Property Graphic Property Panel
- . Message Panel
 - UI Manager Message view

	4GB
	Windows 2000 Server, Windows NT
	256 MB
50	512 MB
1 가 가	2~3 MB
	MS SQL
JDBC Driver	Microsoft JDBC Driver
	DataBase JDBC Driver

1.2 MetaDevice

1.2.1

(1) MetaDevice

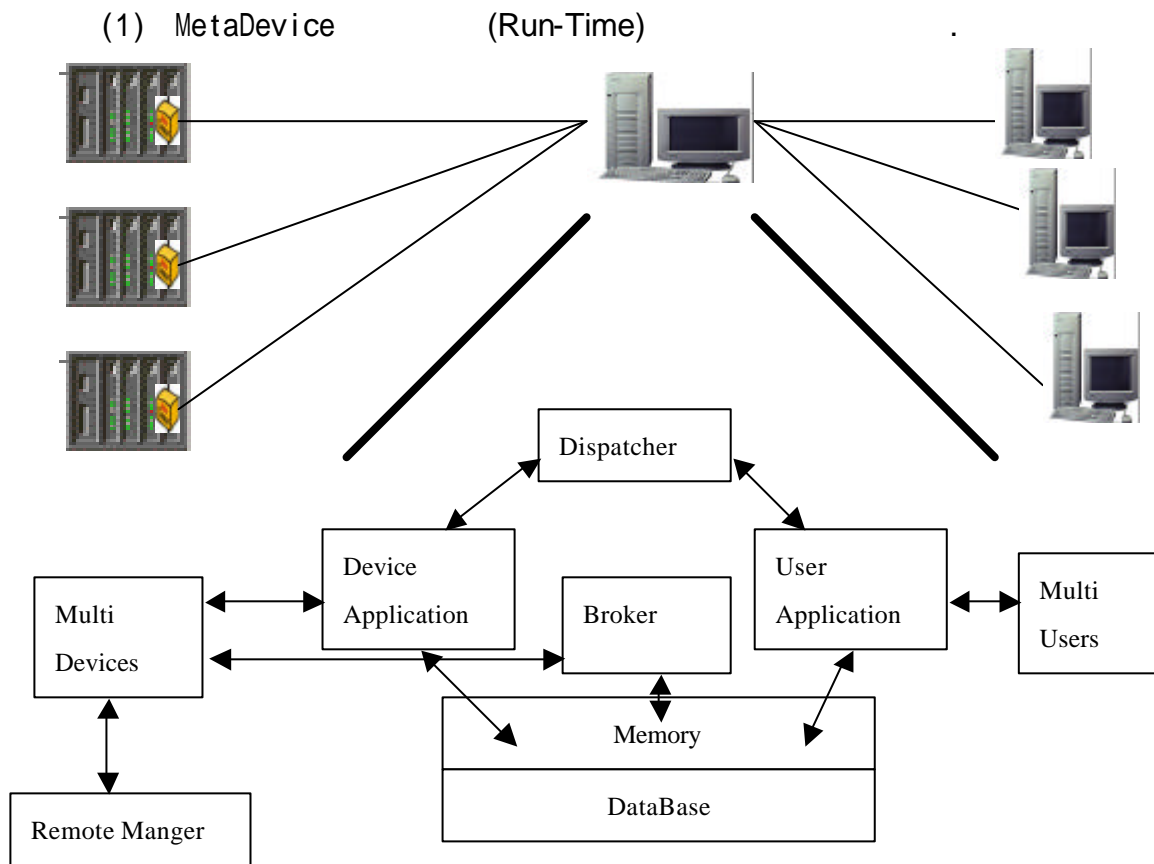


[1.1 MetaDevice]

(2)

- UI Manager : GUI Application/Applet
- Protocols :
- Semantics : (Device)
- Transfers : (Device) , GUI
- User Applications: GUI
- DataBase: (Logging)
- Device Applications: (Device)
- Broker: Device IP Device Tag, ID

1.2.2 (Run-Time)



[1.2 MetaDevice]

(2) (Run-Time)

Device Appl. :

User Appl. : UI

Broker : IP

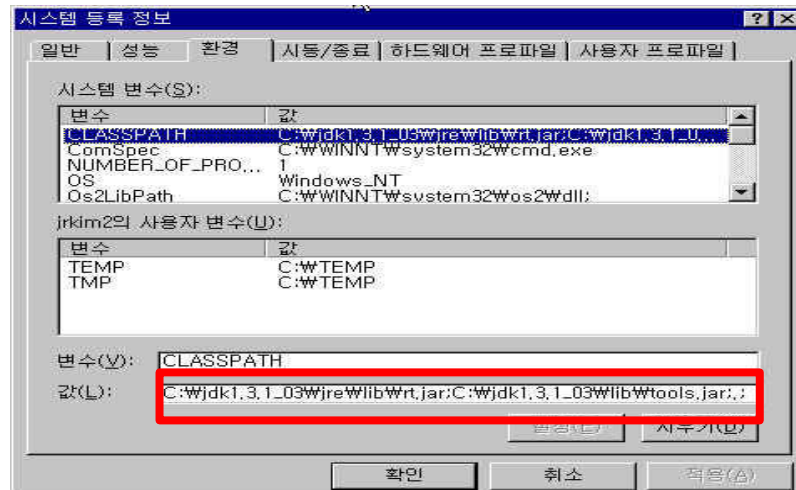
Dispatcher : (User Application)

(Device Application)

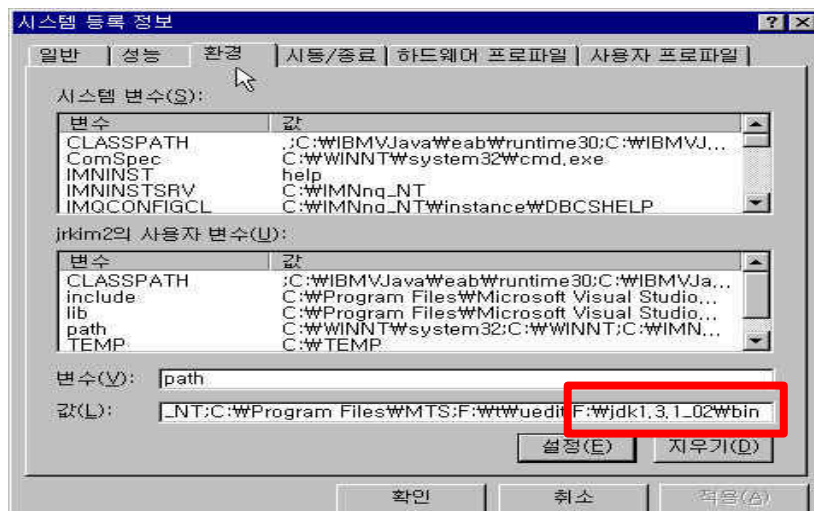
Remote Manager : (Device)

1.2.3

MetaDevice Java JDK1.3.1_02
JDK 가 , JDK JRE . JDK
Java (http://java.sun.com) 가 가 .
JDK (Path) . Windows NT
“ ” “ ”
[1.3] . “ ”
. Windows 2000 “ ” “ ”
“ ” Path . Window 95/98
“Autoexec.bat” .



[1.3 Window NT CLASSPATH]



[1.4 Window NT (Path)]

1.3 MetaDevice

1.3.1 Administration

- , , Fault , ,

1.3.2

- Bit
-
- ModBus

가 가 I/O, DPRAM I/F 가

1.3.3 Semantics

- / .

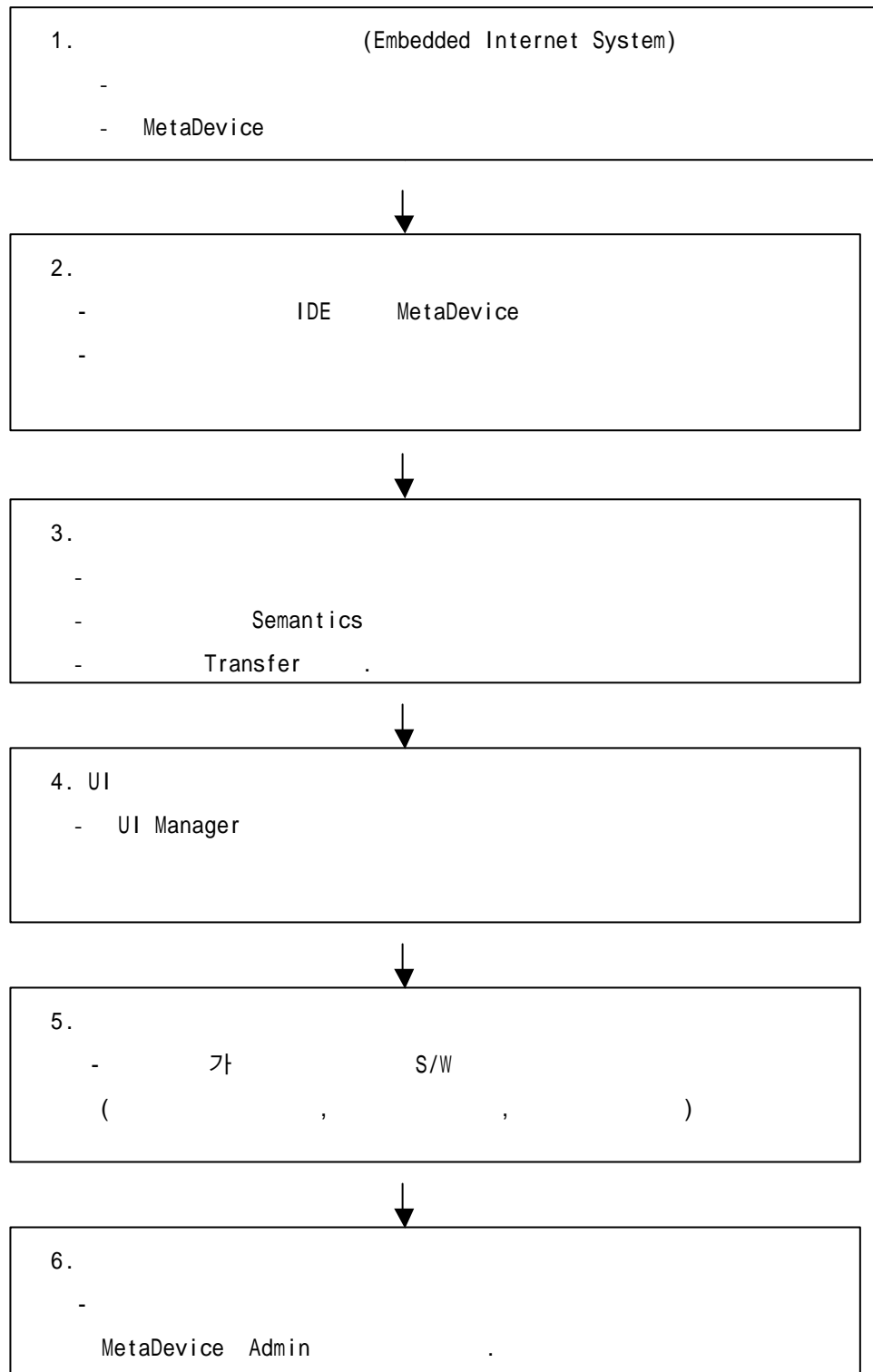
1.3.4 Transfers

- 가
- 가
- 가

1.3.5

- Java Beans
- &
- Deploy (Applet) (Application)
- 가
- /

1.4 MetaDevice



2. MetaDevice

2. 1 MetaDevice

MetaDevice

(<http://www.sena.com>)

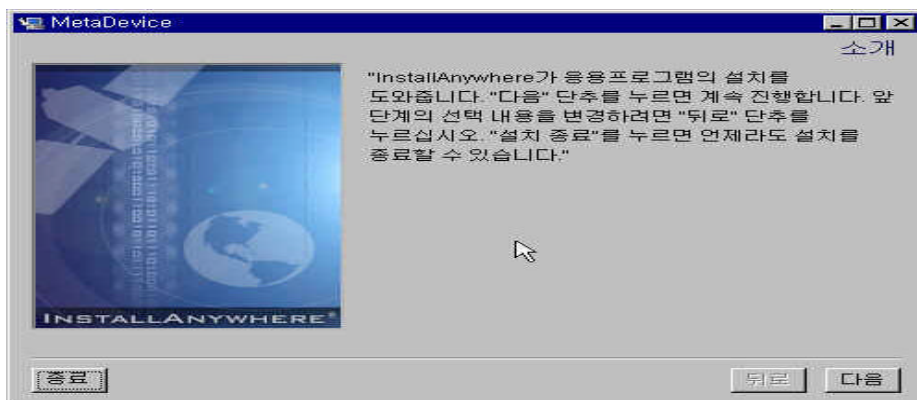
2. 2

MetaDevice



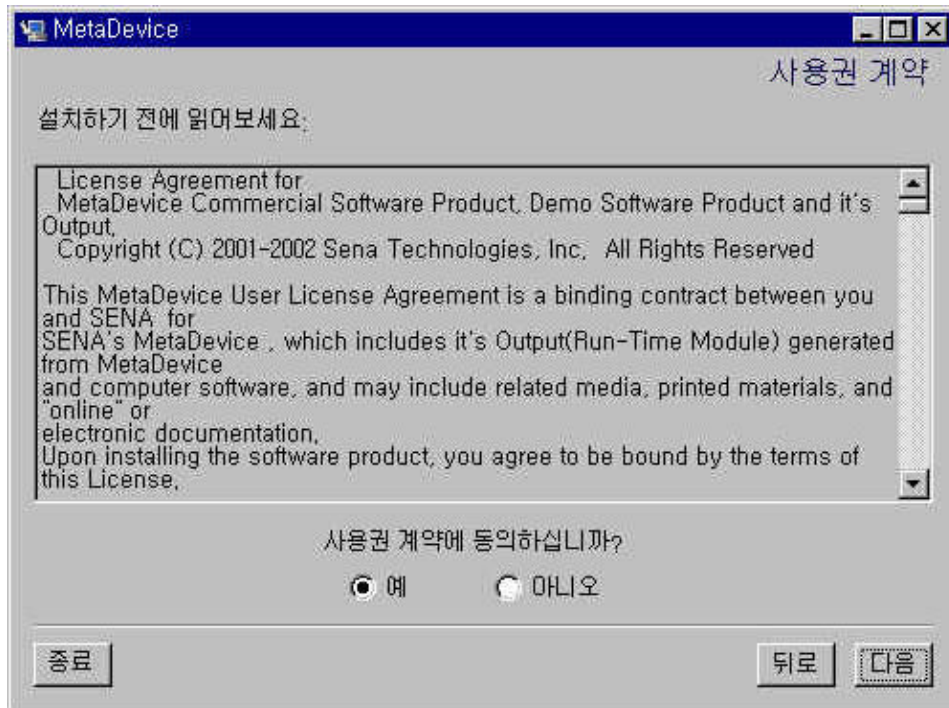
[1.5.1]

“ ” “OK”



[1.5.2]

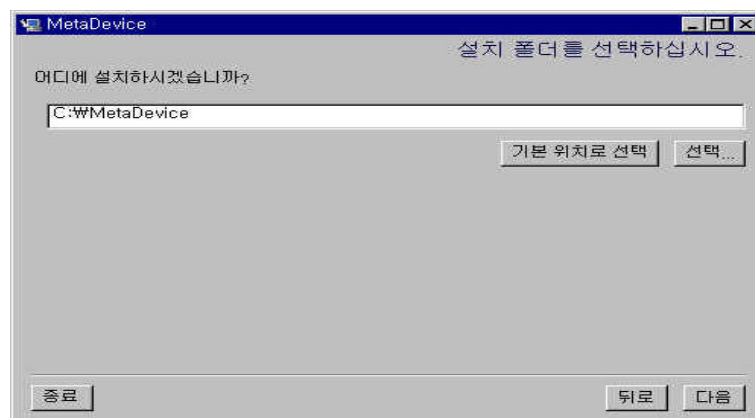
“ ”



[1.5.3]

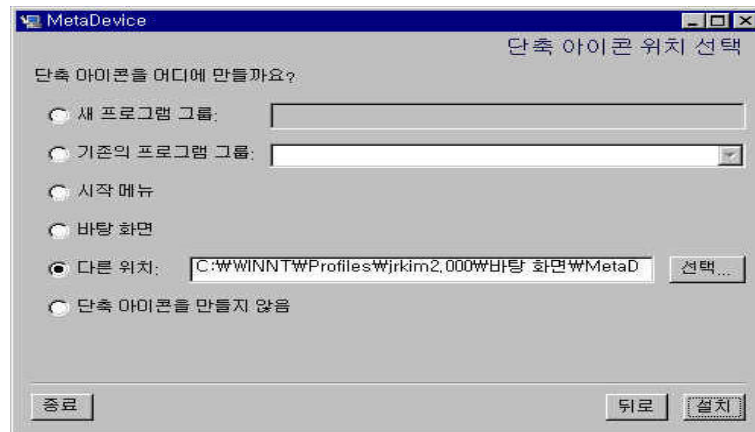
“ ”

“ ” “ ”



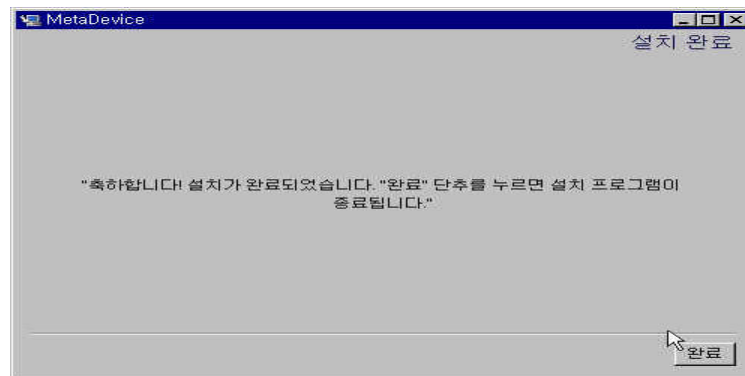
[1.5.4 MetaDevice]

MetaDevice



[1.5.5]

“ ”



[1.5.6]

“ ”

“UIManager”

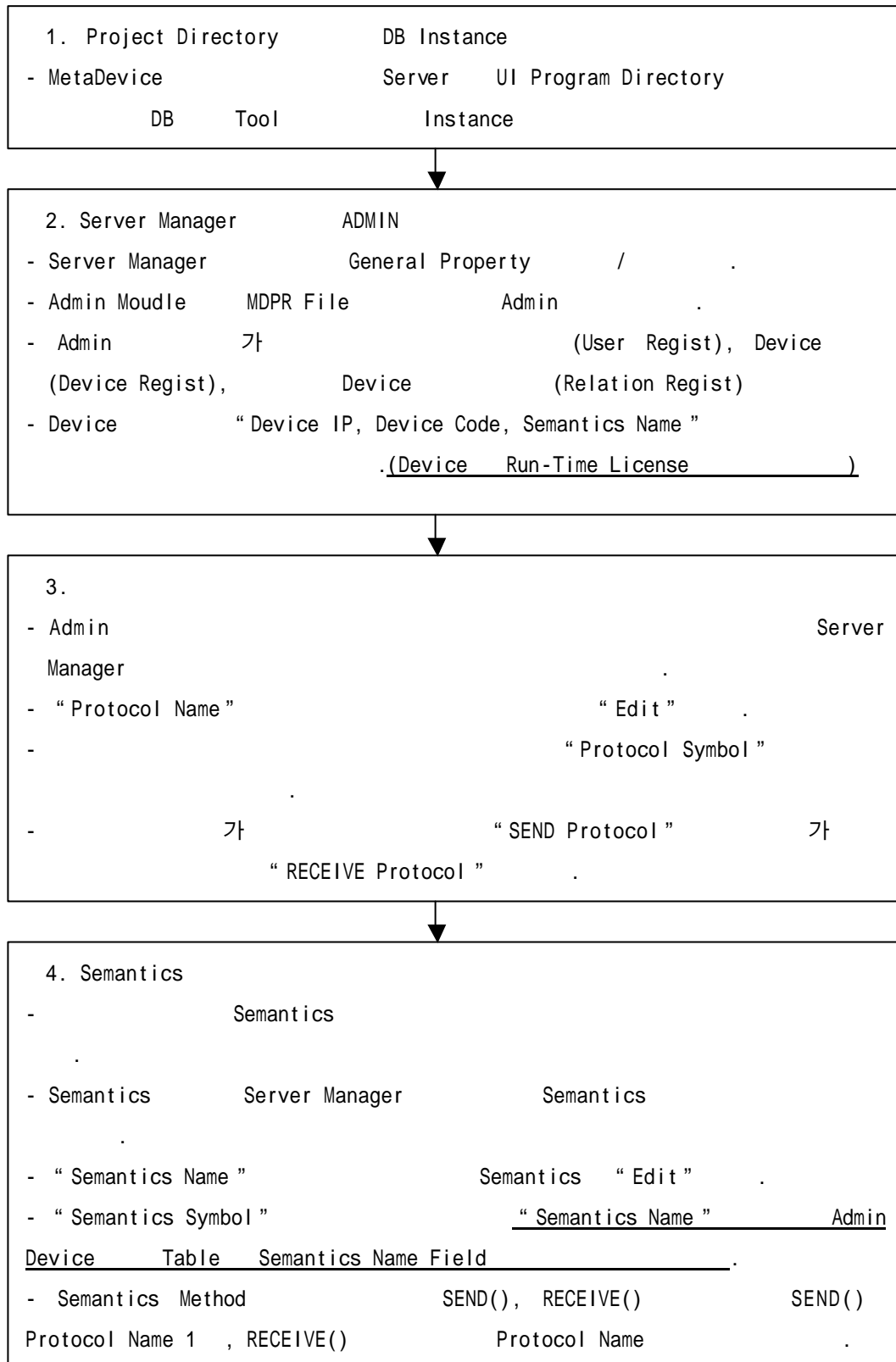
MetaDevice

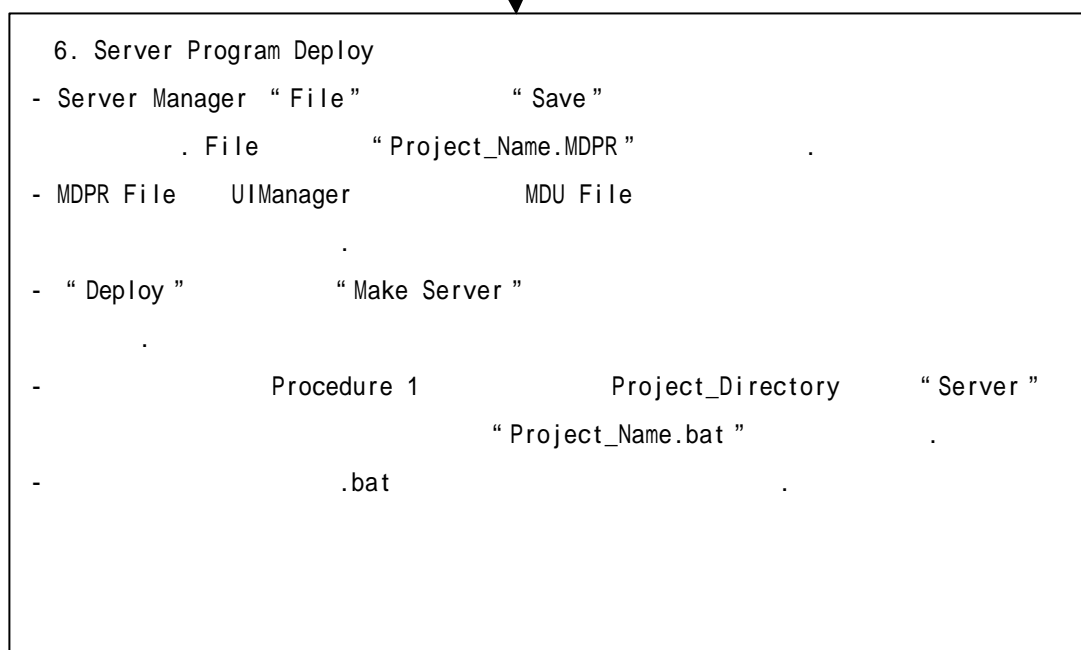
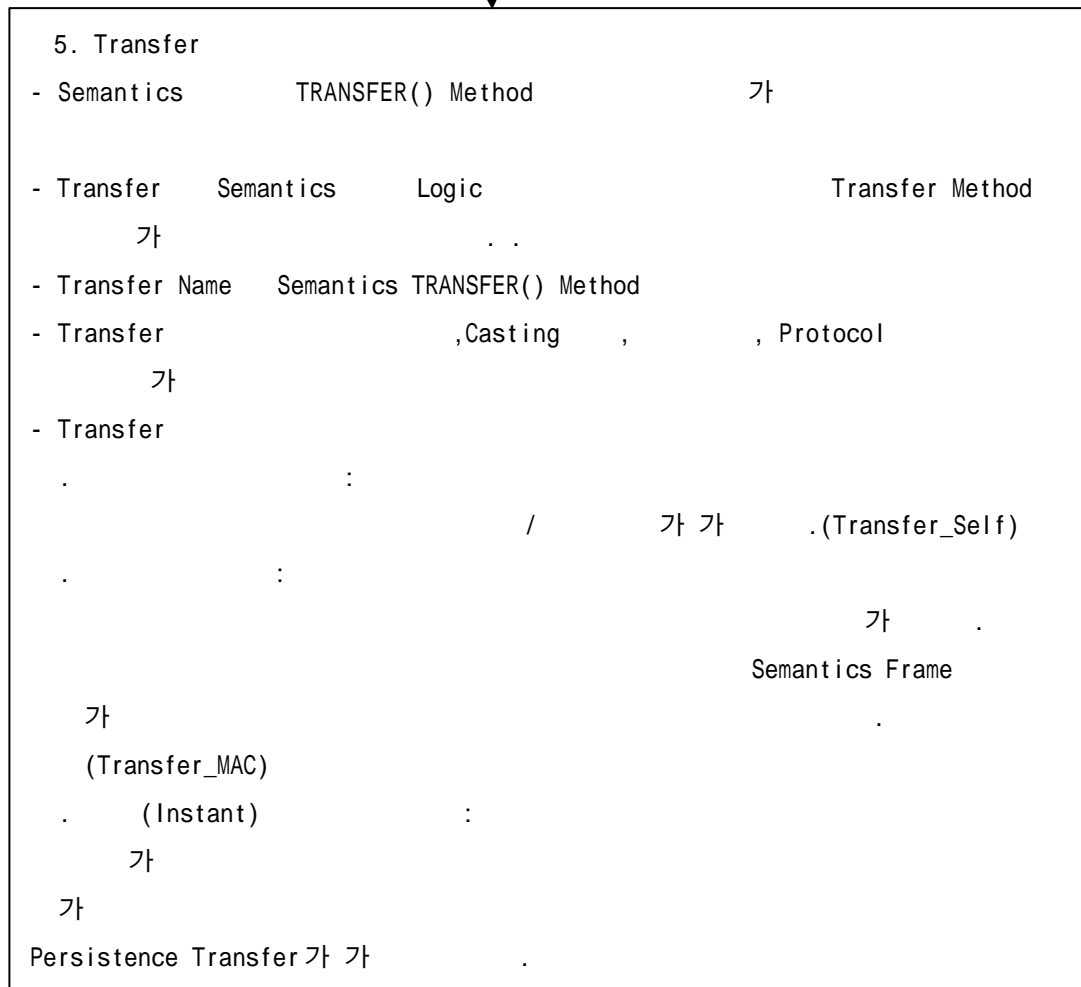
“ServerManager”

3. MetaDevice

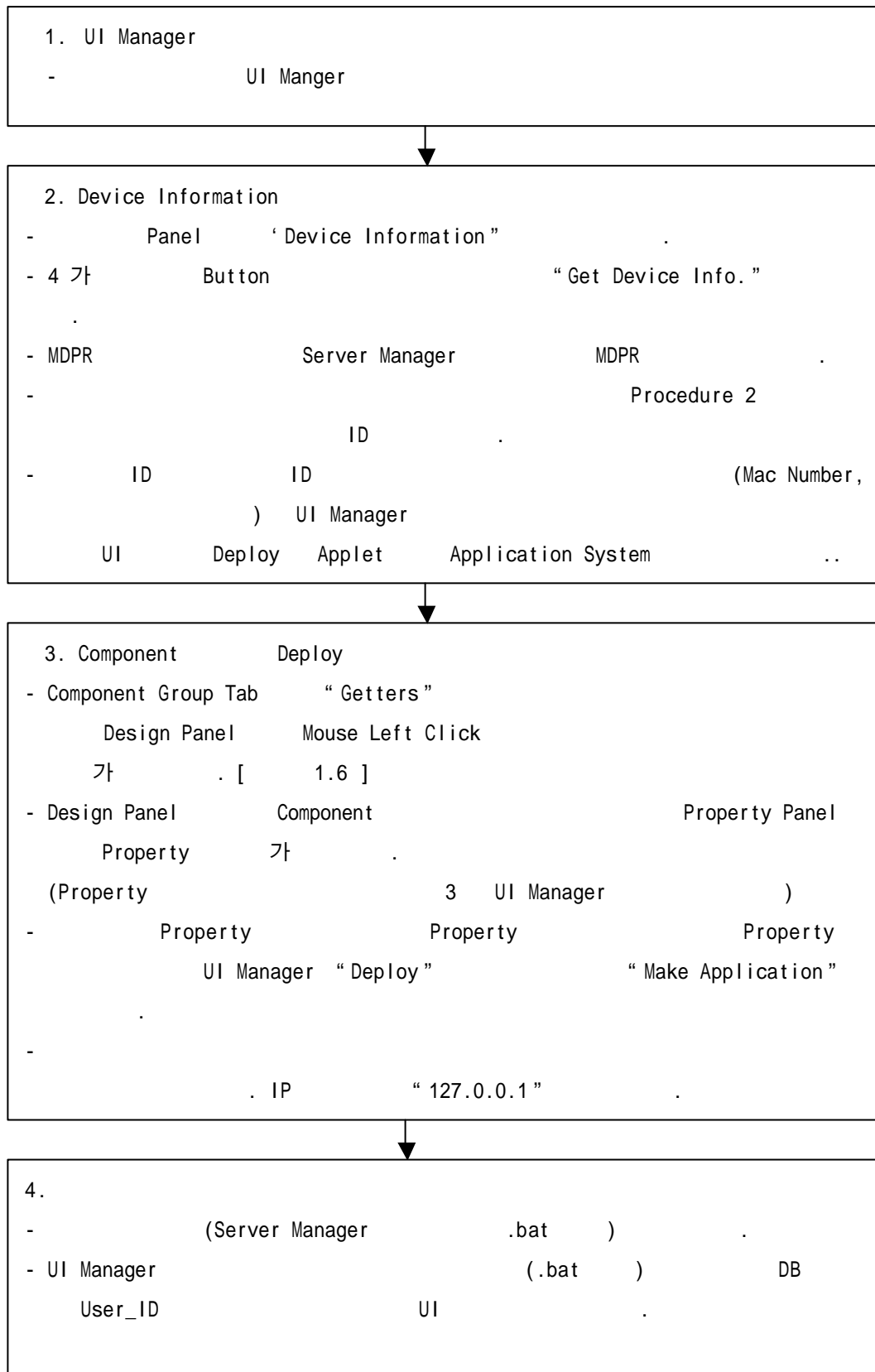
4

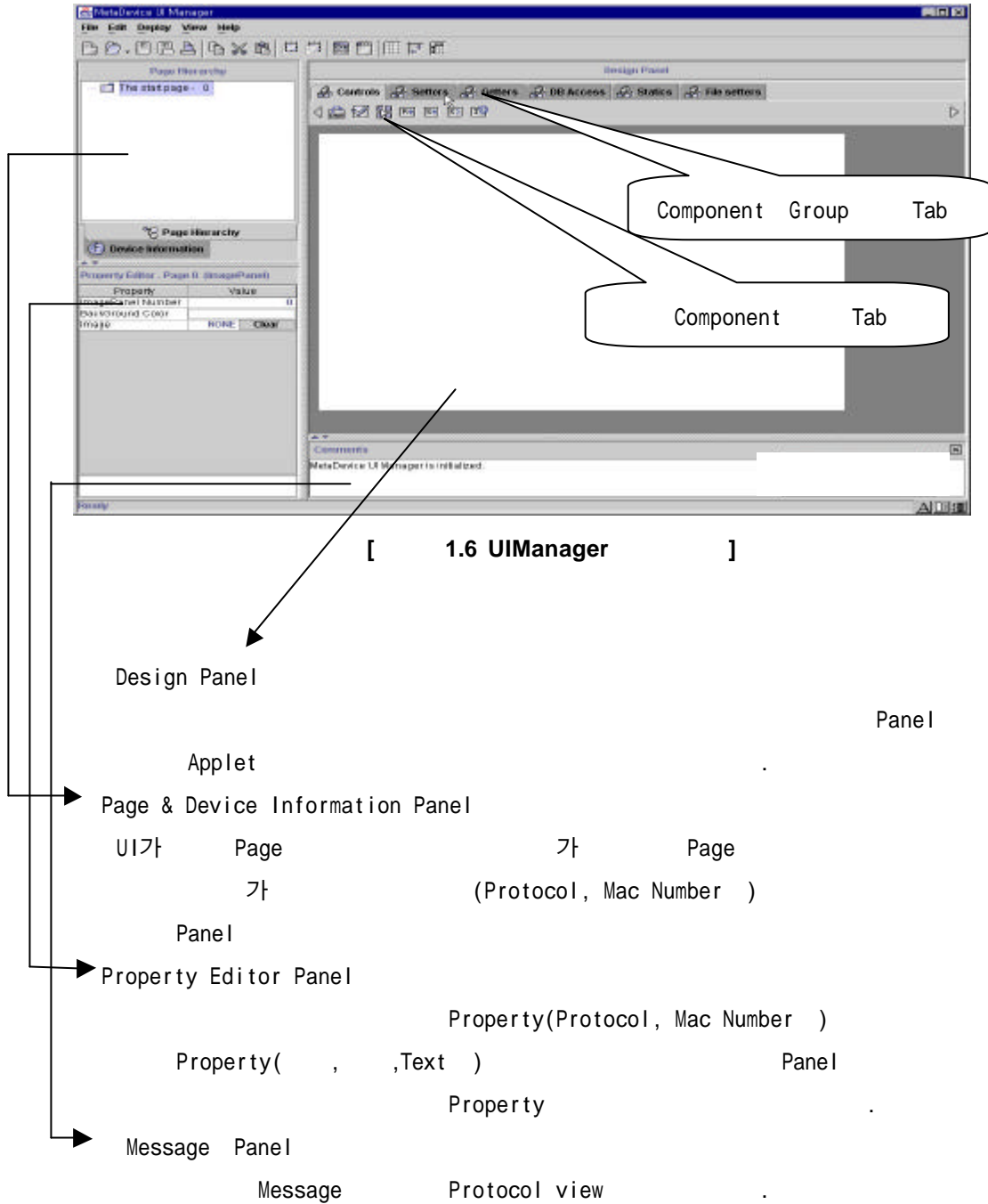
3.1 (Server System)



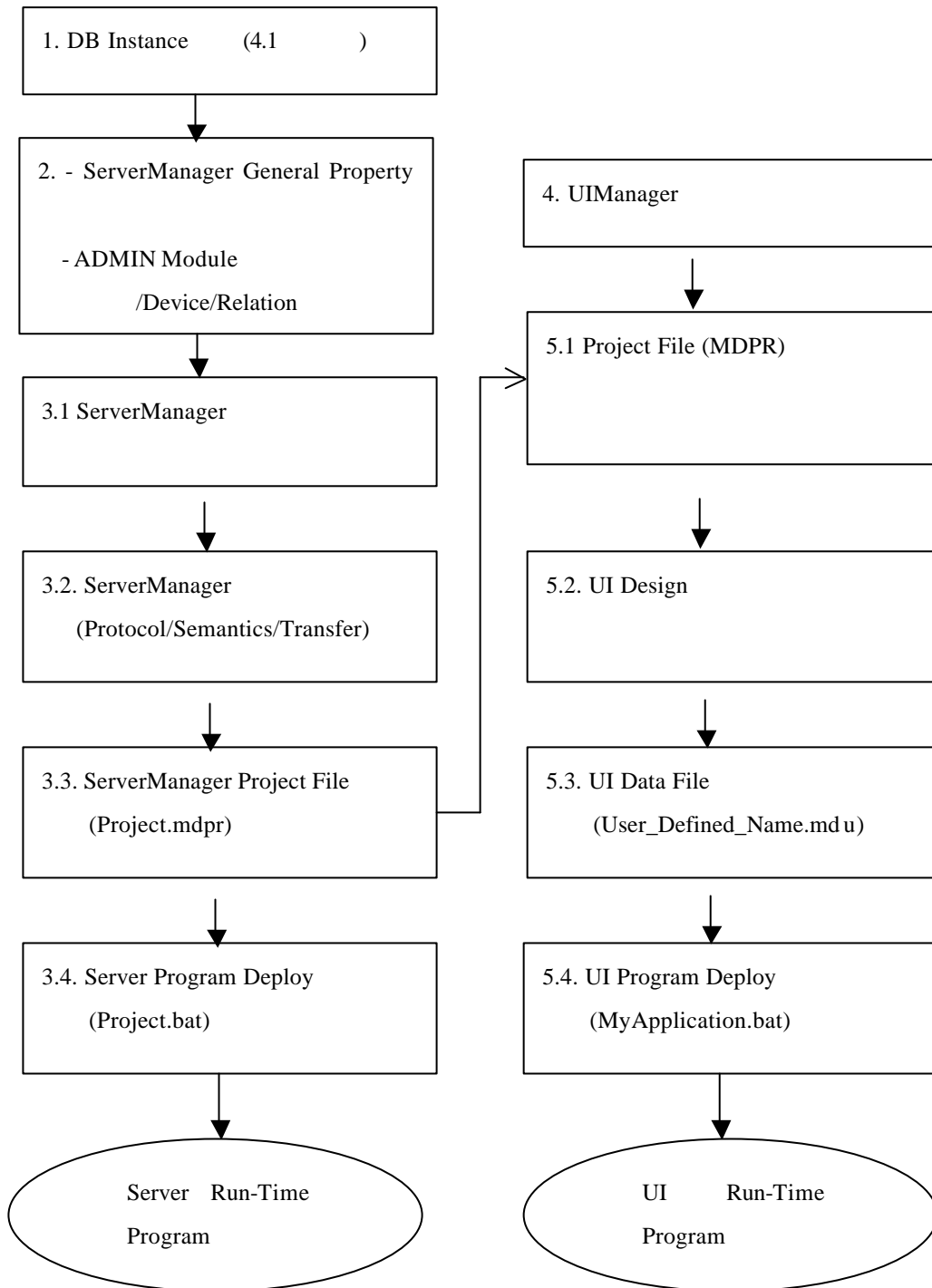


3.2





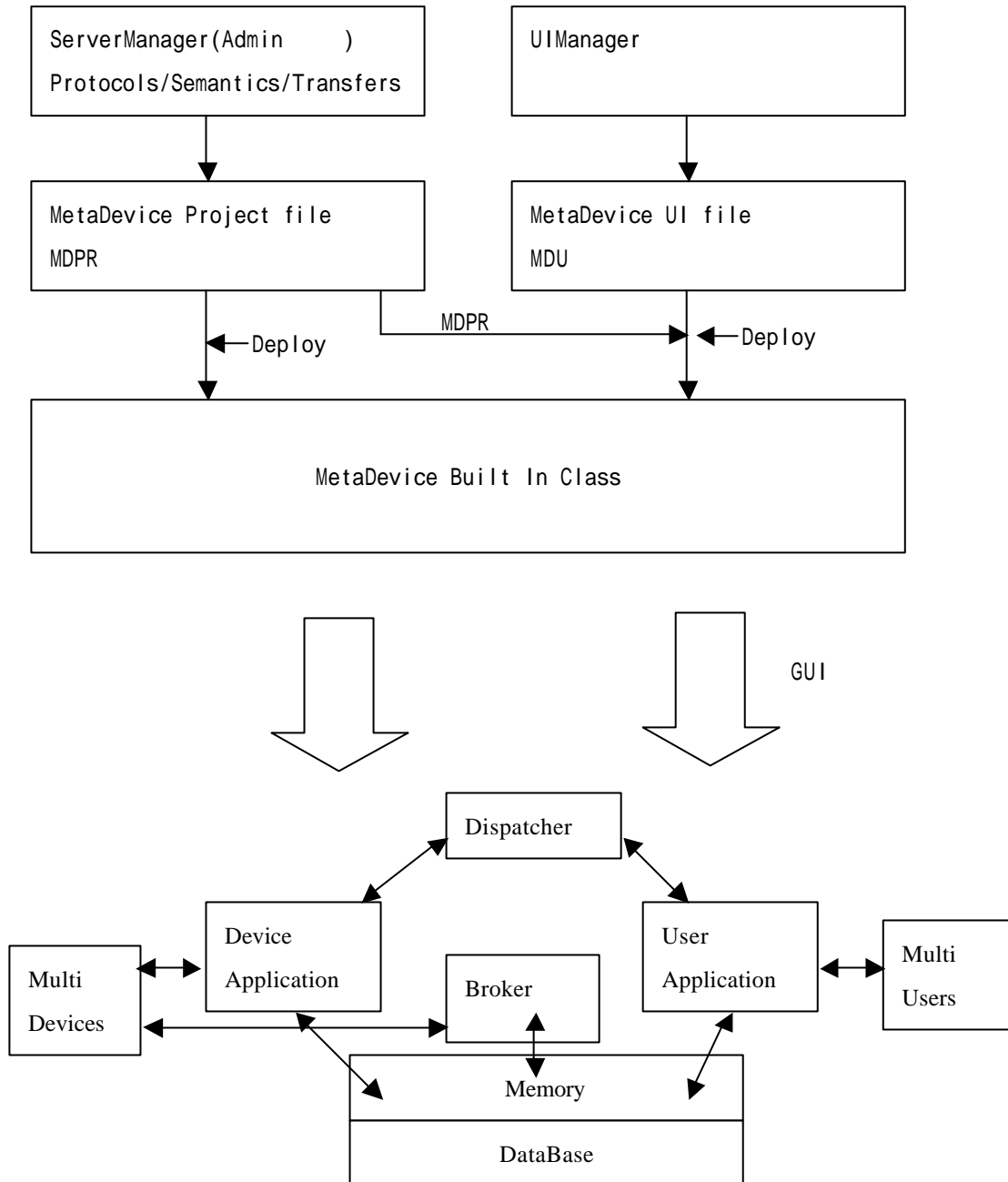
3.3



1) 2 [1.7 Procedure] Admin
 2) 5.1 . Device Segmentation Deploy UI Component

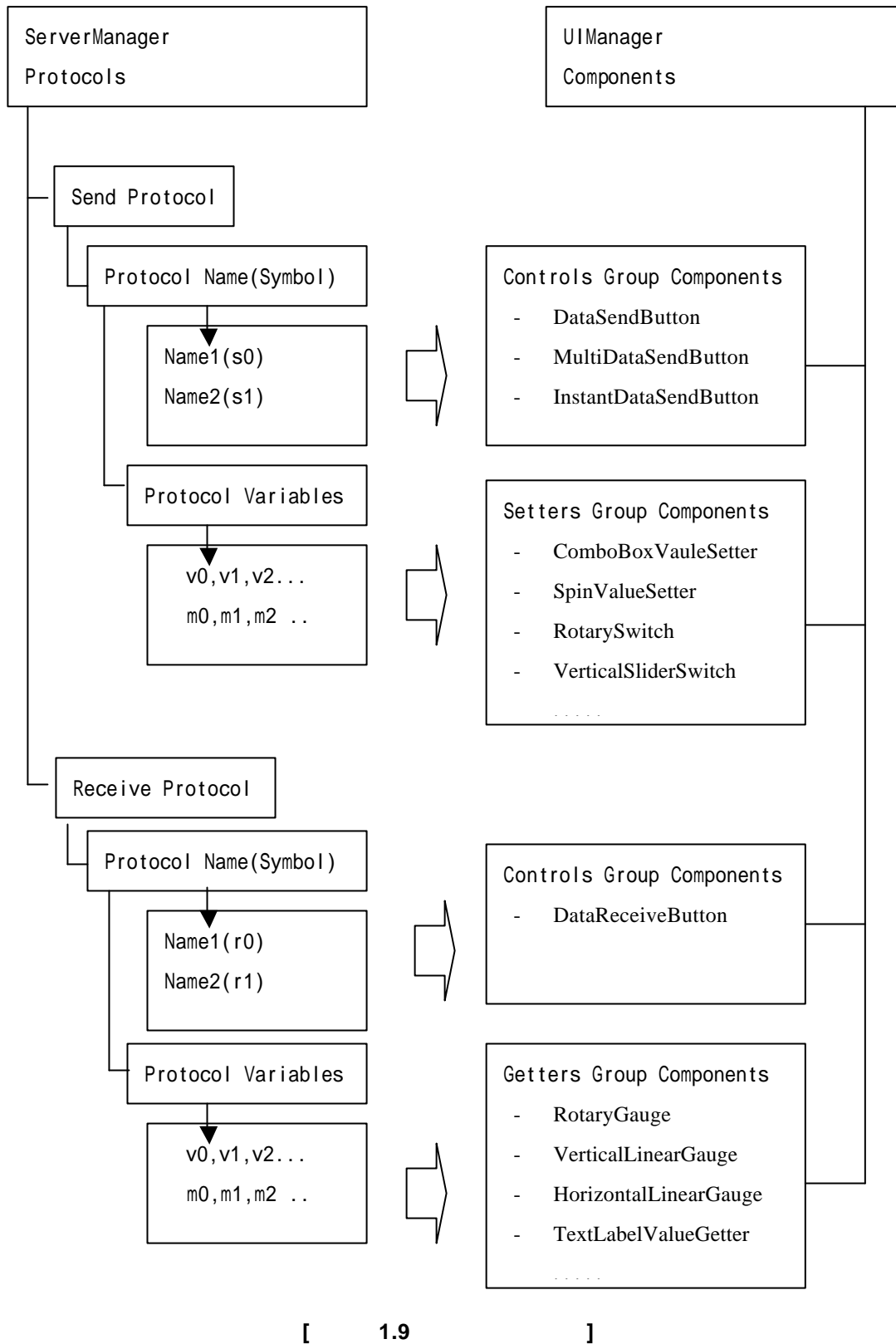
MDPR file

3.4



[1.8]

3.5



2 Server Manager Admin

1. Server Manager

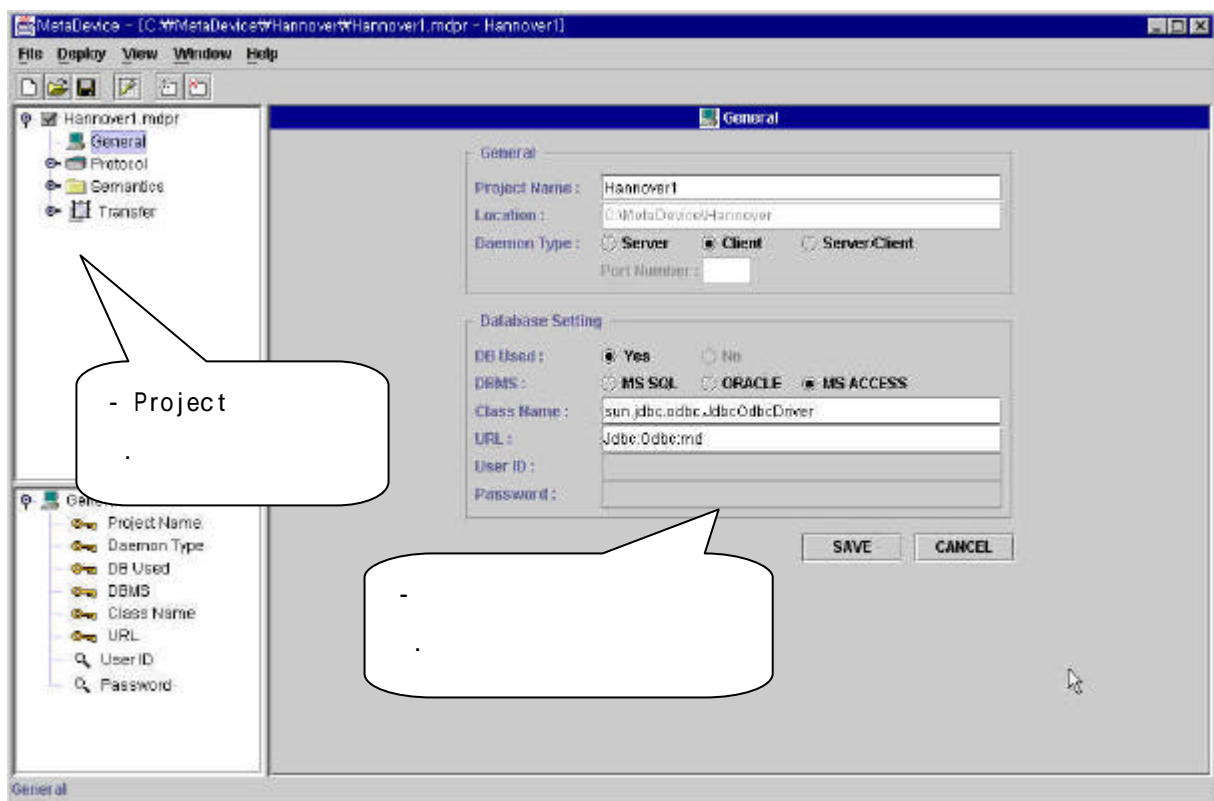
Server Manager

. Server Manager

1.1

Server Manager General Panel

[2.1]



[2.1]

- **Project Name** : Server Manager (MDPR File)

“Project Name.mdp”

- **Location** :

“Server”

“Project_Name.bat”

- **Daemon Type** : Daemon Type

. : 가 가

. : 가

. / : 가 /
가 .

- **Port Number** : 가 /

- **DB Used** : "Yes" .
가 .

- **DBMS** : Version 1.3 "Oracle"
"MS-SQL" "MS Access" .

- **Class Name** : MS-SQL DataBase
Microsoft JDBC Driver .

- **URL** : DataBase Instance . DataBase URL
MS Access "DSN" Name .

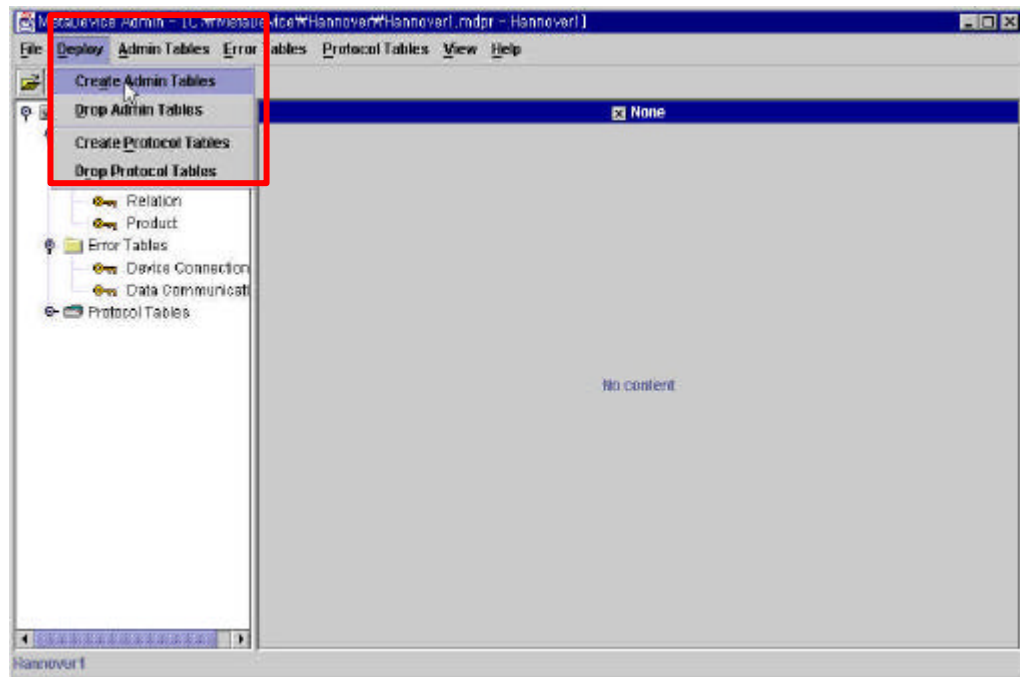
- **UserID/Password** : MS-SQL DataBase Oracle
UserID/Password .
"Create" "Save" Project File

1.2 DataBase Admin

Admin " ", " ", "Relation" "(),
"Error ", " ", " ", "Excel File .
가 ,
, Relation .

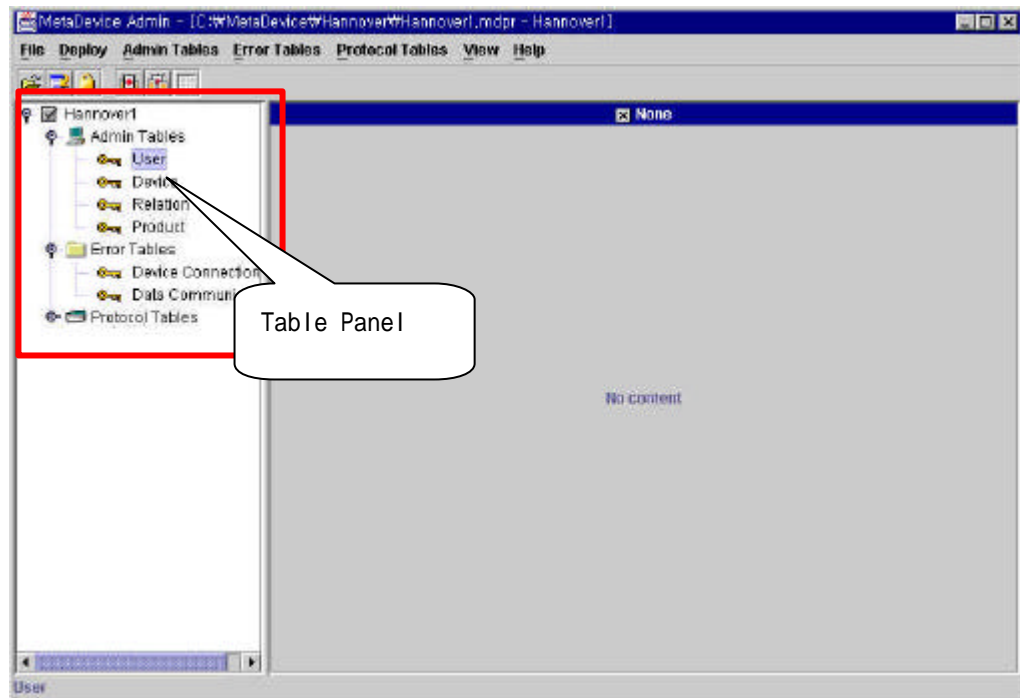
가 Admin Table

Admin Module [**2.2.1**] "Create Admin Tables"
MDPR File .



[2.2.1 Admin Table]

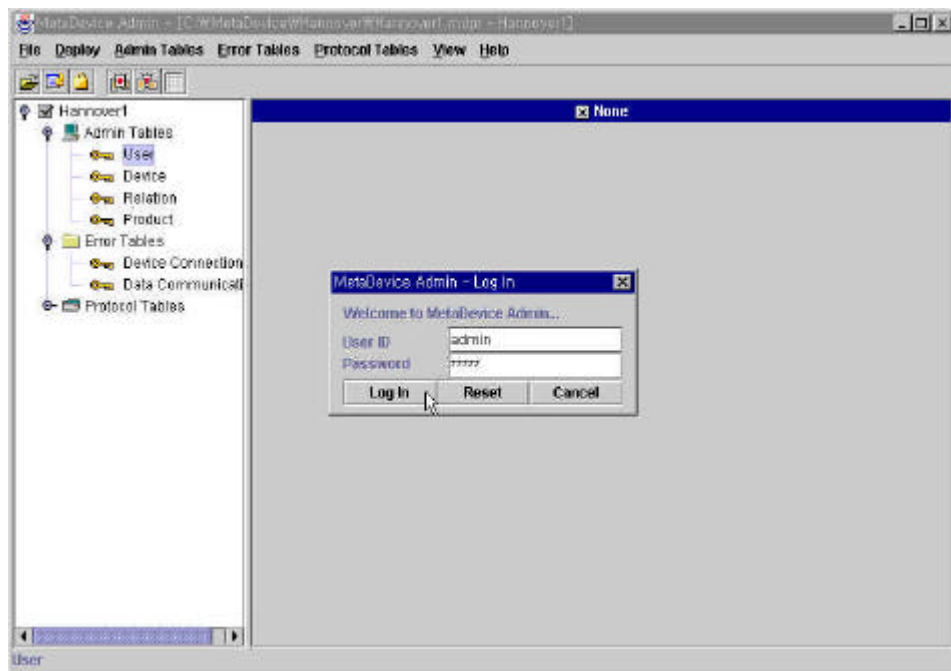
Admin Table DB Table Panel Admin Table Admin



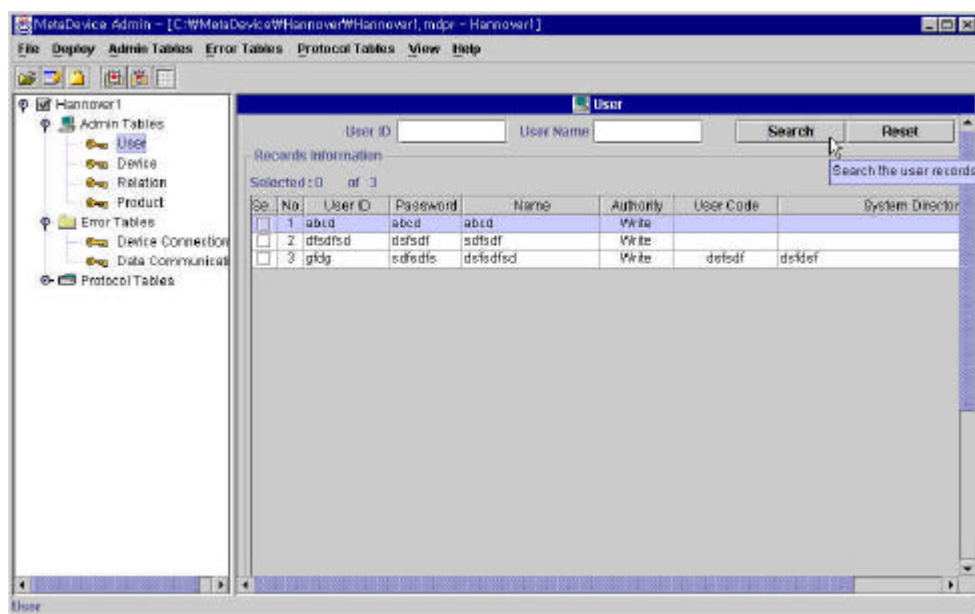
[2.2.2 Admin]

MetaDevice

Admin User ID Password Admin
 Default User ID Password admin/admin



[2.2.3 ID/Password]

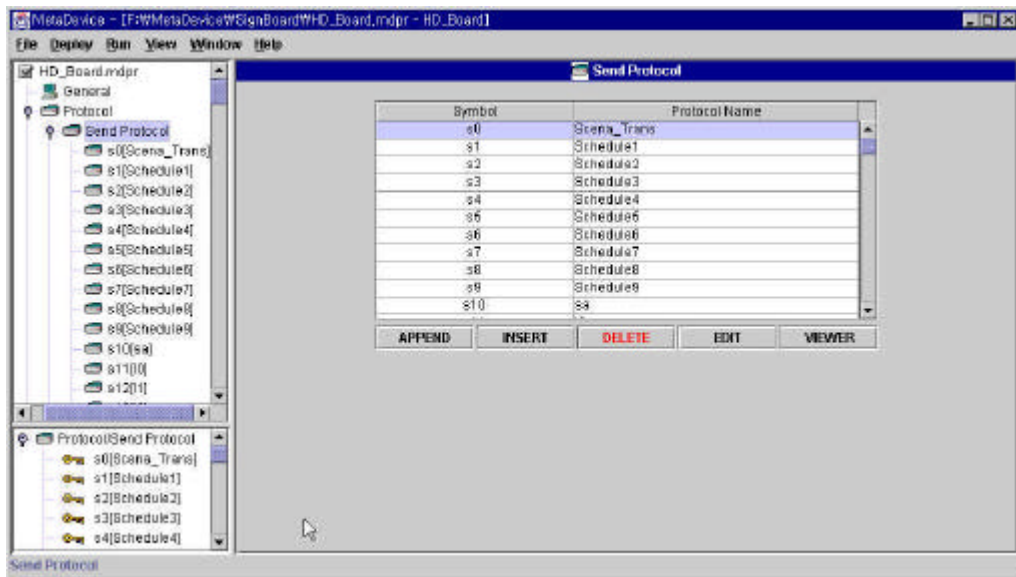


[2.2.4 Admin]

Admin Login [2.2.4] Admin 가 .
 [2.2.4] Login Table Panel "User" Table .
 Admin 2 "Admin" .

1.3

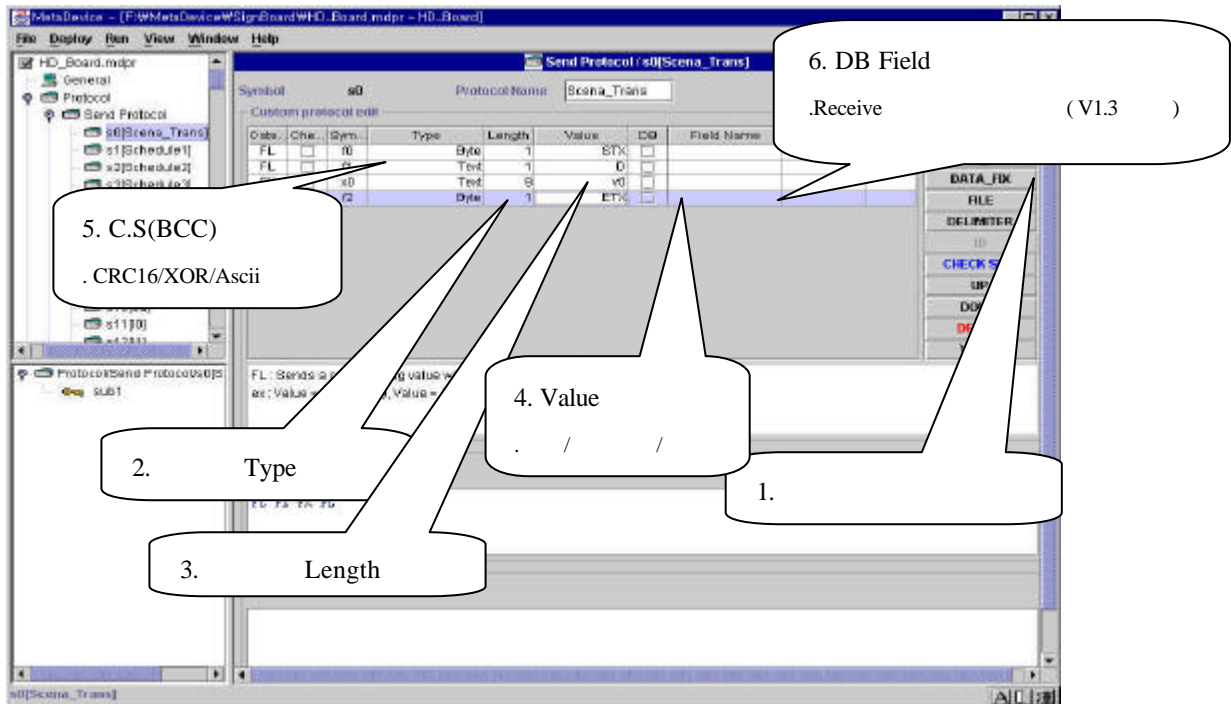
Admin [2.1] Project "Protocol"
 [2.3] List . SEND RECEIVE
 2 가 가 . SEND 가
 RECEIVE 가 .



[2.3 Name]
 Protocol Name "Append" "Insert" /
 Protocol Symbol System Protocol Name 가

“EDIT”
 . / [2.4] .

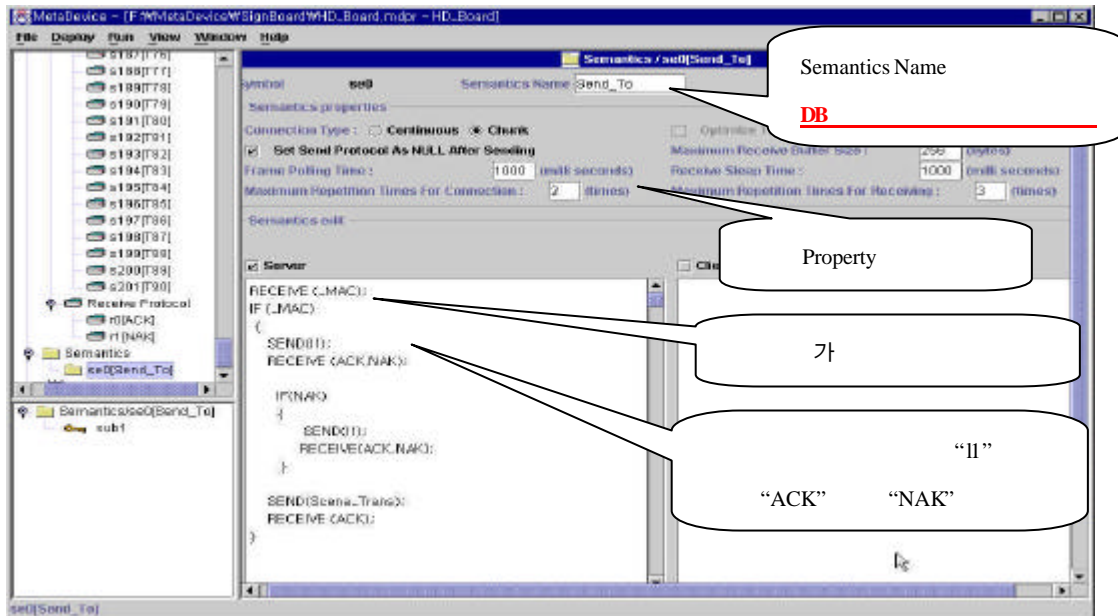
/ 4



[2.4 /]

1.4 Semantics

Semantics 가 가
SEND() Method RECEIVE() Method
SEND 가 RECEIVE() 가
[2.5] Daemon Type



[2.5 Semantics]

1.5 Transfer

Transfer Semantics Transfer Method 가

Transfer Name Semantics TRANSFER() Method

Transfer ,Casting , 가

. :

/ 가 가 .(Transfer_Self)

. :

가 .

Semantics Frame 가

. (Transfer_MAC)

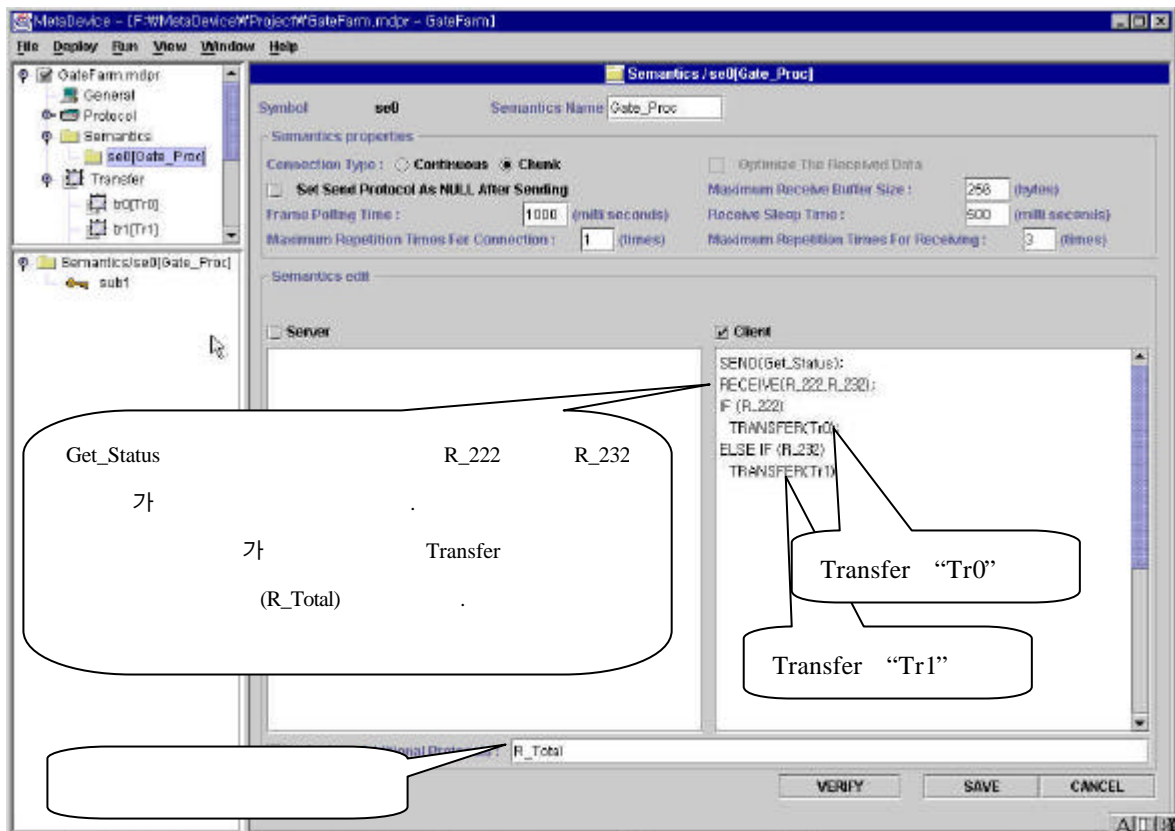
(Instant) :

가

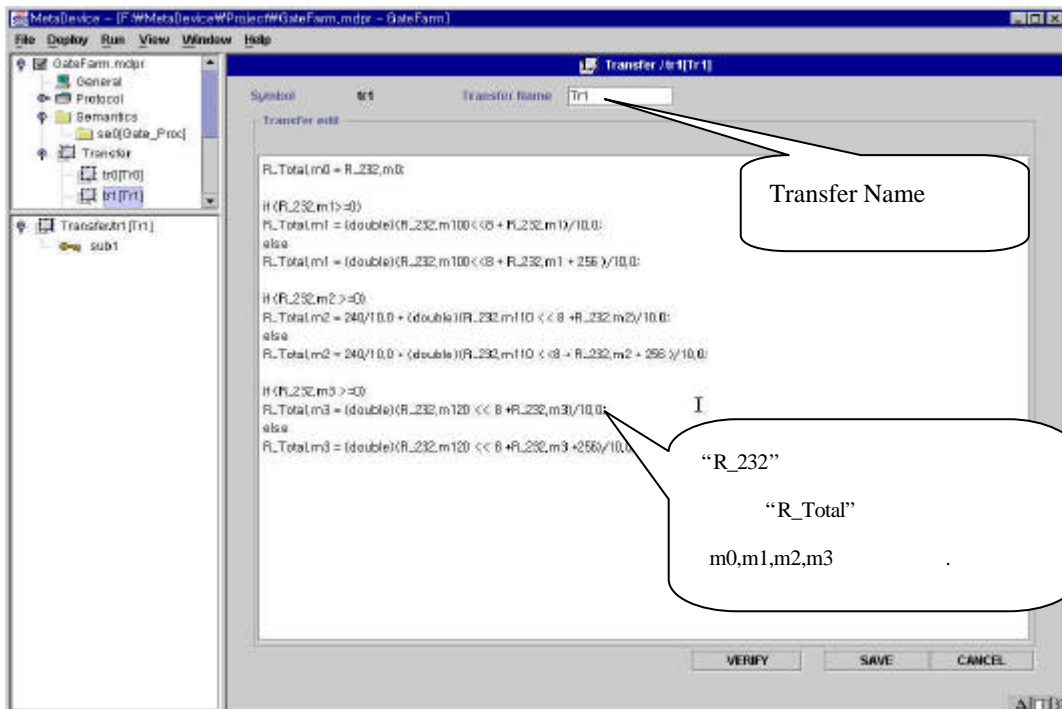
가

Persistence Transfer

가 가 .(Transfer_MAC_Instance)



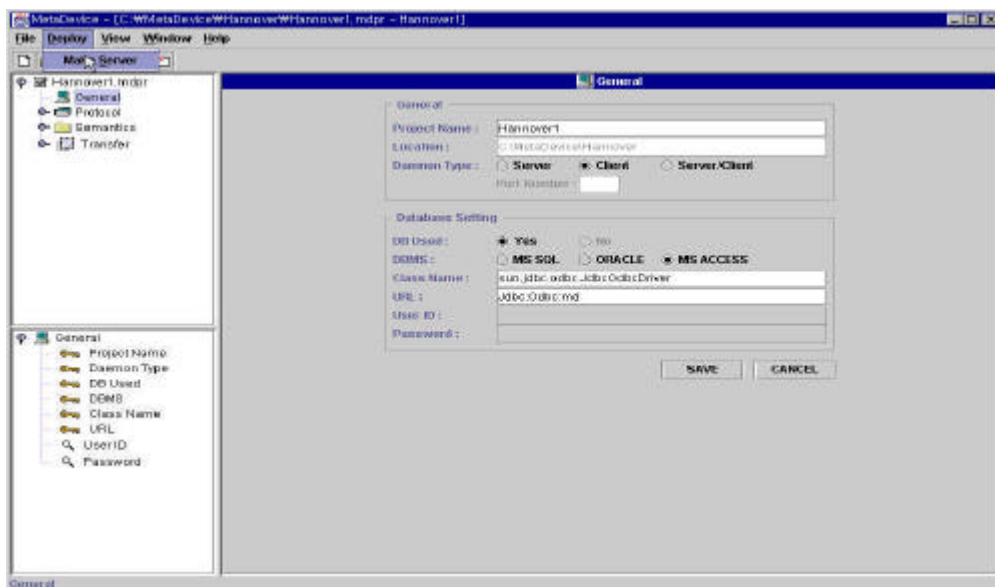
[2.6 Transfer가 Semantics]



[2.7 Transfer]

1.6 Server Program Deploy

Server Manager Menu “Make Server”
 Admin Module “Create Protocol Tables”
 Semantics Run-Time
 Data DB 가



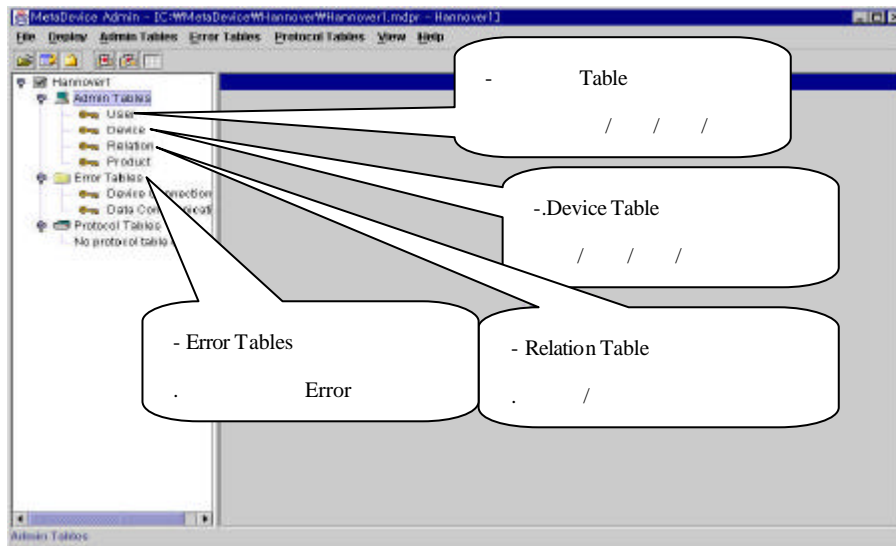
[2.8 Server Program Deploy]

2. Admin

Admin

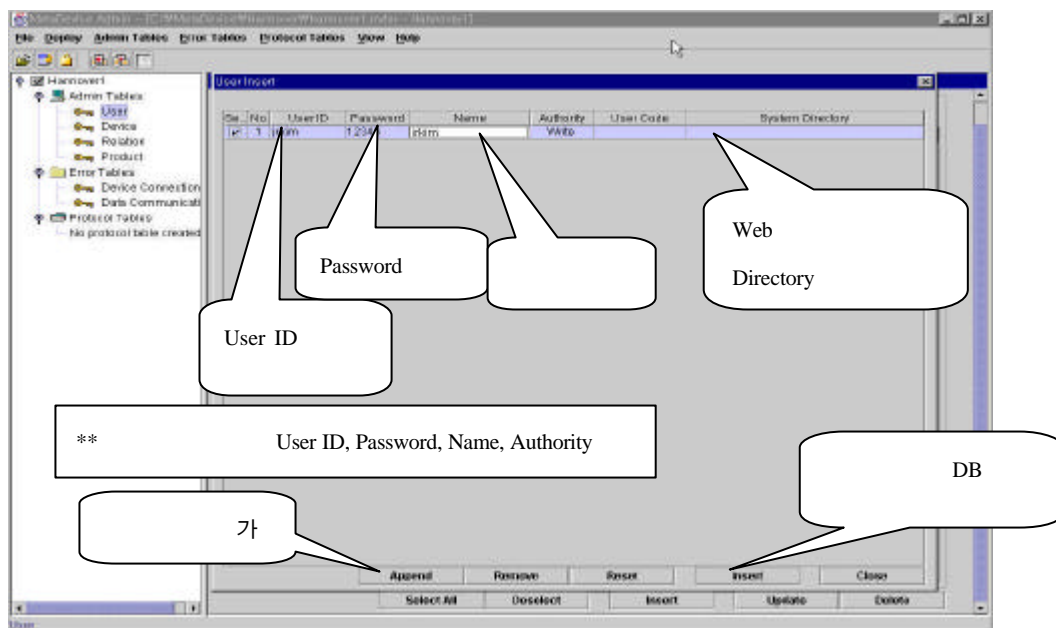
UI Program Deploy

“Protocol Data”, Excel



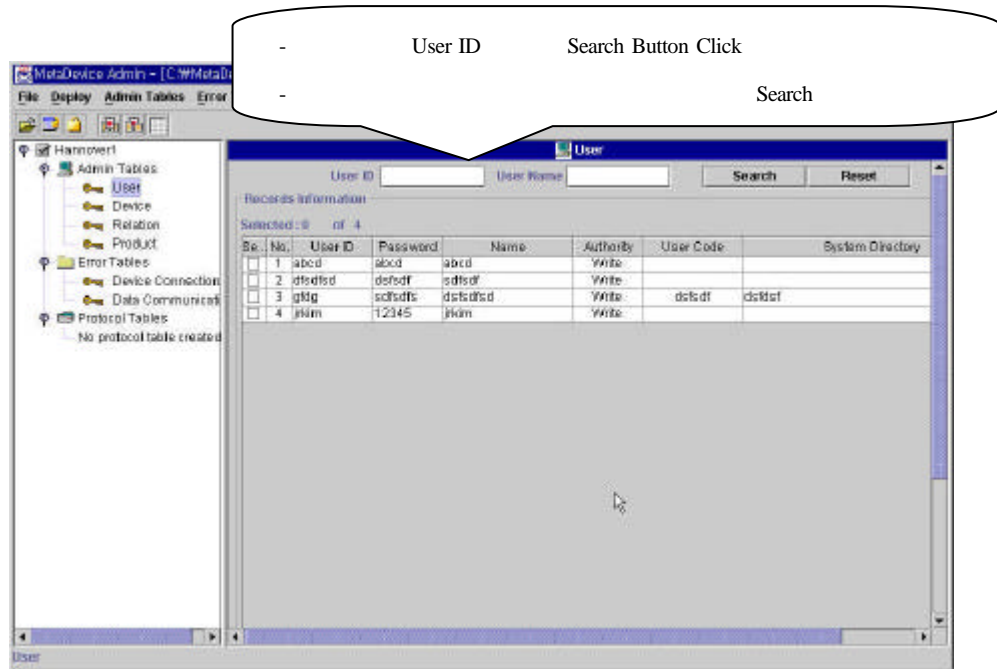
[2.9 Admin]

2.1

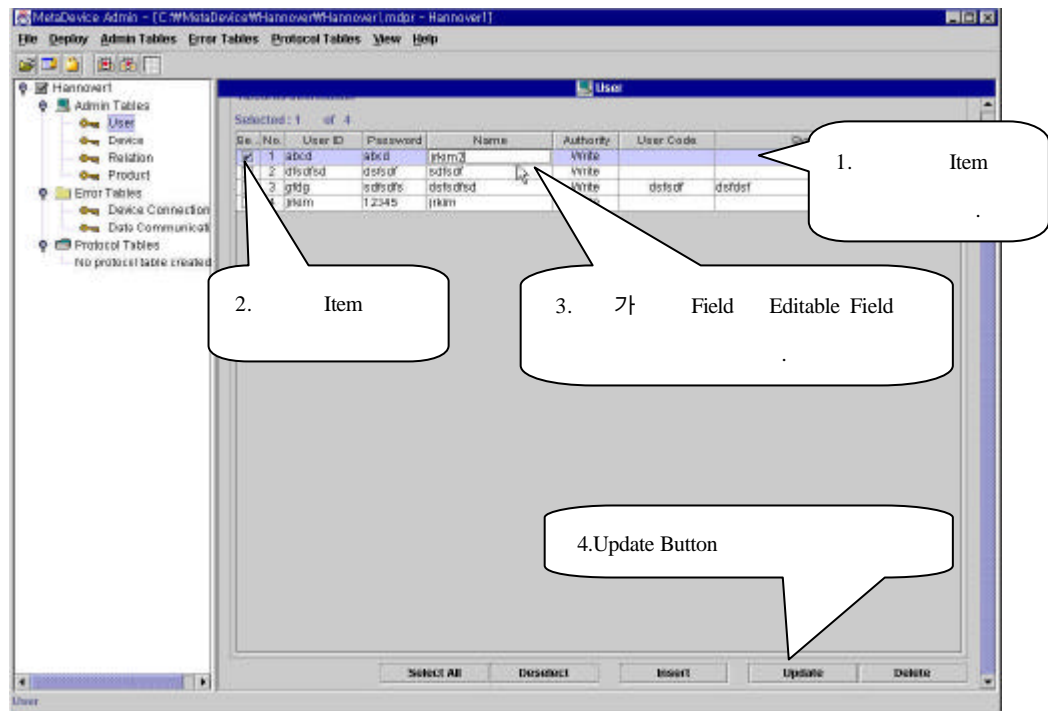


[2.10.1]

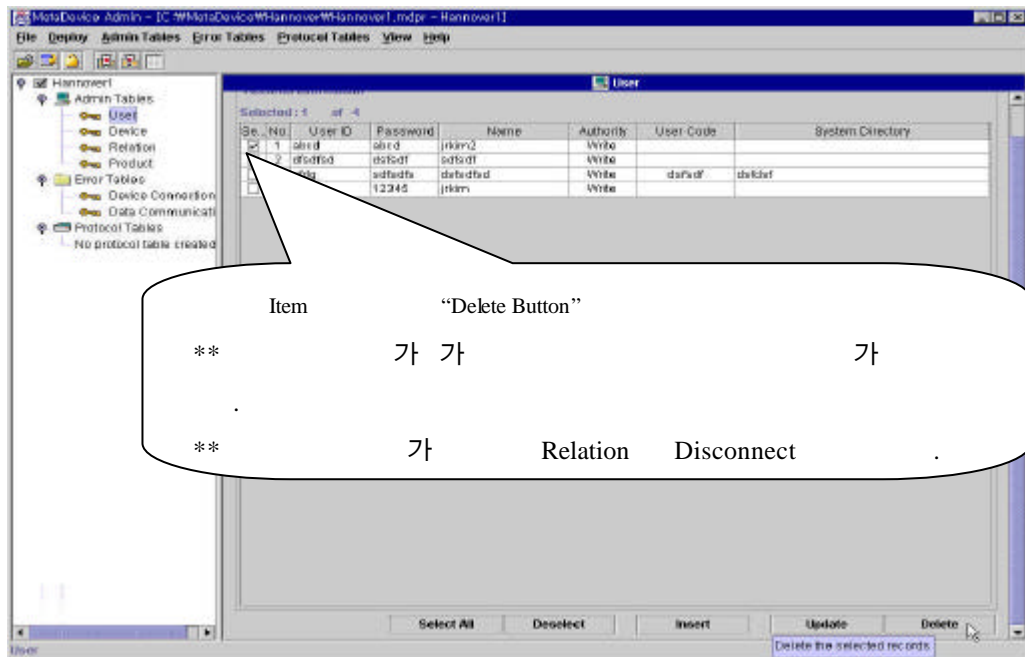
MetaDevice



[2.10.2]



[2.10.3]



[2.10.4]

2.2

가 . , (Uniqueness) (Consistency) 가

IP 가 .

- : MetaDevice MAC

Number . TCP/IP 가 Mac Address

가 . Mac Address

3byte MAC Number

256*256*256 1 7 가

가 .

- : MAC Number

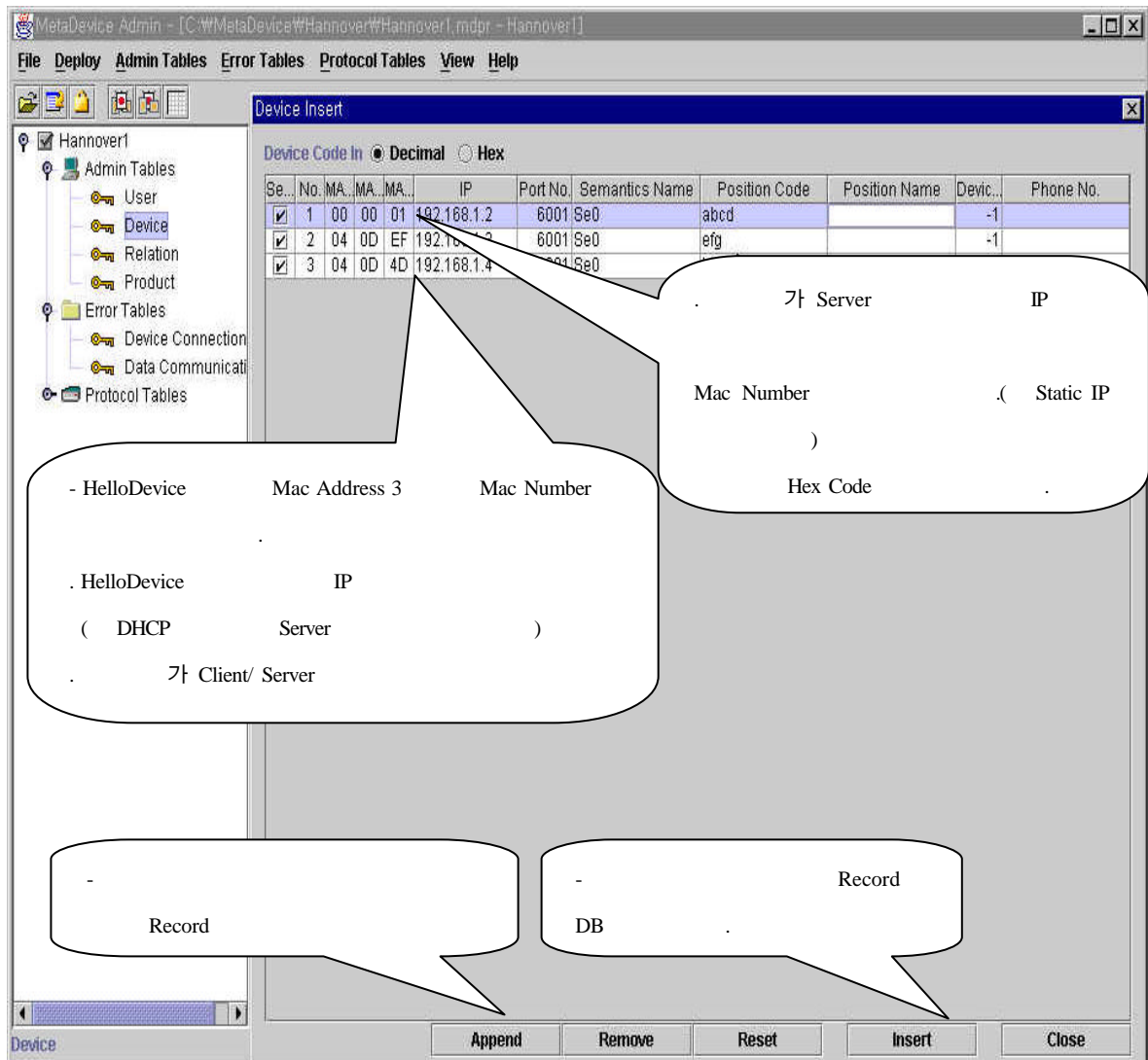
Data . Position Code Code

. Position Code Code

Mapping Code 4Byte Integer,

Position Code Maximum 50 Character

MetaDevice



[2.11.1 1]

HelloDevice HelloDevice Mac Address

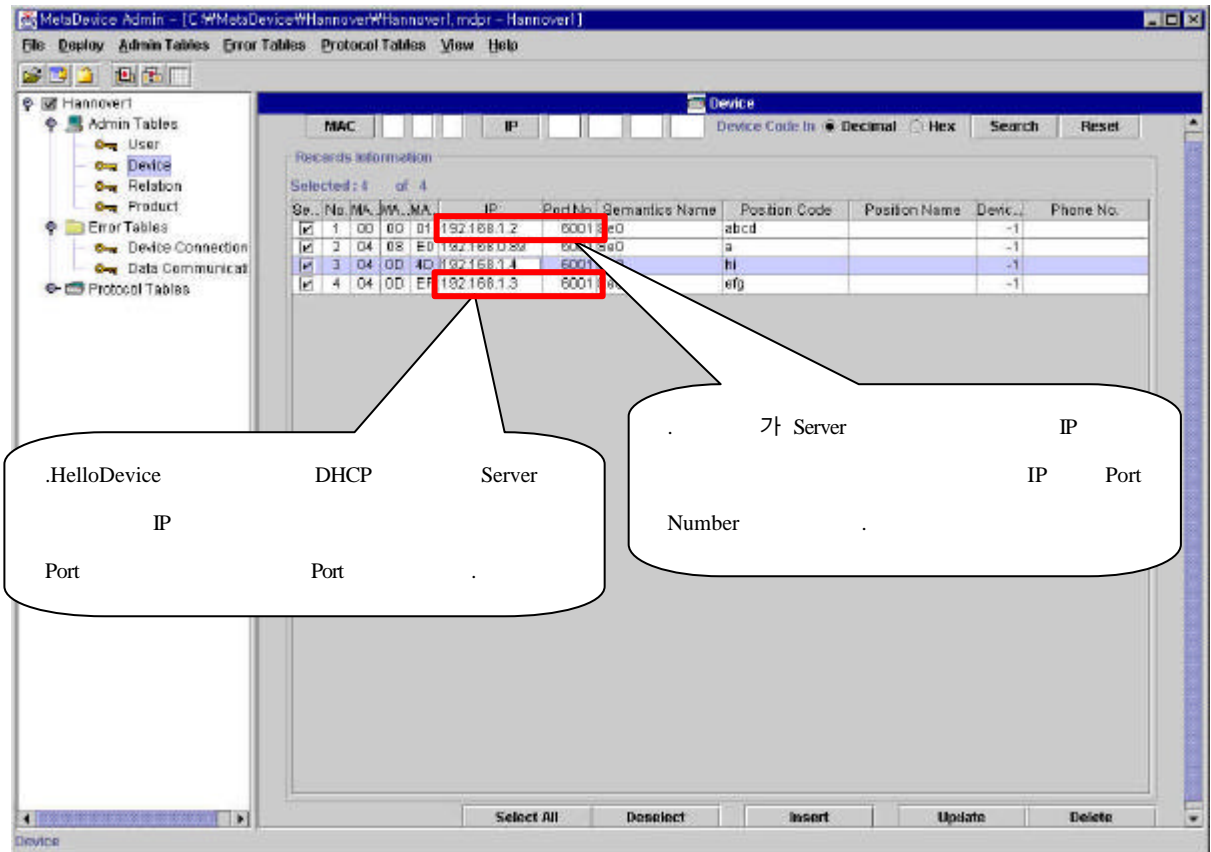
3 Byte Mac Number TCP/IP

. HelloDevice Mac Address 가 "00:01:95:04:0d:ef" "04,0d,ef" Mac

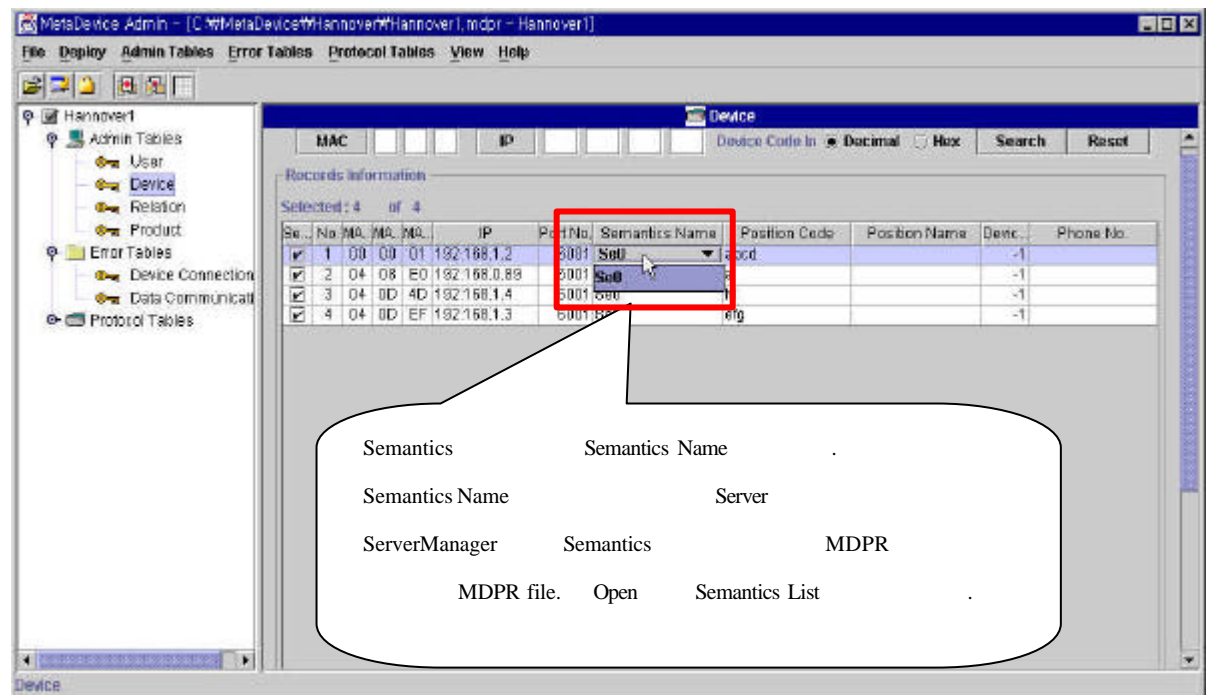
Number . MAC Number

. , MAC Number System

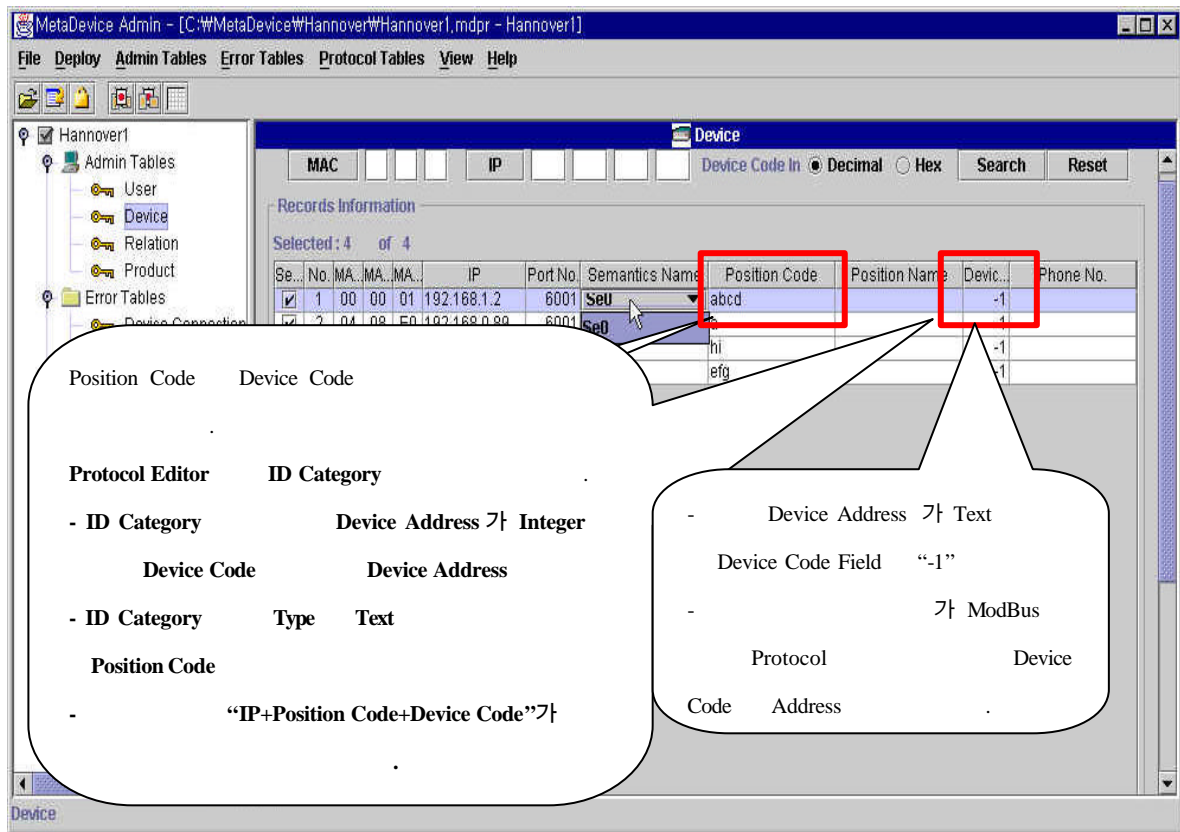
MetaDevice



[2.11.2 2]

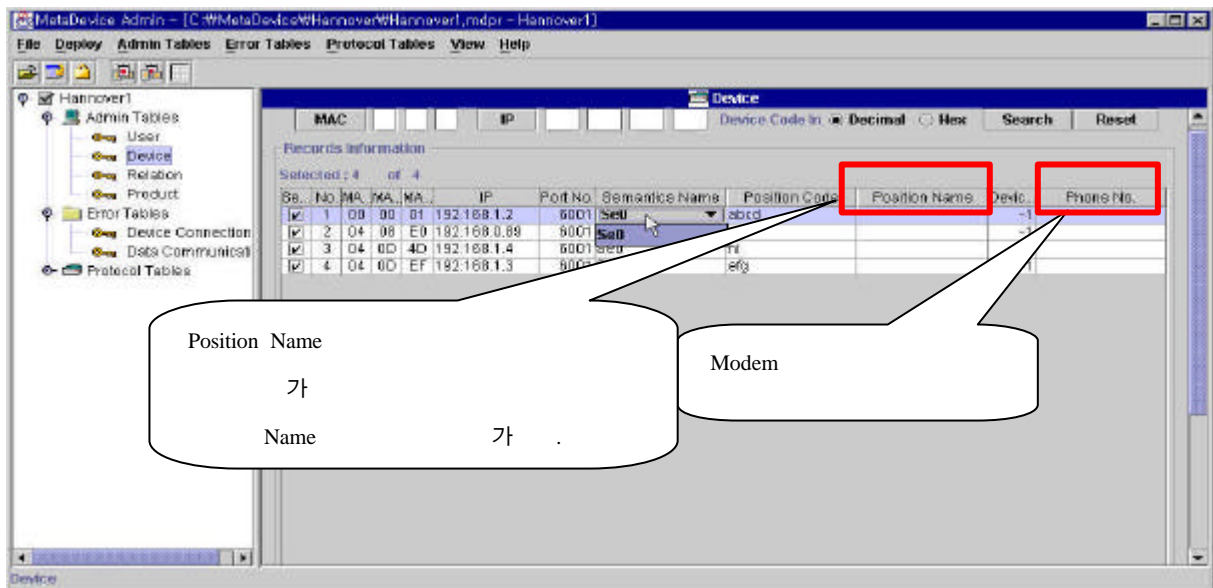


[2.11.3 3]



[2.11.4 4]

: Position Code Address Code
 "-1" ModBus Address 가 Integer
 Code Address

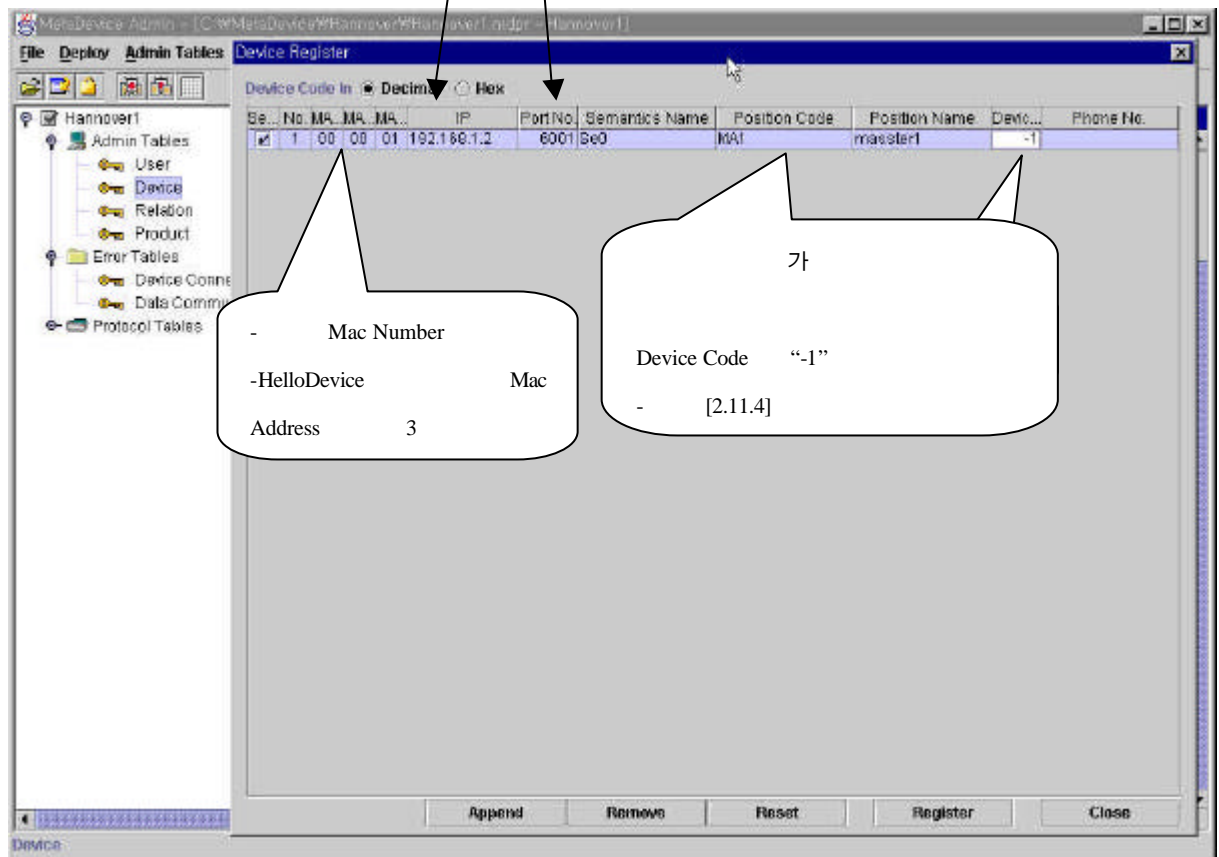
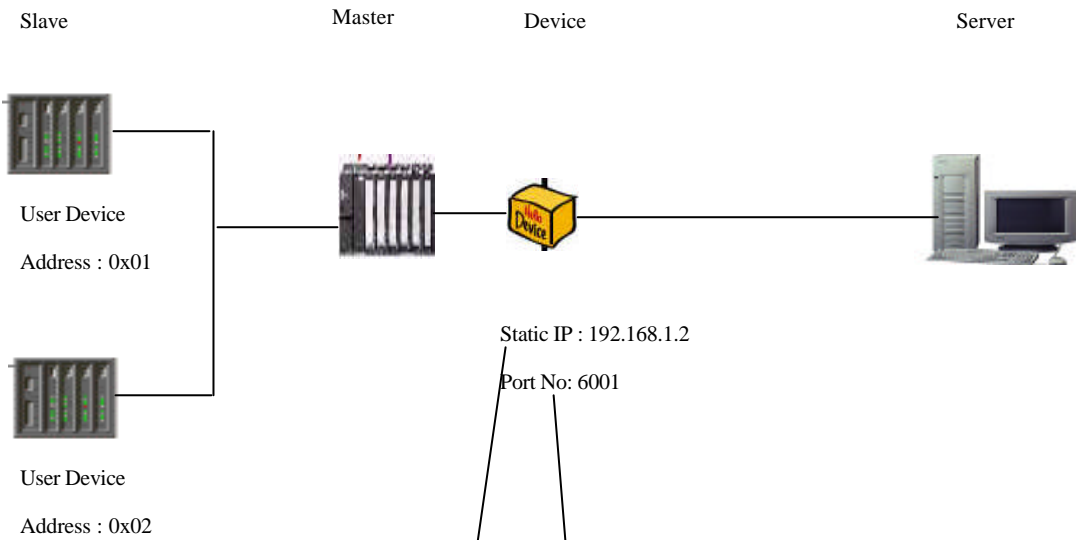


[2.11.5 5]

2.3

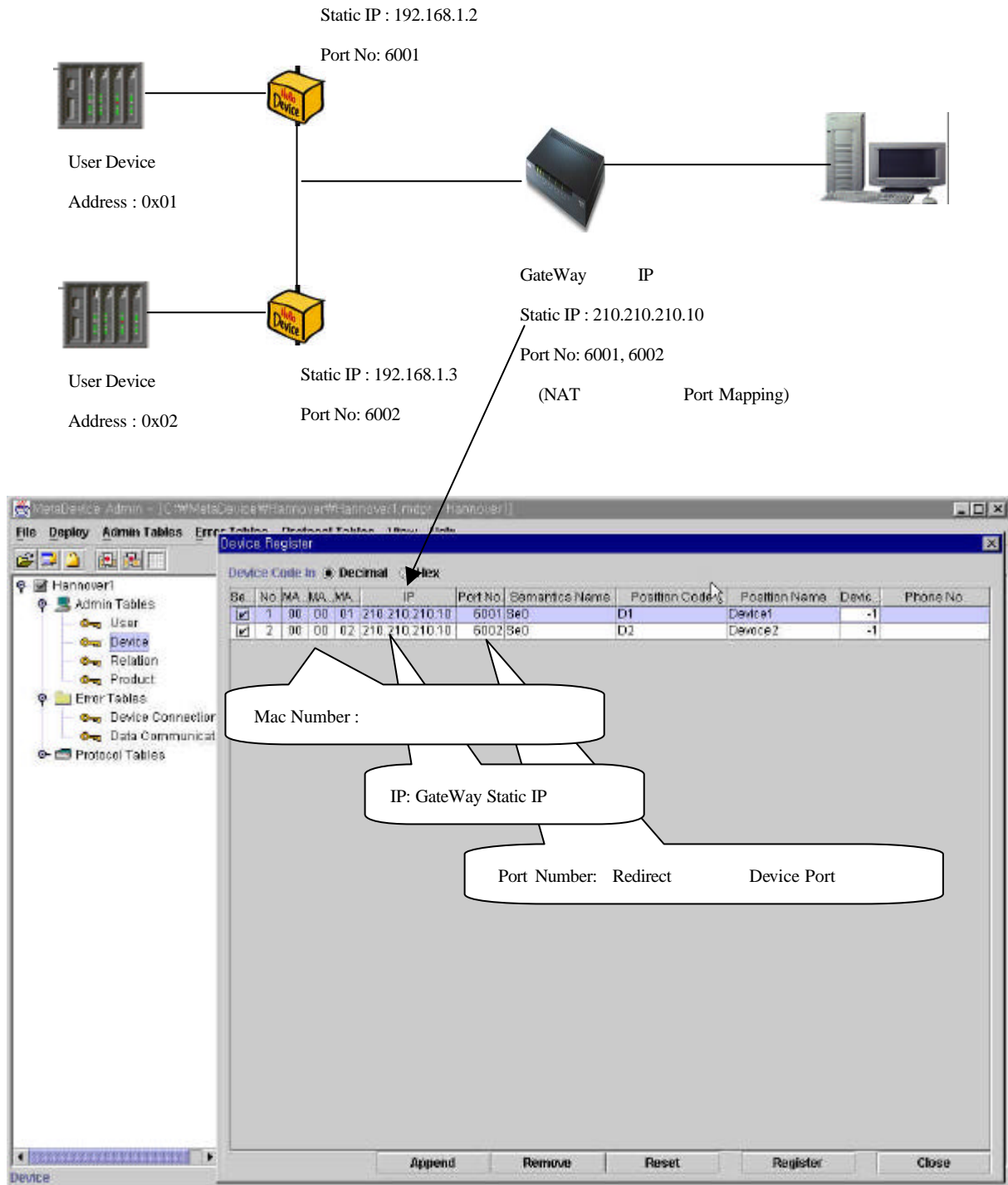
(1) 가

- Case 1



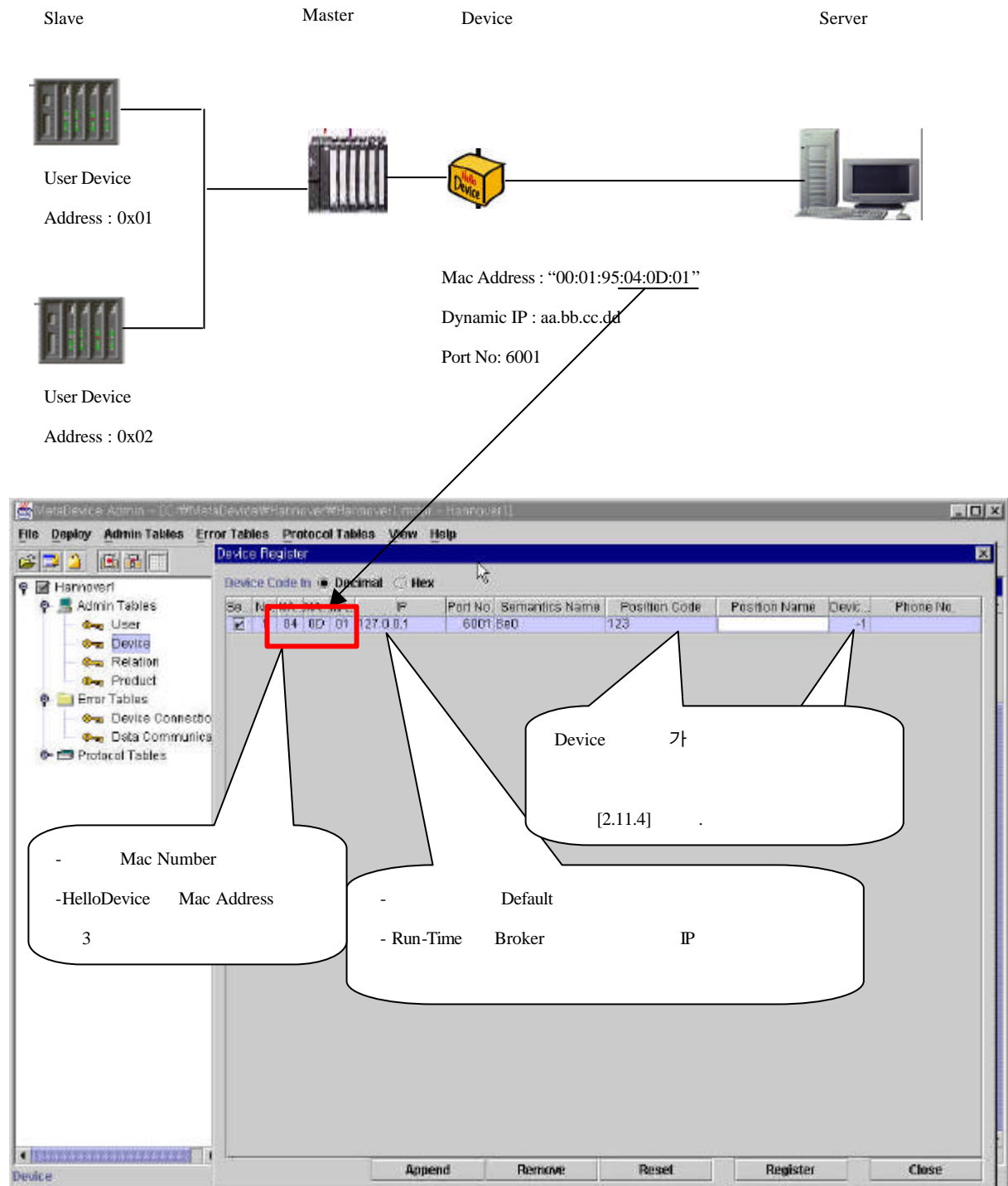
[2.11.6 1]

- Case 2



[2.11.7 2]

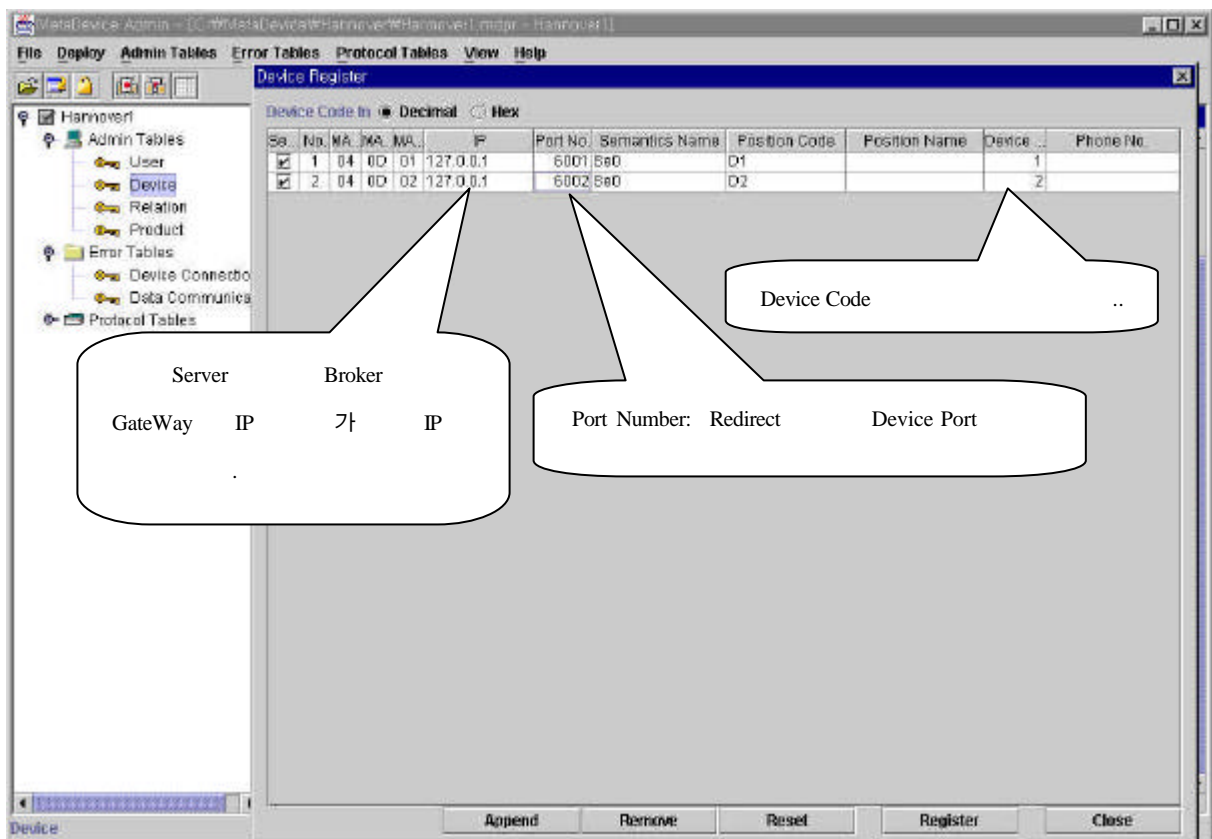
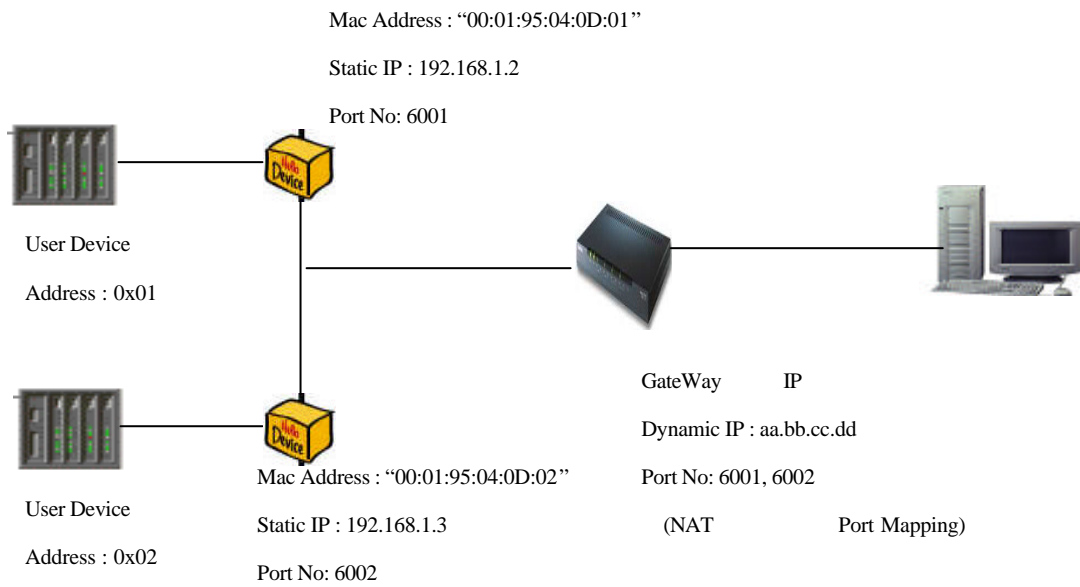
- Case 3



[2.11.8 3]

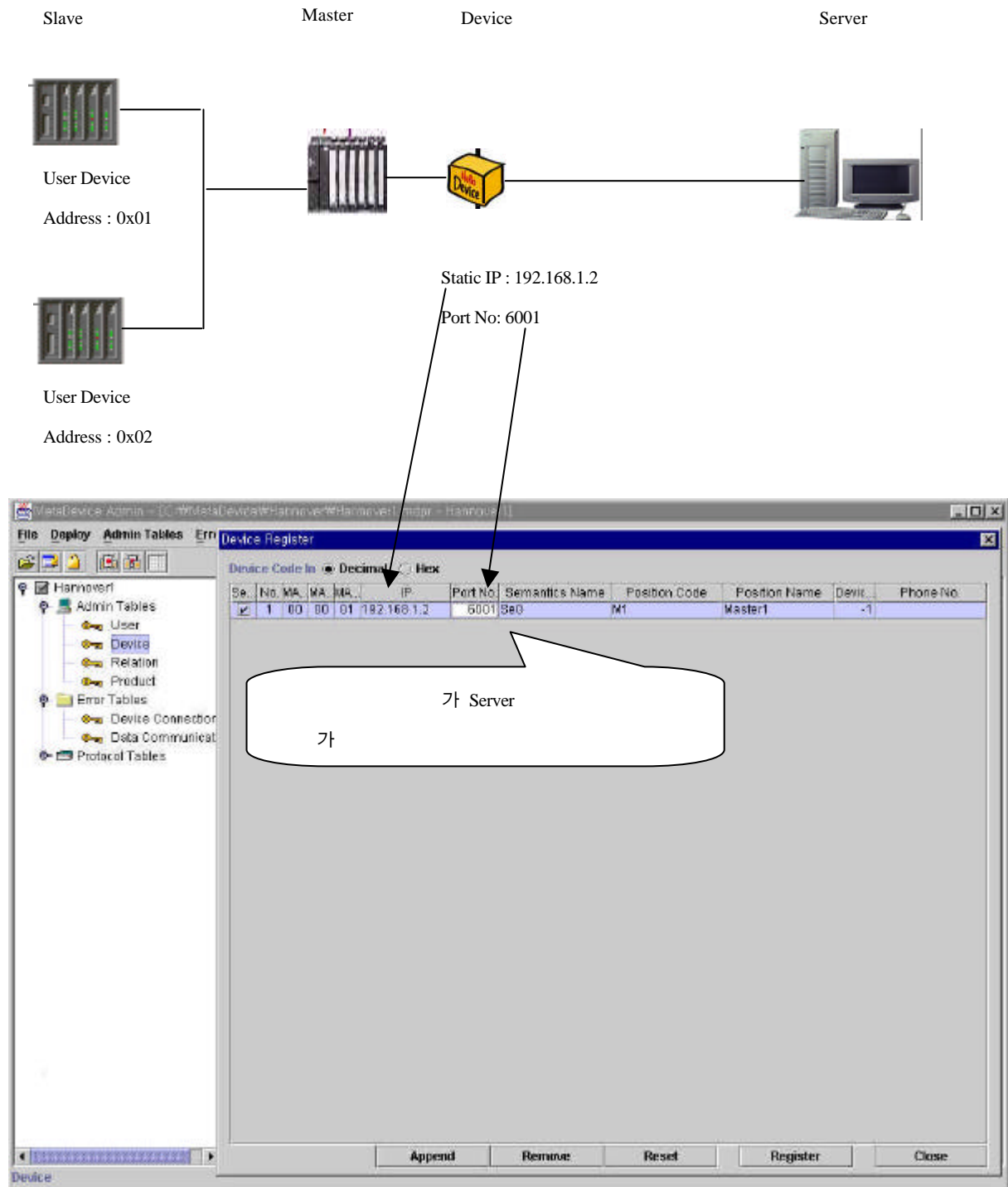
MetaDevice

- Case 4

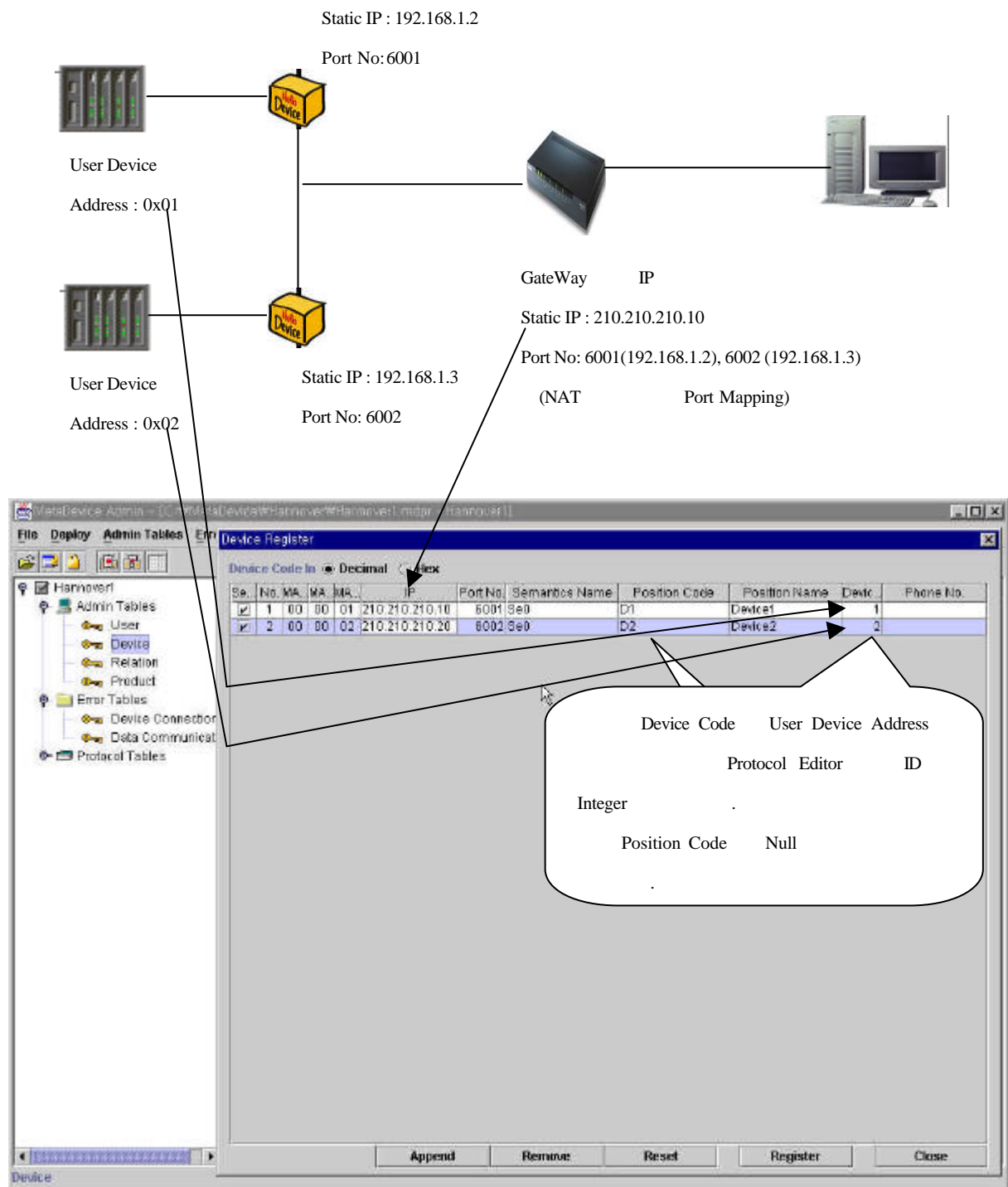


[2.11.9 4]

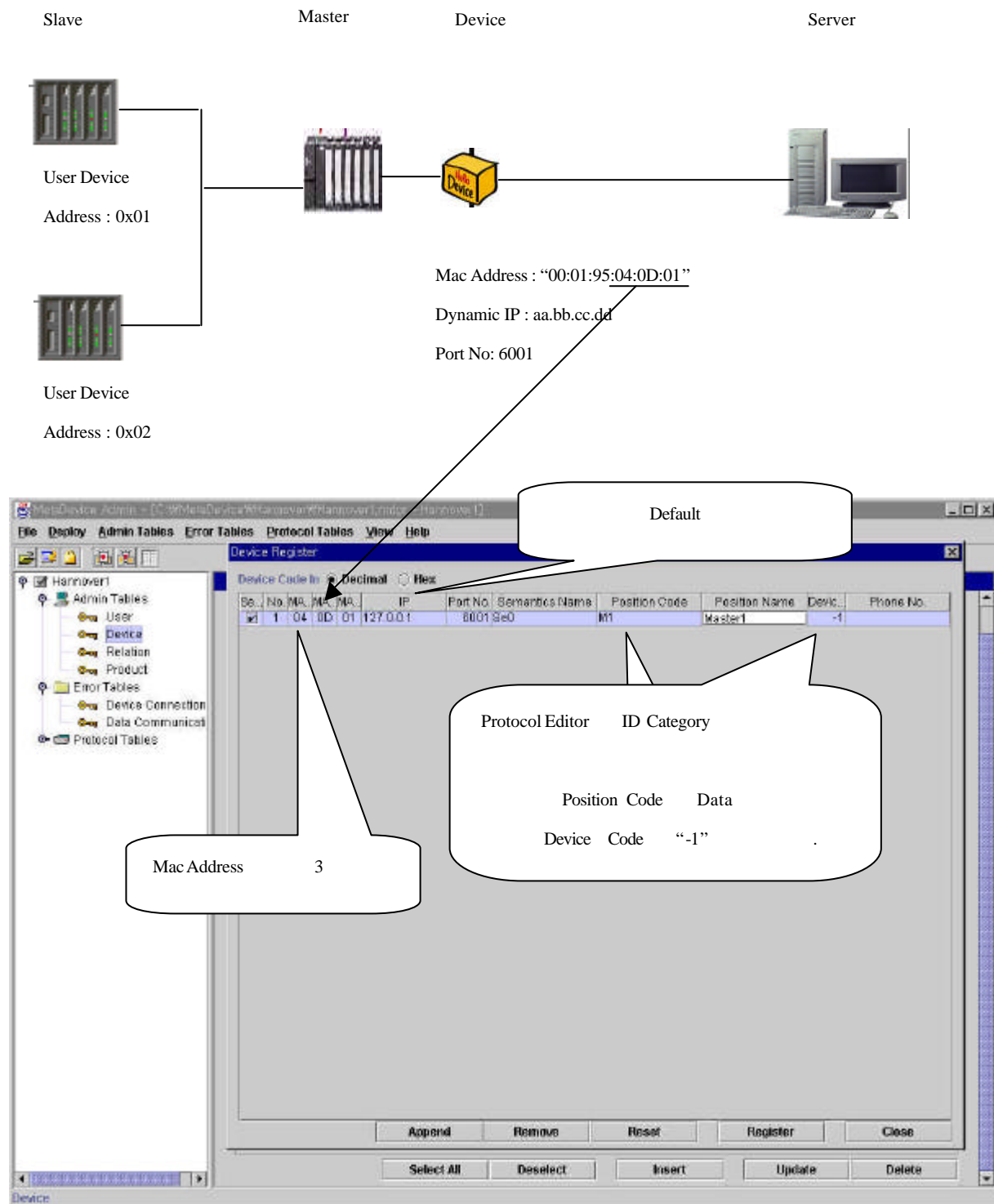
(2) 가
- Case 1



- Case 2

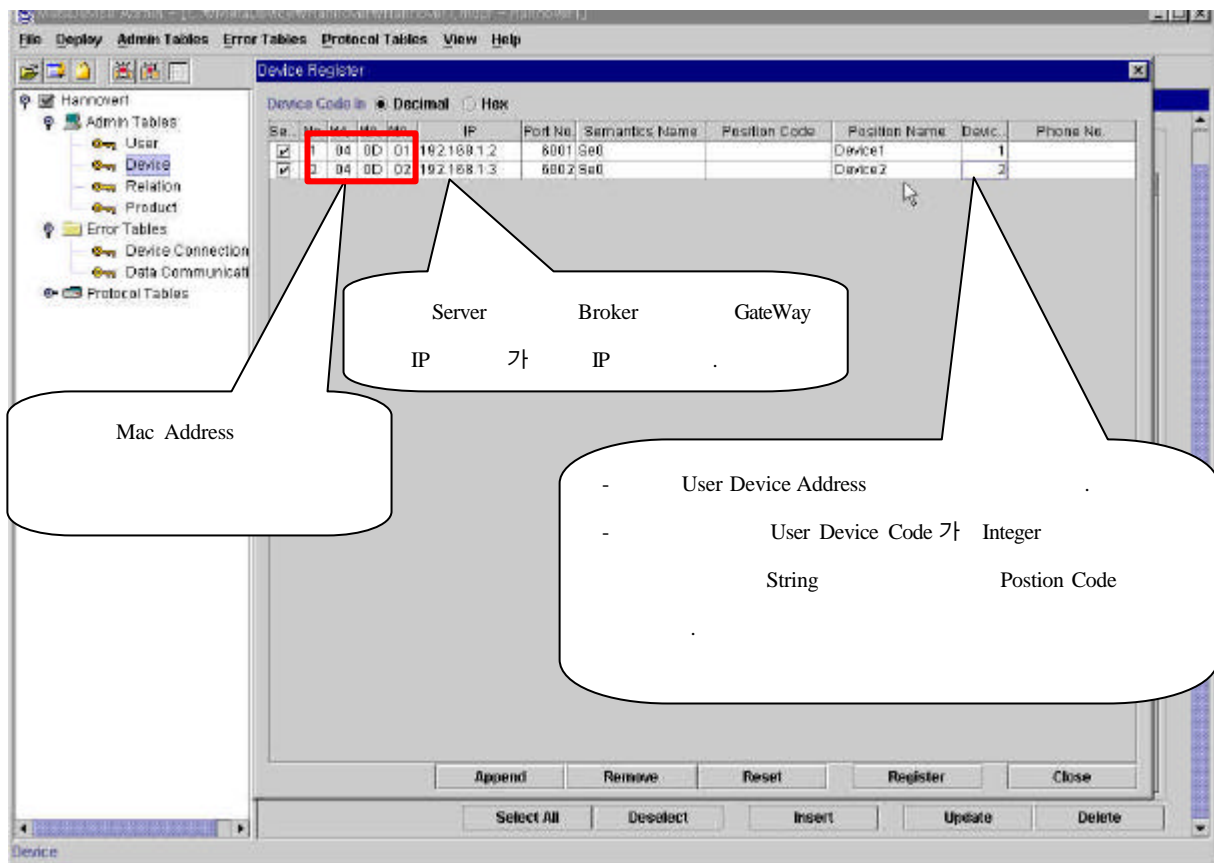
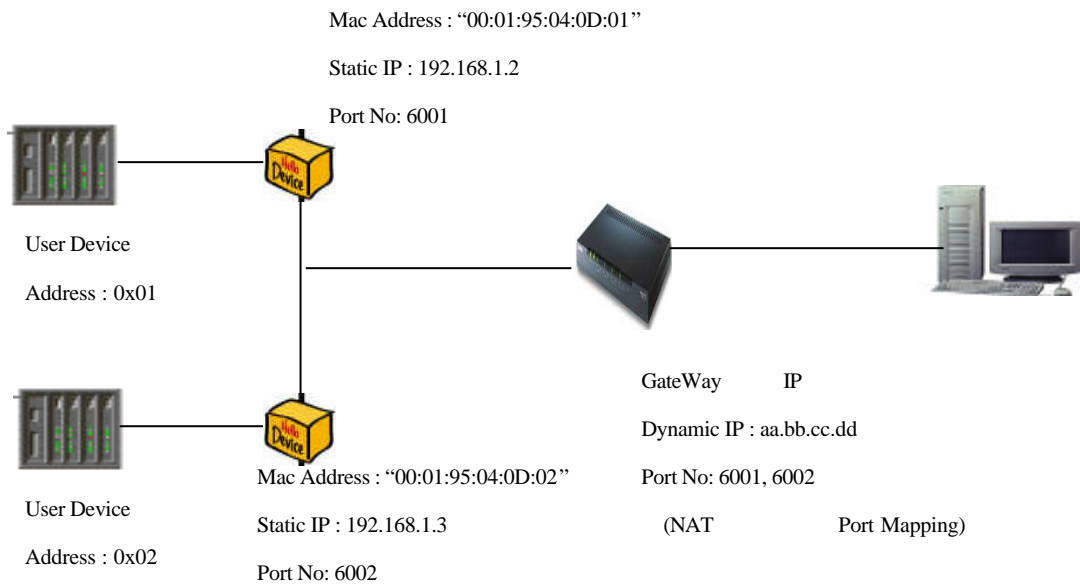


- Case 3



MetaDevice

- Case 4



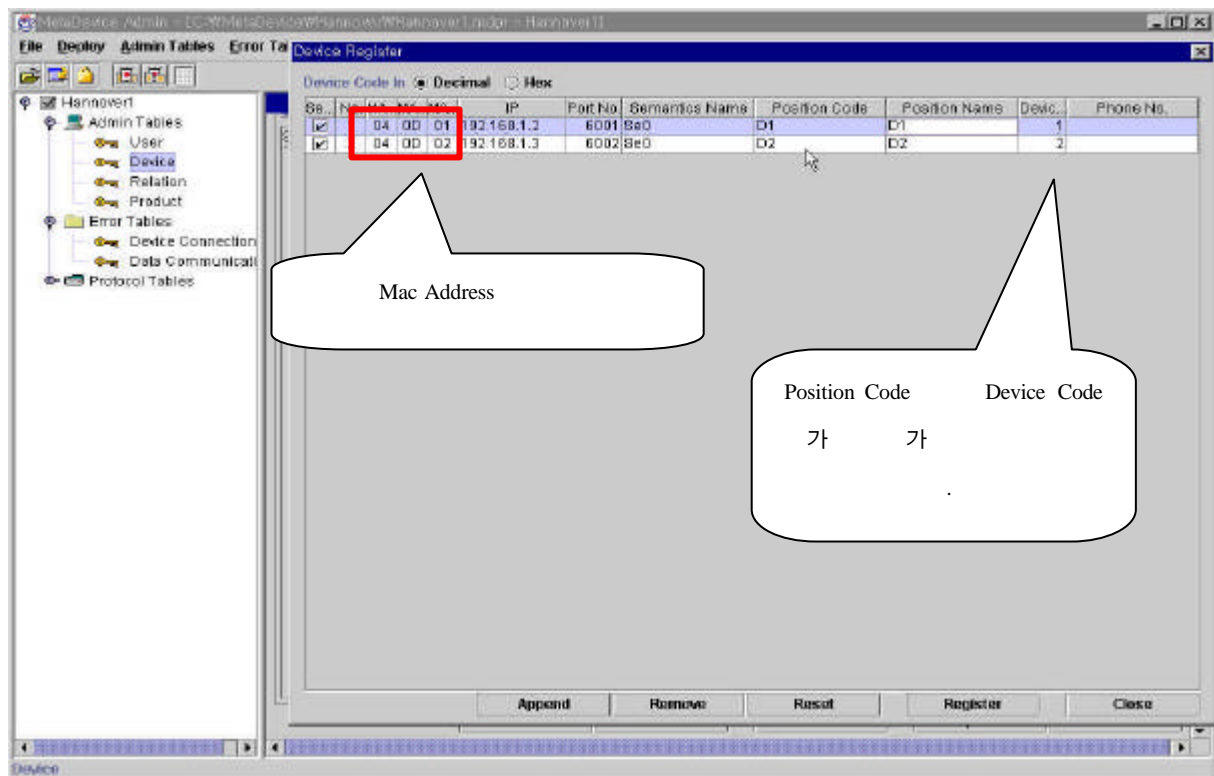
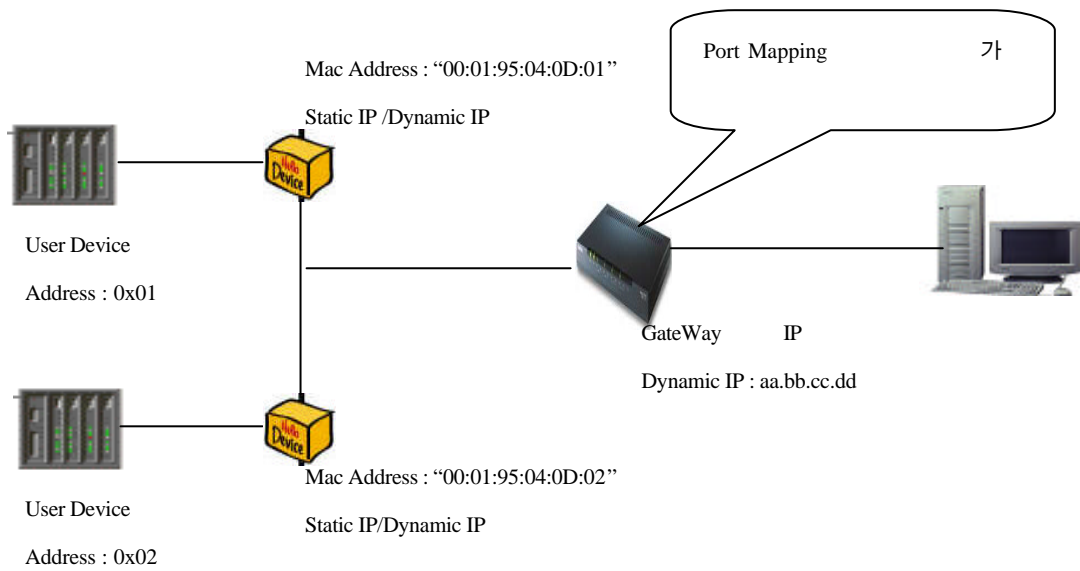
[2.11.13

8]

- (3) 가 Client/Server
가 Client

(4)

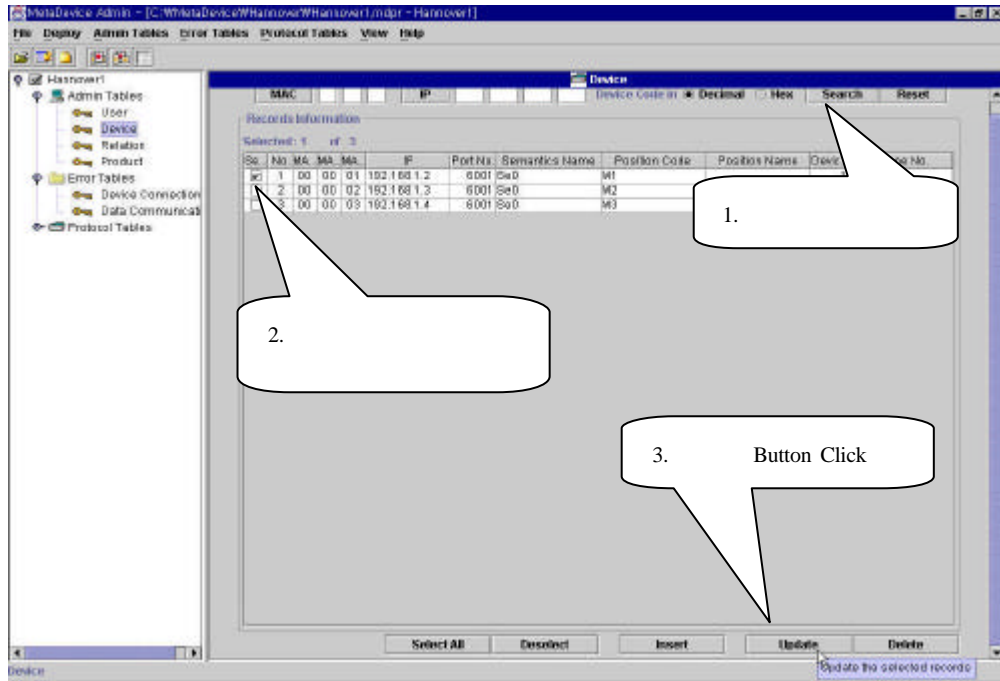
GateWay Port redirecting HelloDevice 가 IP
 PC HelloDevice
 HelloDevice TCP HelloDevice
 가 Server Semantics “_MAC”



[2.11.14]

2.4

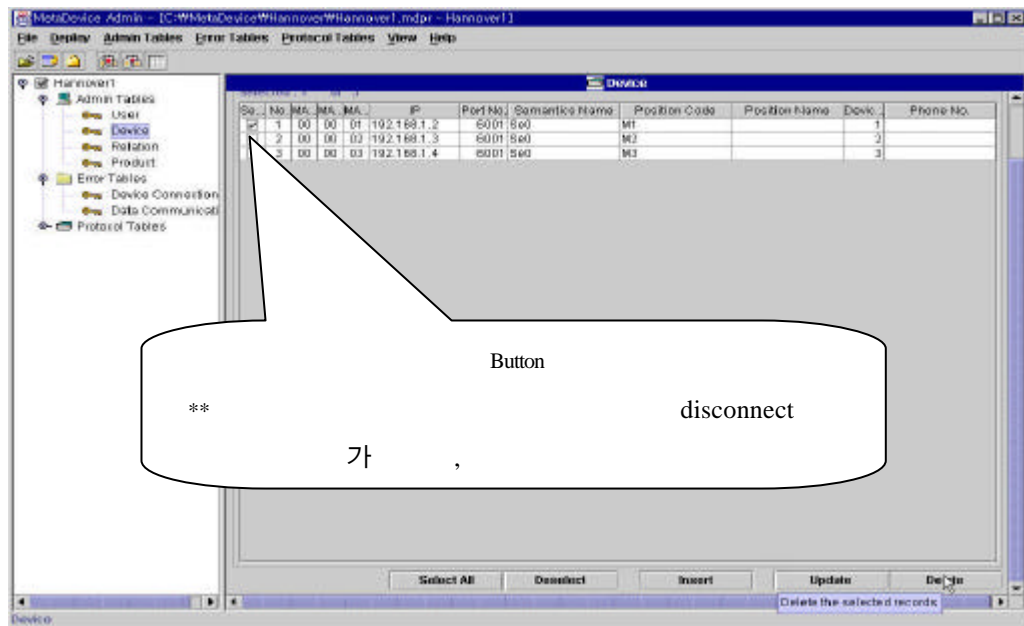
/



[

2.12.

]



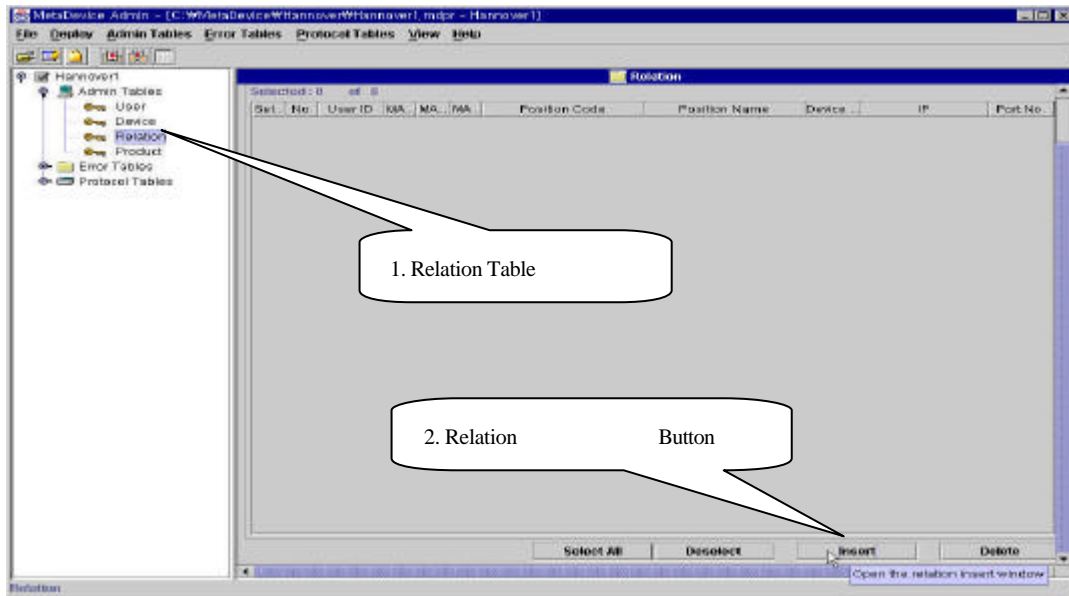
[

2.13

]

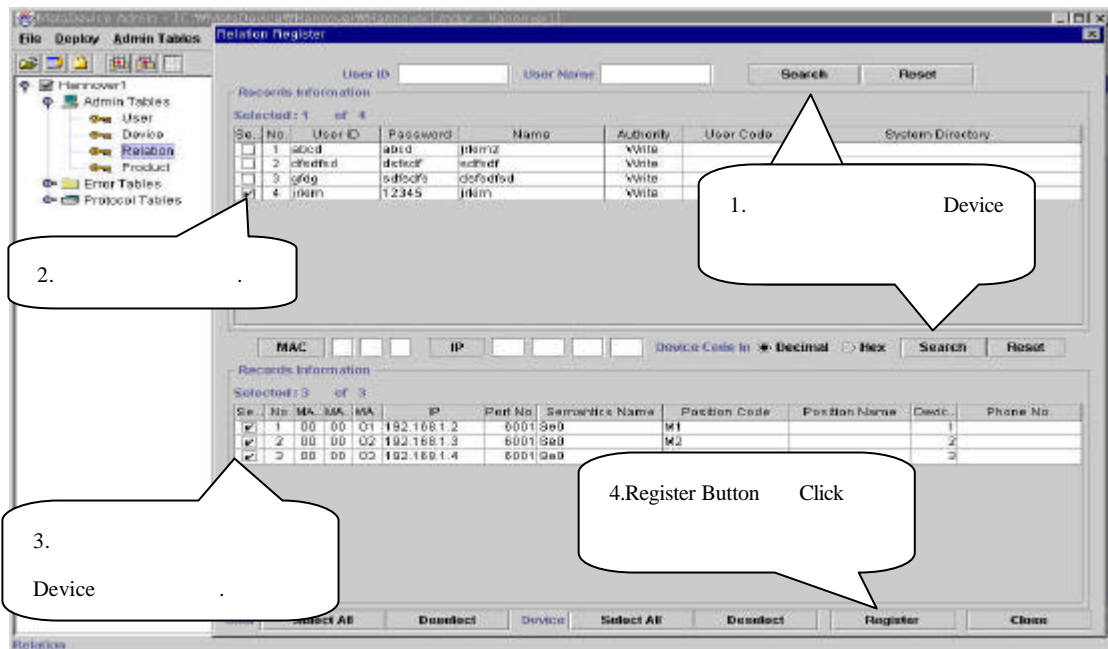
2.5 /

UI Deploy



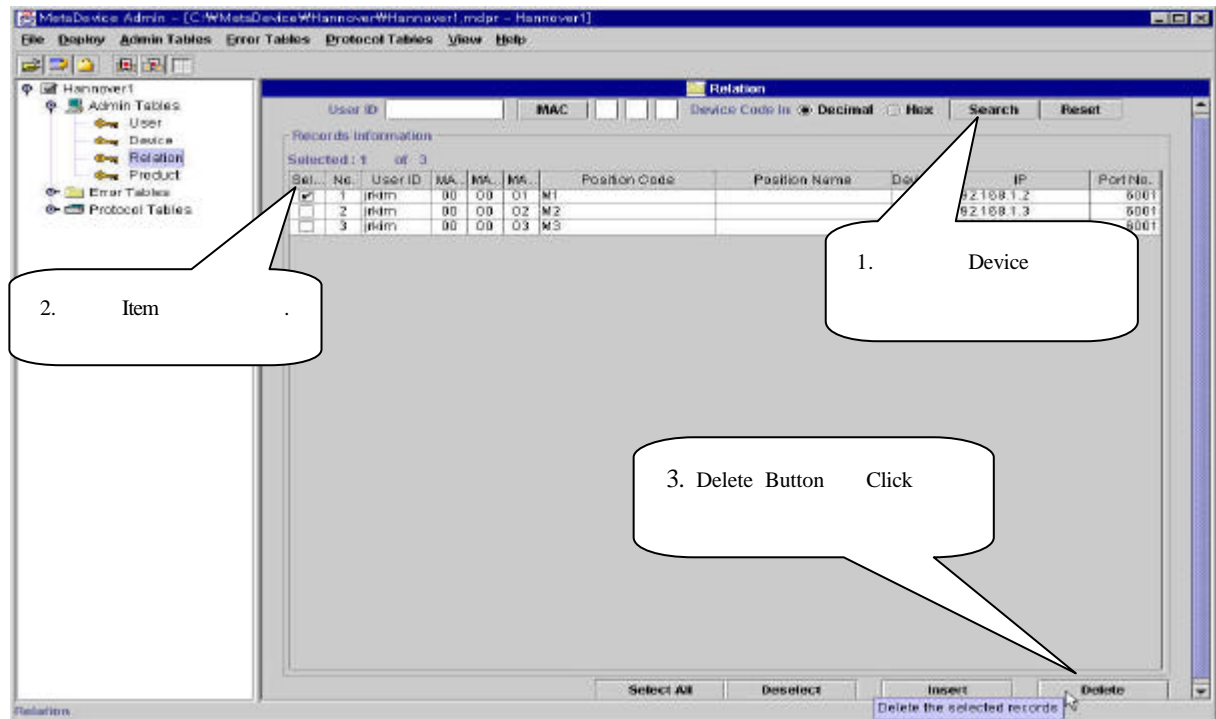
[2.14 Relation]

(1) /



[2.15]

(2) /



[2.16]

2.6

(1) Error

Error List . Error "Device Connection Error","No Data Receive" "Data Parsing Error" 가 .

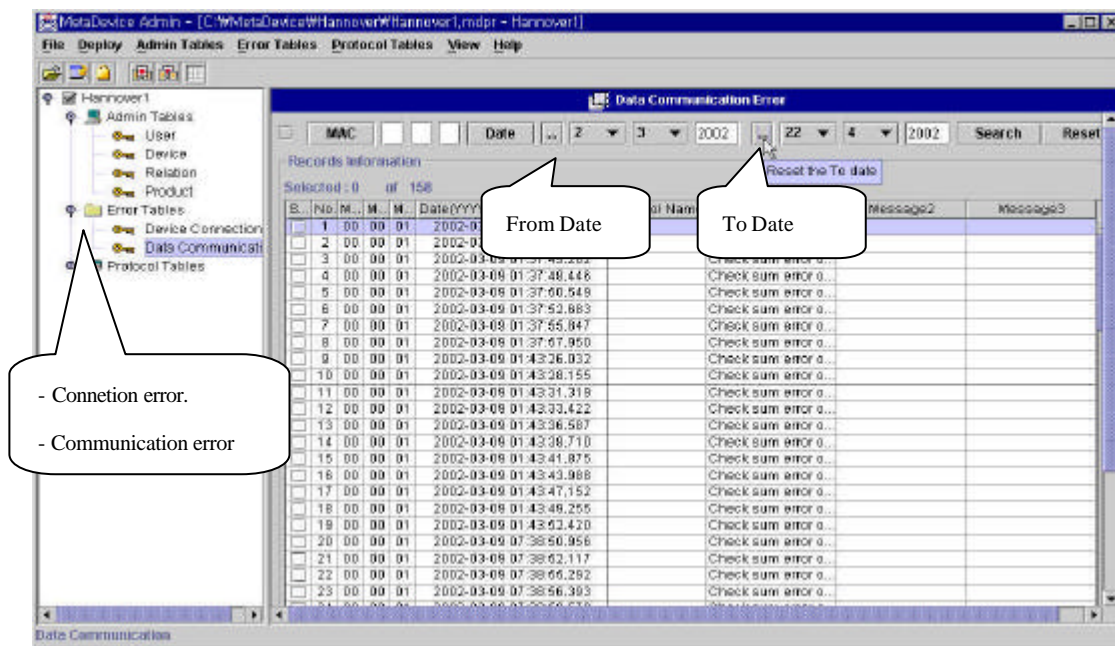
.Device Connection Error: Server Daemon Type 가

.No Data Receive : Semantics

Protocol

.Data Parsing Error : Data 가 Semantics Protocol Format

MetaDevice

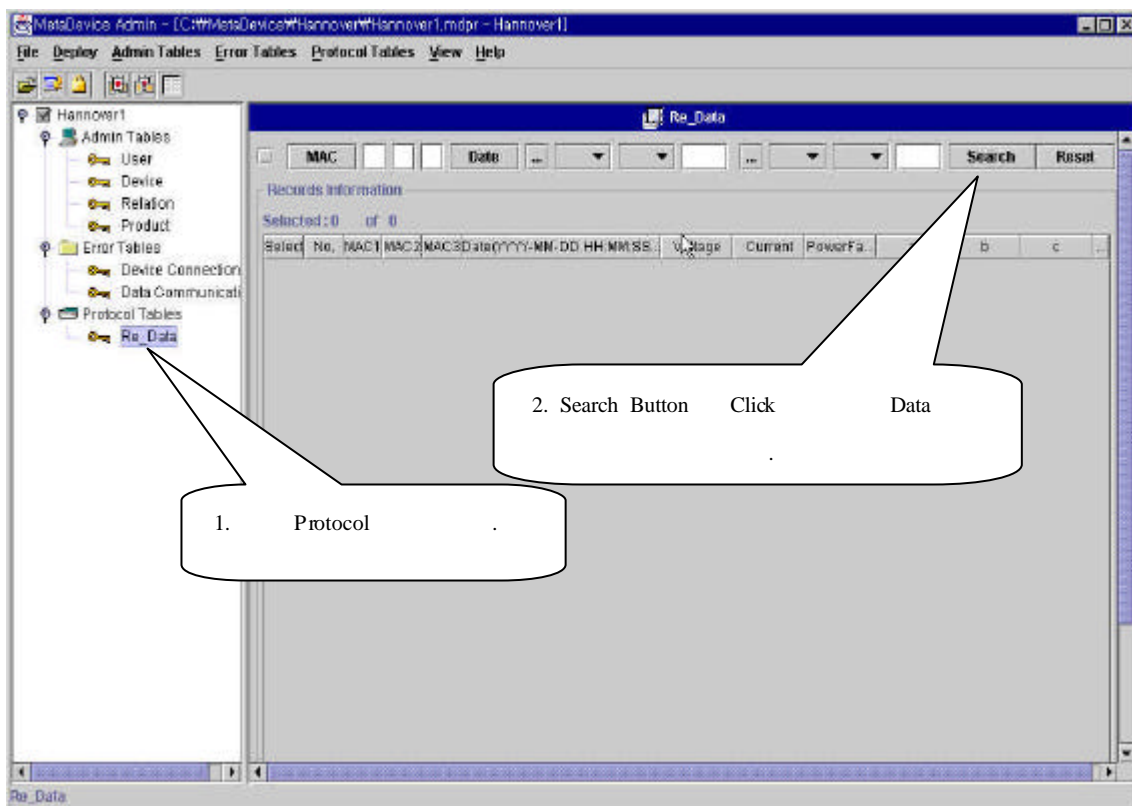


[2.17 Error]

(2) Protocol Data

Protocol

Data Logging



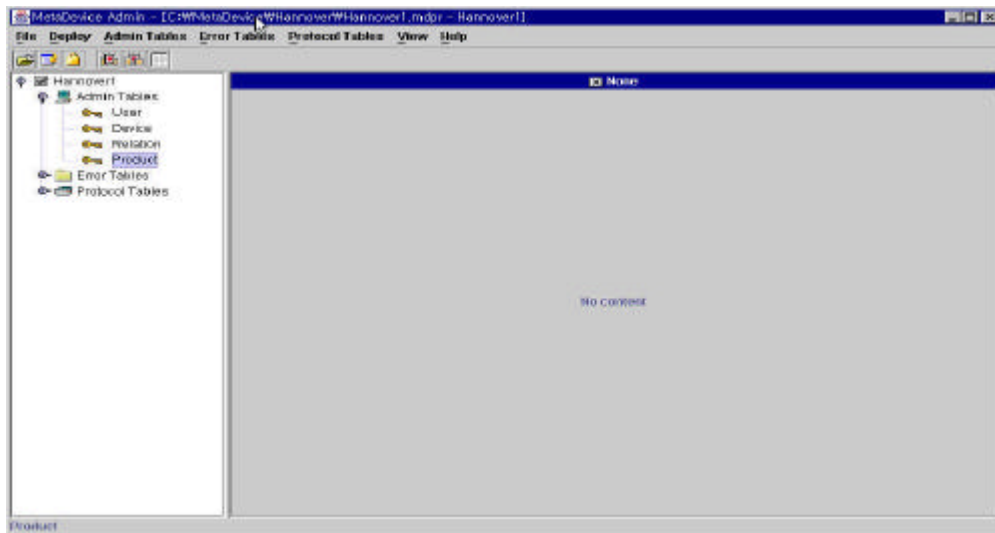
[2.18 Protocol Data]

MetaDevice

(3)

Version 1.5

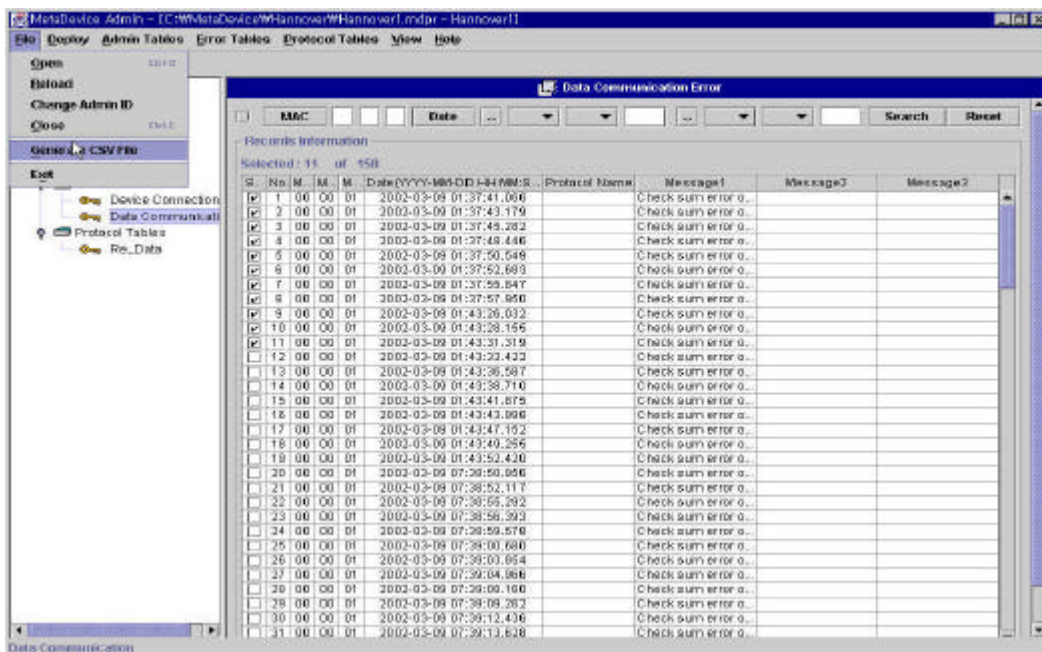
Multi Port



[2.19 Product Data]

(4) CSV File

Excel File



[2.20 CSV File]

3. (General Property)

MetaDevice Server Manager Server Program .
 , , Server Program , , DB , DBMS
 , JDBC Class , DBMS URL, DBMS ID Password .
 Server Program (File/New) New Project
 [2.21.1] , General Panel[2.21.2] .

New Project

General

Project Name : ProjectForManual

Location : D:\Manual

Daemon Type : ☐ Server ☐ Client ☒ Server/Client

Port Number : 6001

Database Setting

DB Used : ☒ Yes ☐ No

DBMS : ☐ MS SQL ☐ ORACLE ☒ MS ACCESS

Class Name : sun.jdbc.odbc.JdbcOdbcDriver

URL : Jdbc:Odbc:test

User ID :

Password :

Create Cancel

[2.21.1 New Project]

General

General

Project Name : ProjectForManual

Location : D:\Manual

Daemon Type : ☐ Server ☐ Client ☒ Server/Client

Port Number : 6001

Database Setting

DB Used : ☒ Yes ☐ No

DBMS : ☐ MS SQL ☐ ORACLE ☒ MS ACCESS

Class Name : sun.jdbc.odbc.JdbcOdbcDriver

URL : Jdbc:Odbc:md

User ID :

Password :

Save Cancel

[2.21.2 General Panel]

3.1 Project Name

Server Program , Server Manager

[Server Manager]

1. : Project Name, Send Protocol Name, Receive Protocol Name, Transfer Name, Semantics Name
2. 가 : / , , _
3. :
 - 1) . (: _Abc , 123Abc)
 - 2) . (: ABC123, AAA)
 - 4) 20 . (: IAmLongerThan20Letters)
 - 3) : , 가 .
 - 4) .

boolean, byte, short, int, long, char, float, double, void, true, false, null, if, else, switch, case, default, for, while, do, break, continue, return, class, interface, extends, implements, static, abstract, final, new, instance, of, this, super, public, protected, private, volatile, transient, synchronized, native, package, import, try, catch, finally, throw, throws
- 5) Server Manager .

_MAC, NO_DATA_RECEIVE, PARSE_ERROR, CS_ERROR, ALARM_RECEIVE, Broker, CRC, DateUtil, DBUtil, InstantMessage, LogIn, MAC, MACInfo, Protocol, ReceiveProtocol, RMIServer, RSSerializable, RSSerializableImpl, Semantics, SemanticsInterface, SendProtocol, Utility
- 6) .

3.2 Location

(mdpr) , Server Program (Deploy/Make Server) Server .

New Project 가 General Panel . Windows NT Operating System 가 Location Path 가 .

3.3 Daemon Type

Server Program Device Server Client

. Server Client Server/Client .

Server Program Server – , Server Server/Client

Device 가 Port Number .
 Daemon Type Semantics Panel Semantics Edit Server
 Client Check Box 가 가 가 가 , Daemon Type Server
 Semantics Panel Client Check Box 가 가 Client
 Semantics , Daemon Type Client Semantics Panel
 Server Check Box 가 가 Server Semantics .

[2.22.1 Daemon Type Semantics Panel]

3.4 Port Number

Daemon Type / 가
 가 ,
 .

3.5 DB Used

DBMS

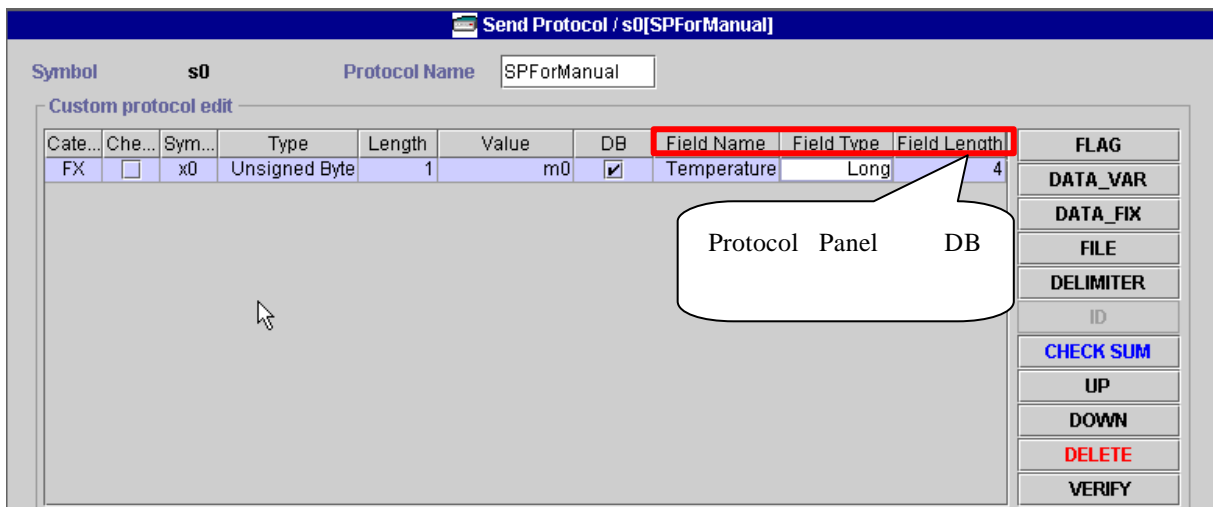
3.6 DBMS

DBMS . MS SQL, Access

ORACLE . DBMS Protocol Panel(Send Protocol
Receive Protocol Panel) Field Type, Field Length . DBMS

Protocol Panel Field Type, Field Length DBMS

Field Type Default Field Length , Protocol Panel Field Type Field
Length DBMS Protocol Panel DB



[2.22.2 Protocol Panel DB]

3.7 DB

JDBC DB Class Name, URL,
User ID, Password 가 . Class Name JDBC Driver , URL

DBMS URL , User ID Password DBMS ID

Password . DBMS JDBC Driver DBMS

JDBC Driver .

)

1. DBMS : Access , DSN() : DSNName, Driver : Sun JDBC/ODBC Driver
(Access DB DSN User ID, Password)

Class Name – “sun.jdbc.odbc.JdbcOdbcDriver”

URL – “Jdbc:Odbc:DSNName”

User ID – “”

Password – “”

2. DBMS : MS SQL, DSN : DSNName, Driver : Sun JDBC/ODBC Driver (User
ID : kumar Password : kumar)
Class Name – “sun.jdbc.odbc.JdbcOdbcDriver”

URL – “Jdbc:Odbc:DSNName”

User ID – “kumar”

Password – “kumar”

3. DBMS : MS SQL, Driver : Microsoft SQLServerDriver, Server Name : ServerName

(User ID : kumar Password : kumar)

Class Name – “com.microsoft.jdbc.sqlserver.SQLServerDriver”

URL – “jdbc:microsoft:sqlserver:// ServerName:1433”

User ID – “kumar”

Password – “kumar”

4. DBMS : MS SQL, Driver : Microsoft SQLServerDriver, DBMS 가 IP : 61.252.52.5

(User ID : kumar Password : kumar)

Class Name – “com.microsoft.jdbc.sqlserver.SQLServerDriver”

URL – “jdbc:microsoft:sqlserver:// 61.252.52.5:1433”

User ID – “kumar”

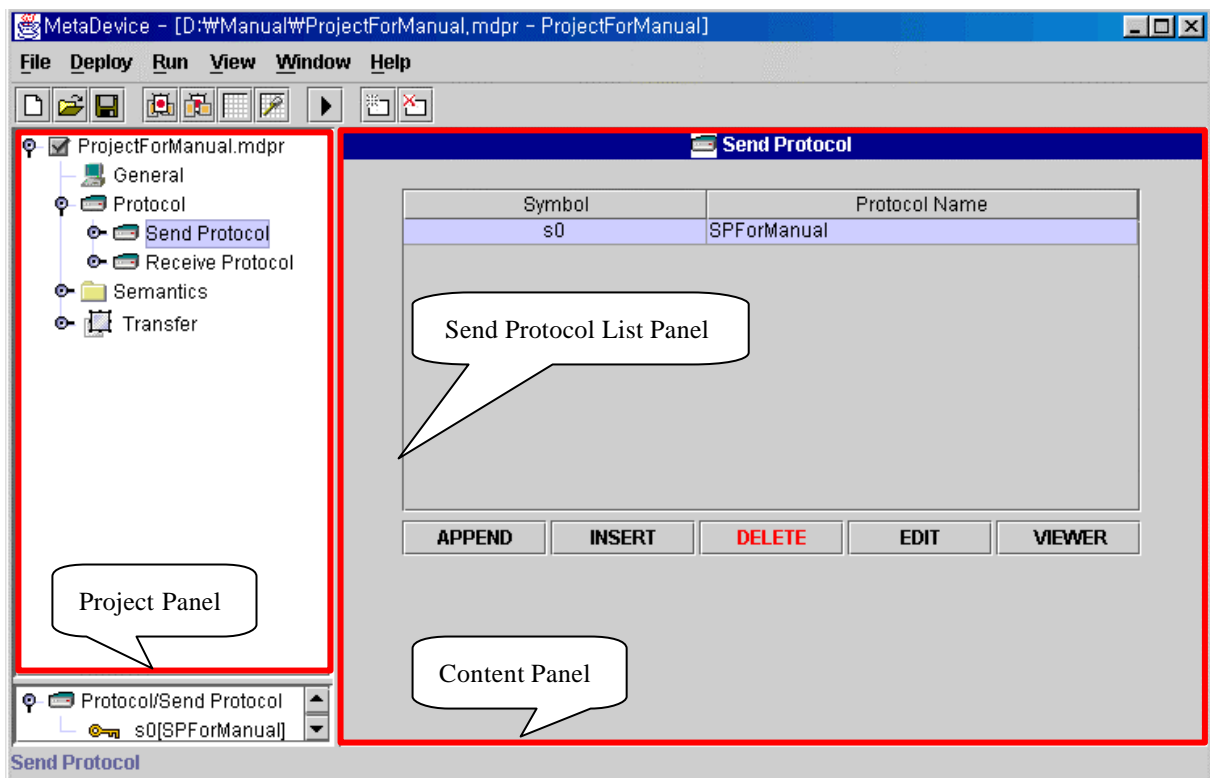
Password – “kumar”

4. (Protocol)

Protocol .
 Send Protocol ,
 Receive Protocol . 가
 UI Program Send Protocol ,
 UI Program Receive
 Protocol .
 Protocol List Panel , Protocol Edit Panel
 , Protocol View . Protocol Edit Panel

4.1 Protocol List Panel

. Send Protocol List Panel
 Receive Protocol List Panel . Protocol Edit Panel , Semantics
 Transfer Protocol Viewer



[2.23 Send Protocol List Panel]

(1). Protocol List Panel

(1.1) Project Panel Protocol Node Send Protocol Node Send Protocol List Panel , Receive Protocol Node Receive Protocol List Panel .

(1.2) View/Protocol/Send Protocol Send Protocol List Panel , View/Protocol/Receive Protocol Receive Protocol List Panel .

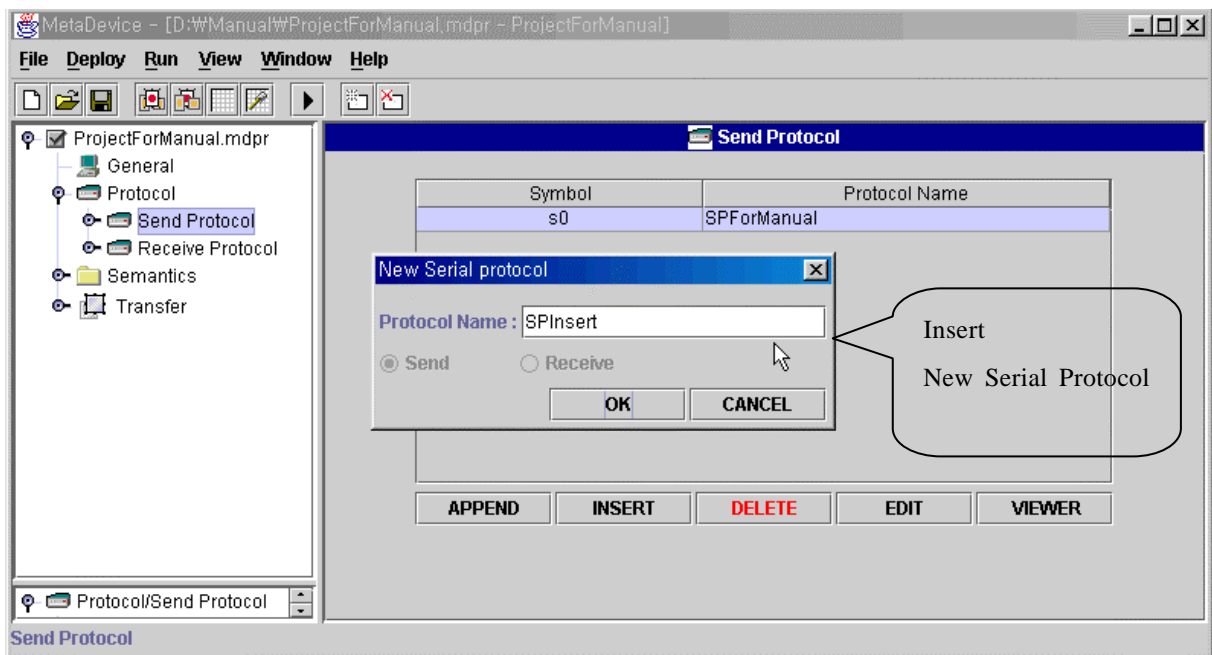
(2).

(2.1) Protocol List Panel APPEND New Serial Protocol , Protocol Name OK Protocol

Protocol List Panel Protocol List 가 .

(2.2) Protocol List Panel INSERT New Serial Protocol , Protocol Name OK Protocol

Protocol List Panel Protocol 가 .



[2.24 New Serial Protocol]

(2.3) Protocol Name Server Manager . (3. General Property 3.1 Project Name [Server Manager])

(3). Protocol

(3.1) Protocol List Panel Protocol DELETE .

(3.2) Delete a row Yes Protocol List Panel Protocol .

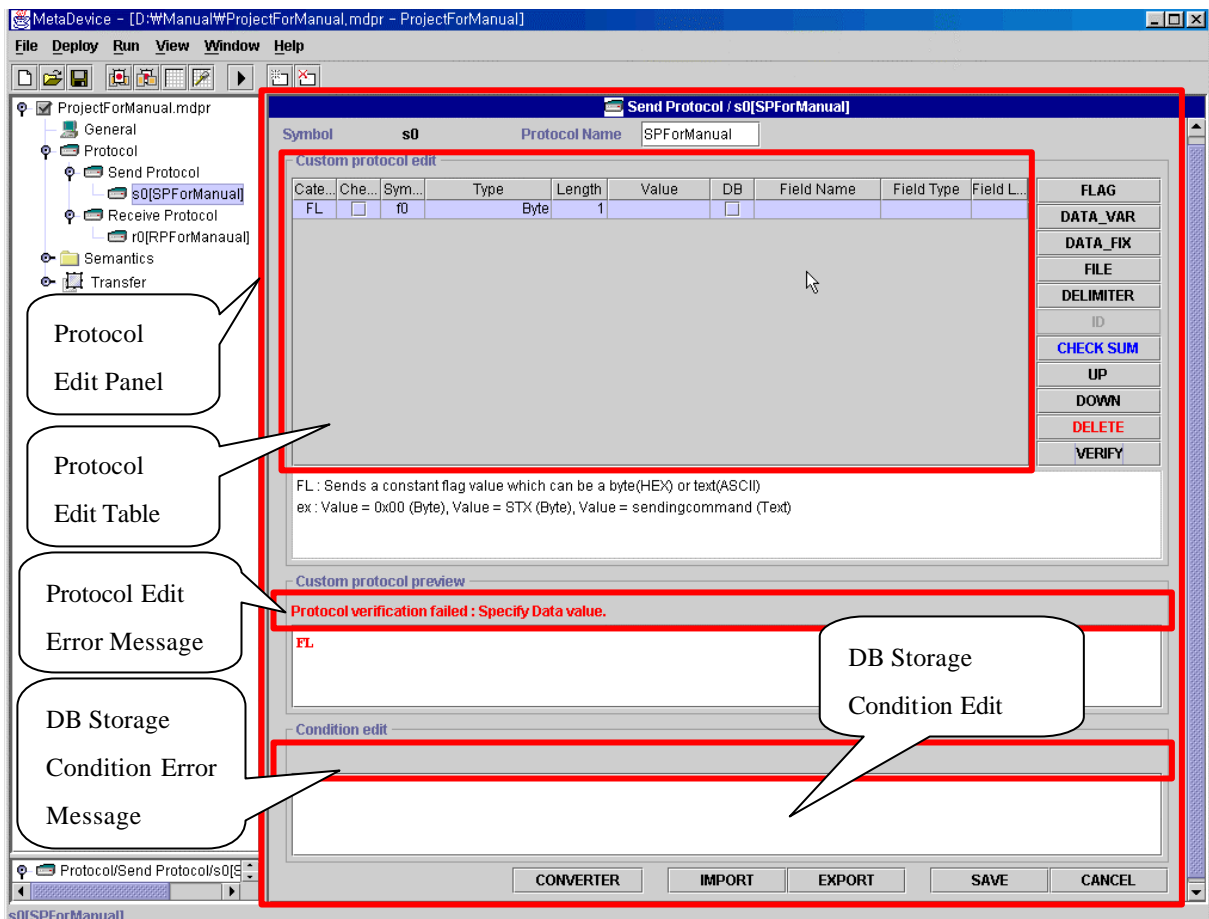
(4). Protocol Viewer

(4.1) Protocol List Panel Protocol .

(4.2) VIEWER Protocol Viewer .

4.2 Protocol Edit Panel

Protocol . Protocol Category, Check
Sum , Symbol, Type, Length, Value, DB , DB Protocol Table Field Name,
Field Type, Field Length Send Protocol Receive Protocol
. Protocol Edit Table Protocol ,
Protocol Edit Error Message . Protocol DB DB Storage
Condition Edit DB Storage Condition Error Message



[2.25 Protocol Edit Panel]

(1). Protocol Edit Panel

- (1.1) Project Panel Send Protocol Node Receive Protocol Node
 Protocol Node .
- (1.2) Protocol List Panel Protocol EDIT .
- (1.3) Protocol List Panel Protocol .

(2). Protocol

- (2.1) Category : Protocol .
 - FLAG : (byte text 가 .)
 - VARIABLE DATA : 가 가 Data
 - FIXED DATA : 가 Data
 - FILE : file Data (Send Protocol .)
 - DELIMITER : VARIABLE DATA
 - ID : Server Program Device ID Data(Receive Protocol .)
 - CHECK SUM : Data Data
- (2.2) Check Sum : Protocol CHECK SUM 가 Check Sum .
- (2.3) Symbol : Protocol
- (2.4) Type : Protocol Protocol Category
 Type 가 .
- (2.5) Length : Protocol Protocol Category .
- (2.6) Value : Protocol Protocol Category .
- (2.7) DB : Protocol Table DB .
 Protocol Category 가 가 .
- (2.8) Field Name : DB Protocol
 Protocol Table Field DBMS
 Field Name .
- (2.9) Field Type : DB Protocol Protocol
 Table Field DBMS
 가 Field Type .
- (2.10) Field Length : DB Protocol
 Protocol Table Field DBMS
 Field .

(3). Protocol

(3.1) Protocol Protocol .

(3.2) Protocol Category .

Category	Button	Category	Button
FLAG	FLAG	DELIMITER	DELIMITER
VARIABLE DATA	DATA_VAR	ID	ID
FIXED DATA	DATA_FIX	CHECK SUM	CHECK SUM
FILE	FILE		

[2.1 Category Button]

(3.3) Protoco Edit Table Protocol Protocol 가 Default 가

(4). Protocol

(4.1) Protocol Protocol Edit Table .

(4.2) DELETE .

(4.3) Protocol 가 .

(5). Protocol

(5.1) Protocol , DB VERIFY

(5.2) Protocol Edit Error Message Protocol verification
successful 가 , DB Storage Condition Error Message Condition
verification successful 가 .

(5.3) Protocol 가 Protocol Edit Error Message
가 , DB Storage Condition 가 DB Storage Condition
Error Message 가 . [9. Protocol
][11. DB] .

(6). Protocol

(6.1) Protocol SAVE .

(6.2) 가 .

(6.3) 가 Protocol Edit Error Message DB Storage
Condition Error Message .

(7). Send Protocol

(7.1) FLAG

Category	X	FL	
Check Sum	O	true or false	Check Box
Symbol	X	f + 0 or	0 integer
Type	O	Byte or Text	List Box
Length	X		Type Value Type Byte 1 Text Value Text
Value	O	Byte, Byte Symbol, Text	1) Type Byte 16 Byte) '0x02' Byte Symbol ([Byte Symbol Table])) 'STX' 2) Type Text Text) 'C', 'abcd'
DB	X	false	DB
Field Name	X		DB
Field Type	X		DB
Field Length	X		DB

[2.2 Send Protocol FLAG]

[Byte Symbol Table]

Symbol	Value	Symbol	Value	Symbol	Value	Symbol	Value
NUL	0x00	BS	0x08	DLE	0x10	CAN	0x18
SOH	0x01	HT	0x09	DC1	0x11	EM	0x19
STX	0x02	LF	0x0A	DC2	0x12	SUB	0x1A
ETX	0x03	VT	0x0B	DC3	0x13	ESC	0x1B
EOT	0x04	FF	0x0C	DC4	0x14	FS	0x1C
ENQ	0x05	CR	0x0D	NAK	0x15	GS	0x1D
ACK	0x06	SO	0x0E	SYN	0x16	RS	0x1E
BEL	0x07	SI	0x0F	ETB	0x17	US	0x1F

[2.3 Byte Symbol Table]

(7.2) VARIABLE DATA

Category	X	VA	Send Condition
Check Sum	O	true or false	Check Box
Symbol	X	v + 0 or	0 integer

Type	X	Byte Array	
Length	O	FLAG Symbol, DELIMITER Symbol, FIXED DATA Symbol, end	VARIABLE DATA 가 Data 1) FLAG Symbol DELIMITER Symbol 가 VARIABLE DATA FLAG DELIMITER VARIABLE DATA) 'f0', 'de' 2) FIXED DATA Symbol FIXED DATA 가 가 VARIABLE DATA FIXED DATA VARIABLE DATA) 'x0' 3) end Data 가 Protocol Protocol 가) 'end'
Value	O	v + 0 or) 'v0', 'v100'
DB	O	true or false	Check Box
Field Name	O		
Field Type	O	String Type Field Type	DB true 가 String Type Data Type 가 [DB]
Field Length	O		
Send Condition Configuration	O	Send even if null Send only if not null	CATEGORY UI Program Server Program 가 null De-vice

[2.4 Send Protocol VARIABLE DATA]

[DB]

- Field Name DBMS .(DBMS)
- Field Type Field Length Data Type DBMS

Data Type \ DBMS	Access		MS SQL	
	Field Type	Field Length	Field Type	Field Length
String Type	Text Varchar Memo	1 ~ 255 1 ~ 255 65535	char varchar	1 ~ 8000 1 ~ 8000
Integer Type	Long Integer Byte	4 2 1	int smallint tinyint	4 2 1
Float Type	Double Single	8 4	float real	8 4

[2.5 Data Type Field Type Field Length]

(7.3) FIXED DATA

Category	X	FX	
Check Sum	O	true or false	Check Box
Symbol	X	x + 0 or	0 integer
Type	O	Unsigned Byte	0 ~ 255 , short
		Byte	-126 ~ 125, byte
		Short	-32768 ~ 32767, short
		Unsigned Short	0 ~ 65535, integer
		Short(LE)	Short Byte Little Endian
		Unsigned Short(LE)	Unsigned Short Little Endian
		Integer	-65536 ~ 65535, integer
		Unsigned Integer	0 ~ 4294967295, long
		Integer(LE)	Integer Little Endian
		Unsign Integer(LE)	Unsigned Integer Little Endian
		Float	, float
		Float(LE)	Float Little Endian
		Double	, double
		Double(LE)	Double Little Endian
		Text	, String
		Bit(Byte)	1Byte bit
Length	O		Type Text Text
	X		Type 가 가 .
Value	O	v + 0 or	Type Text) 'v0', 'v100'
		set or null	value Bitwise Configura- tion ([Bitwise Con- figuration])
		m + 0 or	Type) 'm0', 'm100'
DB	X	true or false	Type Bit(Byte) Bitwise Configuration
	O	true or false	Type Check Box
Field Name	O or X		Type Bit(Byte) Bitwise Configuration
Field Type		Type	DB true 가 . Type Text String Type Data Type 가 , Integer
Field Length			Float Data Type 가 . [DB] .

[2.6 Send Protocol FIXED DATA]

[Unsinged]

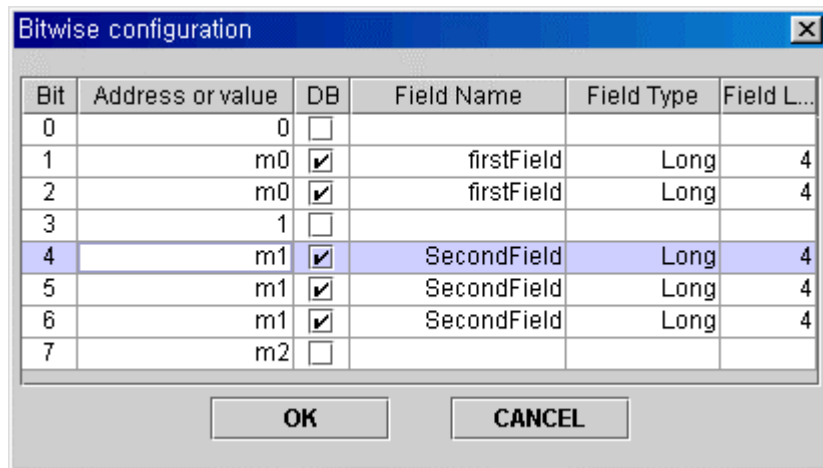
1. byte
2. Length type Data Type byte
) Type : Unsigned Integer
 Length : 4 (Protocol Data Protocol Data 4byte)
 Server Program Data Type : long
 Server Program Data Length : 8
3. Transfer ,
 Transfer 가
 (Deploy/Make Server) Code
 Generator "possible loss of precision" 가 sp Protocol m0
 가 Type Unsigned Integer rp Protocol m0 가 Type Integer
rp.m0 = sp.m0;
 Transfer "possible loss of precision" . sp.m0
 8byte long , rp.m0 4byte integer

[Little Endian]

1. Big Endian (가) , Little Endian
 (가) , Big Endian 16
 "4F52" "4F52" (4F 가 1000 , 52
 1001). , Little Endian "524F"
2. Type Little Endian(LE) UI Program Server Program
 Byte
3. 가 가 Type Big Endian
 Little Endian

[Bitwise Configuration]

1. FIXED DATA Protocol 가 Bit(Byte) Type 가 1Byte bit
2. Value bit null , set
3. Value Bitwise Configuration



[2.26 Bitwise configuration Dialog]

4. Bit 0 bit
5. Address or value '0','1' 'm' + 0 or 가 '0','1' bit
가 가 , 'm' + 0 or bit UI Program Server
Program bit
6. DB 가 DB , DB [DB
] Field Name, Field Type, Field Length . Data Type
Integer Type . [2.26] General Panel DBMS Access
7. byte
) Byte 01010101 Server Program m0 = 00000010(2) ,
m1 = 00000010(2) m2 = 00000001(2)
8. OK , CANCEL
가
9. Bitwise configuration DB Protocol Edit Table Protocol
DB, Field Name, Field Type, Field Length set

(7.4) FILE

Category	X	FI	Send Condition
Check Sum	O	true or false	Check Box
Symbol	X	I + 0 or	0 integer
Type	X	File	
Length	X	s(+ Value +)	Value
Value	O	I + 0 or) 'I0', 'I100'
DB	O	true or false	Check Box
Field Name	O		DB true 가 .
Field Type	O	String Type Field Type	String Type Data Type ram File UI Prog-
Field Length	O		[DB] .
Send Condition Configuration	O	Send even if null Send only if not null	CATEGORY UI Program Server Program 가 null De- vice .

[2.7 Send Protocol FILE]

(7.5) DELIMITER

Category	X	DE	
Check Sum	O	true or false	Check Box
Symbol	X	de	
Type	X	Byte	
Length	X	1	
Value	O	Byte, Byte Symbol	16 Byte) '0x02' Byte Symbol ([Byte Symbol Table])) 'STX' DELIMITER Value 가 , DELIMITER Value Value DELIMITE- R Value .
DB	X	false	DB
Field Name	X		DB
Field Type	X		DB
Field Length	X		DB

[2.8 Send Protocol DELIMITER]

(7.6) ID

Receive Protocol

(7.7) CHECK SUM

Category	X	CS	
Check Sum	X	false	
Symbol	X	cs	
Type	O	Byte	Check Sum Exclusive OR byte
		Ascii2	byte 16
		CRC16	16bit Table CRC
Length	X	1 or 2	Type Byte 1, 2
Value	X	CHECK_SUM	
DB	X	false	DB
Field Name	X		DB
Field Type	X		DB
Field Length	X		DB

[2.9 Send Protocol CHECK SUM]

(8). Receive Protocol

(8.1) FLAG

Category	X	FL	
Check Sum	O	true or false	Check Box
Symbol	X	f + 0 or	0 integer
Type	O	Byte or Text	List Box
Length	X		Type Value Type Byte 1 Text Value Text
Value	O	Byte, Byte Symbol, Text	1) Type Byte 16 Byte) '0x02' Byte Symbol ([Byte Symbol Table])) 'STX' 2) Type Text Text) 'C', 'abcd'
DB	X	false	DB
Field Name	X		DB
Field Type	X		DB
Field Length	X		DB

[2.10 Receive Protocol FLAG]

(8.2) VARIABLE DATA

Category	X	VA	
Check Sum	O	true or false	Check Box
Symbol	X	v + 0 or	0 integer
Type	O	Byte Array	Data String
		Byte Array(integer)	Data integer Parsing
		Byte Array(double)	Data double Parsing
Length	O	FLAG Symbol, DELIMITER Symbol, FIXED DATA Symbol, end	<p>VARIABLE DATA 가</p> <p>Data .</p> <p>1) FLAG Symbol DELIMITER Symbol 가</p> <p>VARIABLE DATA .</p> <p>FLAG DELIMITER VARIABLE DATA</p> <p>) 'f0', 'de'</p> <p>2) FIXED DATA Symbol</p> <p>FIXED DATA 가 가</p> <p>VARIABLE DATA .</p> <p>FIXED DATA VARIABLE DATA</p> <p>) 'x0'</p> <p>3) end Data 가 Protocol Protocol 가</p> <p>) 'end'</p>
Value	O	v + 0 or	Type Byte Array) 'v0', 'v100'
		m + 0 or) 'm0', 'm100'
DB	O	true or false	Check Box
Field Name	O		DB true 가 .
Field Type	O	Type	Type Byte Array String Type Data Type 가 , Byte Array(integer) Integer Type Data Type 가 , Byte Array(double) Float Type Data Type 가 .
Field Length	O		[DB] .

[2.11 Receive Protocol VARIABLE DATA]

(8.3) FIXED DATA

Category	X	FX	
Check Sum	O	true or false	Check Box
Symbol	X	x + 0 or	0 integer
Type	O	Unsigned Byte	0 ~ 255 , short
		Byte	-126 ~ 125, byte
		Short	-32768 ~ 32767, short
		Unsigned Short	0 ~ 65535, integer
		Short(LE)	Short Byte Little Endian
		Unsigned Short(LE)	Unsigned Short Little Endian
		Integer	-65536 ~ 65535, integer
		Unsigned Integer	0 ~ 4294967295, long
		Integer(LE)	Integer Little Endian
		Unsign Integer(LE)	Unsigned Integer Little Endian
		Float	, float
		Float(LE)	Float Little Endian
		Double	, double
		Double(LE)	Double Little Endian
		Text	, String
		Text(integer)	integer Parsing
		TextHex(integer)	16 integer Parsing
		Text(double)	double Parsing
		Bit(Byte)	1Byte bit
Length	O		Type Text Text
	X		Type 가 가 .
Value	O	v + 0 or	Type Text) 'v0', 'v100'
		set or null	value Bitwise Configuration ([Bitwise Configuration])
		m + 0 or	Type) 'm0', 'm100'
DB	X	true or false	Type Bit(Byte) Bitwise Configuration
	O	true or false	Type Check Box
Field Name	O or X		Type Bit(Byte) Bitwise Configuration
Field Type		Type	Type DB true 가 . Type Text String Type Data Type Integer
Field Length			Float Data Type 가 . [DB] .

[2.12 Receive Protocol FIXED DATA]

(8.4) FILE

Send Protocol

(8.5) DELIMITER

Category	X	DE	
Check Sum	O	true or false	Check Box
Symbol	X	De	
Type	X	Byte	
Length	X	1	
Value	O	Byte, Byte Symbol	16 Byte) '0x02' Byte Symbol ([Byte Symbol Table])) 'STX' DELIMITER Value 가 , Value DELIMITER Value Value DELIMITE- R Value
DB	X	False	DB
Field Name	X		DB
Field Type	X		DB
Field Length	X		DB

[2.13 Receive Protocol DELIMITER]

(8.6) ID

Category	X	ID	
Check Sum	O	true or false	Check Box
Symbol	X	Id	
Type	O	Byte	ID 1byte
		Short	ID 2byte
		Integer	ID 4byte
		Text	ID
Length	O		Type Text Text
	X	1, 2, 4	Type
Value	O	v + 0 or	Type Text) 'v0', 'v100'
		m + 0 or) 'm0', 'm100'
DB	O	true or false	Check Box
Field Name	O		Type Text String Type Data Type
Field Type		Type	가 , Integer Data
Field Length			Type 가 . [DB]

[2.14 Receive Protocol ID]

(8.7) CHECK SUM

Category	X	CS	
Check Sum	X	false	
Symbol	X	cs	
Type	O	Byte	Check Sum Exclusive OR byte
		Ascii2	byte 16
		CRC16	16bit Table CRC
Length	X	1 or 2	Type Byte 1, 2
Value	X	CHECK_SUM	
DB	X	false	DB
Field Name	X		DB
Field Type	X		DB
Field Length	X		DB

[2.15 Receive Protocol CHECK SUM]

(9). Protocol

- Continuous "DE" is not allowed

DELIMITER 가

- Only one CS field in a protocol definition

Protocol CHECK SUM 가

- No check sum field is selected.

CHECK SUM 가 Check Sum 가 ,
Check Sum 가

- At least 2 check sum fields are required.

CHECK SUM 가 Check Sum 가
Check Sum

- Every check sum field should be put prior to the Check sum (CS).

Check Sum 가 CHECK SUM

- There is(are) check sum field(s) without the Check sum (CS).

CHECK SUM 가 Check Sum 가

- Specify Data value.

Value

- Specify Data length.

Length

- No more fields are required

VARIABLE DATA Length end 가

VARIABLE DATA 가 Protocol

- Invalid VA-Data length.

Length

- VA-length specifying field [LENGTH VALUE] must be placed right behind the VA field

VARIABLE DATA Length DELIMITER FLAG Symbol
가 VARIABLE DATA

- Variable Data Relation Length

.Text type FX can't specify VA data length.

.Text (double) type FX can't specify VA data length.

.Float type FX can't specify VA data length.

.Double type FX can't specify VA data length.

.Bit type FX can't specify VA data length.

VARIABLE DATA Length FIXED DATA Symbol FIXED
DATA Type (Byte , Short)

- VA-length specifying field must be placed prior to the VA field.

VARIABLE DATA Length FIXED DATA Symbol FIXED
DATA VARIABLE DATA

- Data symbol specified by this VA is missing.

VARIABLE DATA Length DELIMITER, FLAG FIXED DATA
Symbol 가 가 Protocol

- Wrong data in value field. Value must be "v0 or v1 .."

Value v + 0 가

- Wrong data in value field. Value must be 0"m0 or m1 .."

Value m + 0 가

- Value does not match type "[TYPE VALUE]". "m0 or m1" matches "Byte Array(integer) or Byte Array(double)".

- Value does not match type "[TYPE VALUE]". "v0 or v1" matches "Byte Array".

Type Value

- Specify the bitwise configuration in the "[VALUE]" field.

FIXED DATA Type Bit(Byte) Bitwise configuration
Value null

- [ValueField] is allowed only in type Text.

FIXED DATA Type Text 가 v + 0 or Value

- Data length mismatch.

Length

- Field name "[VALUE]" is duplicated.

Field Name

. Bitwise configuration

- Field name contains space.

Field Name

space

- Field name is not filled.

Field Name

- Value "[VALUE]" is duplicated.

v

m

Value

. Bitwise configuration

- Wrong data in value field. value must be \"I0 or I1 ..\"

FILE

Value

I

- Only one ID field in a protocol definition

Protocol

ID

가

(10). DB

DB Storage Condition Edit DB Storage Condition Statement

. 5.

Protocol

6. Protocol

DB Storage Condition

- 가

Symbol	Priority	Operand		Symbol	Priority	Operand	
()	1	1		-	4	2	
+	2	1		<<	5	2	left shift
-	2	1		>>	5	2	right shift
~	2	1	bitwise not	<	6	2	less than
!	2	1	logical not	>	6	2	greater than
(byte)	2	1		<=	6	2	less equal
(short)	2	1		>=	6	2	greater equal
(integer)	2	1		==	7	2	equal
(long)	2	1		!=	7	2	not equal
(float)	2	1		&	8	2	bitwise and
(double)	2	1		^	9	2	exclusive or
*	3	2			10	2	bitwise or
/	3	2		&&	11	2	logical and
%	3	2			12	2	logical or
+	4	2					

[2.16 DB

]

- 가
1 m + 0 or Type Protocol Value) 'm0' , 'm100'
2) 12, -24, 100L, 0x0b, 0x12341234ffL
3) -12.5, 0.
- Statement boolean .

(11). DB

- Operand is duplicated.
가 .) m0 > 100 m1
- Variable "[VARIABLE]" must be "m0 or m1"...
m m + 0 or Type Protocol Value 가 .
) mix > 100
- Variable "[VARIABLE]" is not found in protocol
[VARIABLE] Protocol Value .
) m1000 > 100 m1000 Protocol Value
- Operand "[OPERAND]" has wrong number format.
OPERAND 가 .) m100 > 0xfg
- Operator "[OPERATOR]" is not supported.
.) m100 = 100
- Operator "[OPERATOR]" has a missing operand.
가 .) m100 >= 3 +
- Operator "[OPERATOR]" must have the first operand.
가 .) m100 > * 2
- Operator "(" has no right parenthesis in pair.
() 가 .) m1 > 2 * (m2 + m3
- Operator ")" has no left parenthesis in pair.
) (가 .) m1 > 2 * m2 + m3)
- This operand is not proper type for operator "[OPERATOR]".
Type .) m100 > (m1 == 100)
- Operand "[OPERAND]" is left after operation.
가 .
- There is no result after operation.
.
- The result of operation is not boolean.
가 boolean .) m0 + 100 * m1

(12).

(12.1) CONVERTER

- FLAG DELIMITER Value byte 10 , 16 , Ascii

- CONVERTER Hex-Dec-ASCII convert

- Hex Convert 10 Ascii

- Dec Convert 16 Ascii

- ASCII Convert 16 10

- Close

(12.2) IMPORT / EXPORT

- EXPORT 가

Protocol . Send Protocol

mdsp Receive Protocol mdrp

- IMPORT 가

Protocol Protocol Edit Panel

(12.3) CANCEL

5. Transfer

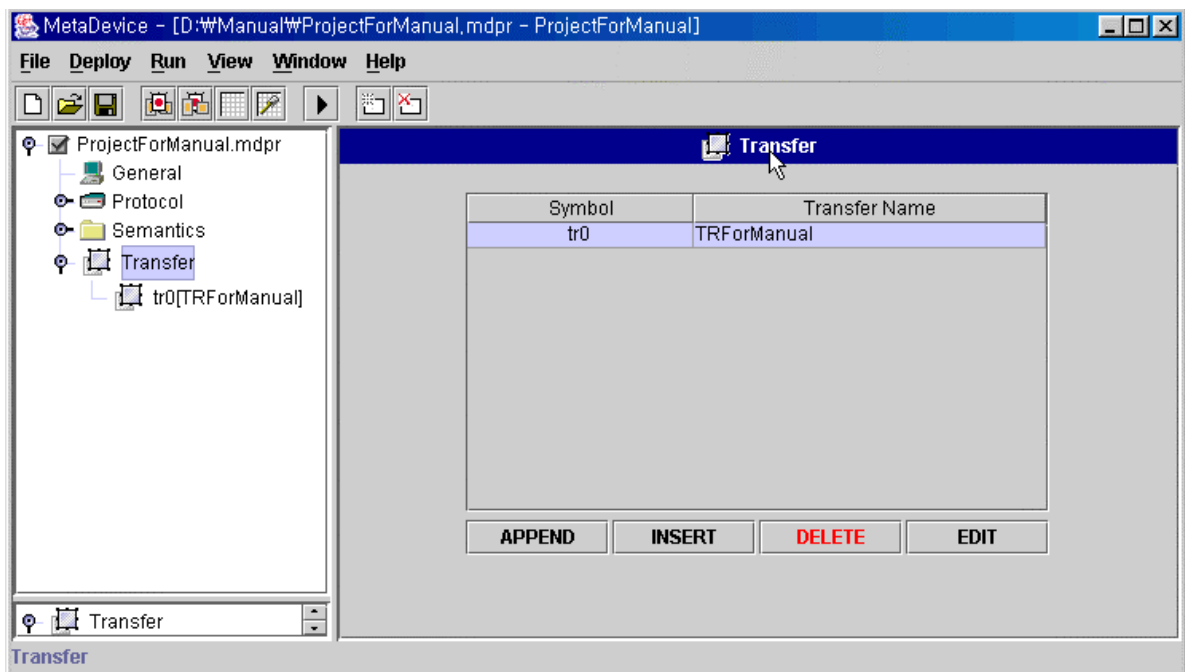
Transfer Edit Panel

Source Protocol ,
 Destination Protocol . Destination Protocol
 , Source Protocol 가 . Transfer Source Protocol Destination Protocol
 Semantics TRANSFER

Transfer List Panel Transfer , Transfer Edit Panel

5.1 Transfer List Panel

Transfer , Transfer Edit Panel Panel .



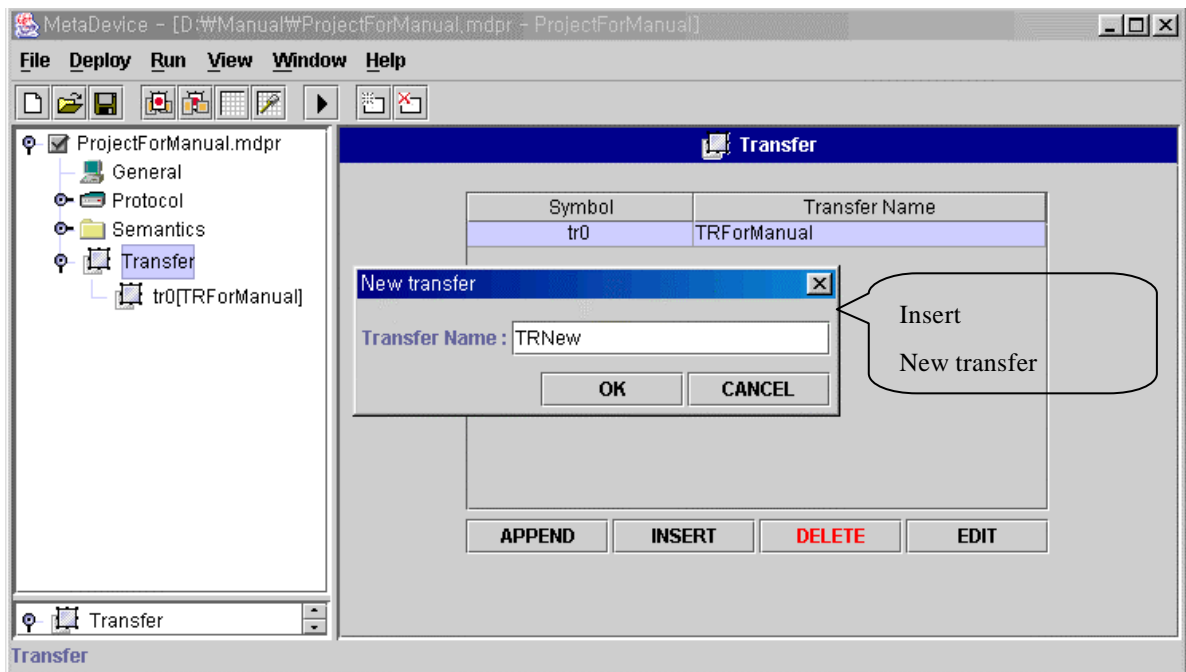
[2.27 Transfer List Panel]

1. Transfer List Panel

- 1) Project Panel Transfer Node Transfer List Panel .
- 2) View/Transfer Transfer List Panel .

2. Transfer

- 1) Transfer List Panel APPEND New transfer ,
 Transfer Name OK Transfer 가 Transfer List
 Panel Transfer List 가 .
- 2) Transfer List Panel INSERT New transfer ,
 Transfer Name OK Transfer 가 Transfer List
 Panel Transfer 가 .



[2.28 New transfer]

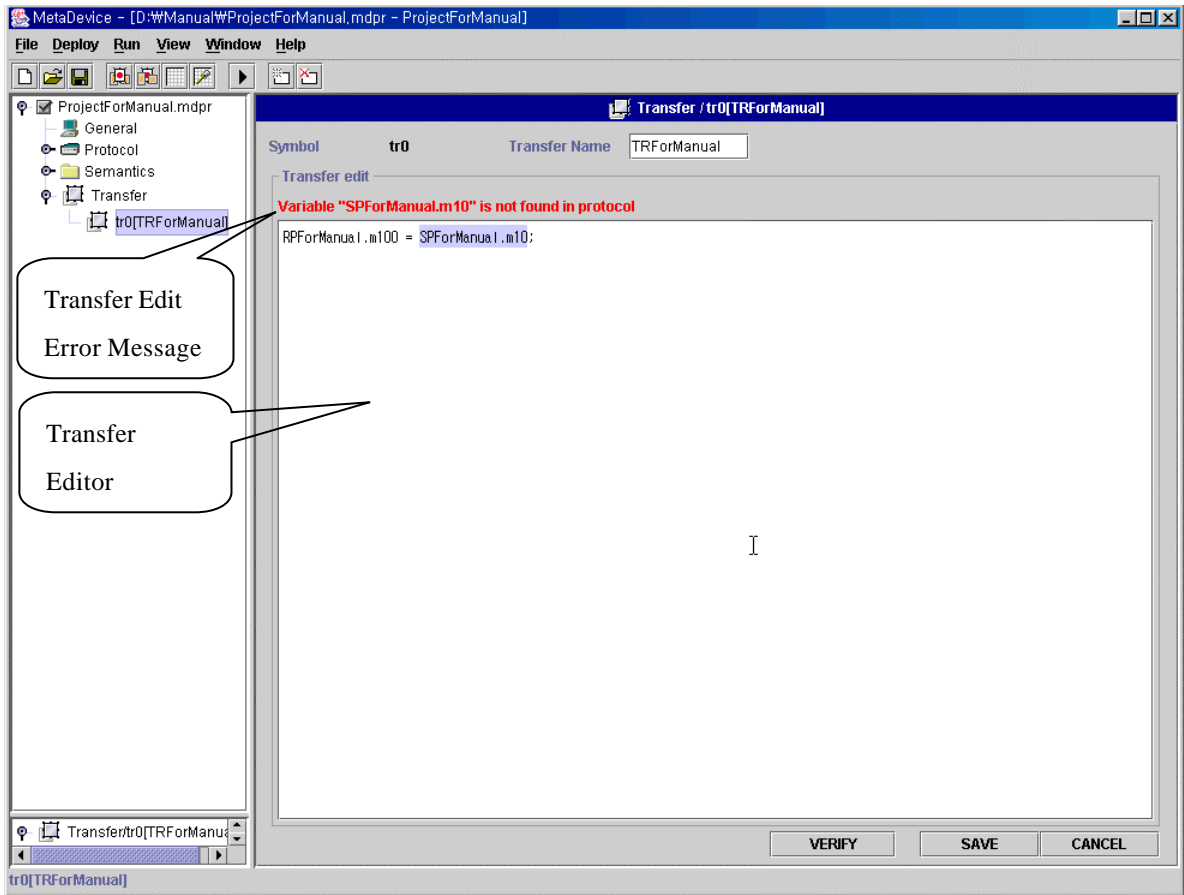
- 3) Transfer Name Server Manager . (3. General Property
 3.1 Project Name [Server Manager])

3. Transfer

- 1) Transfer List Panel Transfer DELETE .
- 2) Delete a row Yes Transfer List Panel
 Transfer 가 .

5.2 Transfer Edit Panel

Transfer . Transfer Transfer Editor Transfer Statement
Transfer Edit Error Message .



[2.29 Transfer Edit Panel]

1. Transfer Edit Panel

- 1) Project Panel Transfer Node Transfer Node .
- 2) Transfer List Panel Transfer EDIT .
- 3) Transfer List Panel Transfer .

2. Transfer

- 1) Transfer VERIFY .
- 2) Transfer Edit Error Message Condition verification
successful 가 .
- 3) Transfer 가 Transfer Edit Error Message 가
[5. Transfer] .

3. Transfer

- 1) Transfer SAVE .
- 2) 가
- 3) 가 Transfer Edit Error Message

4. Transfer

- | | |
|-----|------------------------|
| 1) | (Statement) |
| (1) | : |
| (2) | : (if , else if, if) |
| (3) | : ({ }) |
| 2) | (Expression) |

(1)							
Symbol	Priority	Operand		Symbol	Priority	Operand	
()	1	1		/	3	2	
+	2	1		%	3	2	
-	2	1		+	4	2	
~	2	1	bitwise not	-	4	2	
(byte)	2	1		<<	5	2	left shift
(short)	2	1		>>	5	2	right shift
(integer)	2	1		&	6	2	bitwise and
(long)	2	1		^	7	2	exclusive or
(float)	2	1			8	2	bitwise or
(double)	2	1		=	9	2	assignment
*	3	2					

[2.17 Transfer]

- ```
(2) [Protocol Name].[Value] : Value m + 0 or v + 0 or
) SPForManual.m0, RPForManual.v0
 : , L I long
) 12, -24, 100L, 0x0b, 0x12341234ffL
 :) -12.5, 0.
 :) "TestString"

(3) ;() .
```

- 3) ( if , else if , else )
- (1) if
- if ( [boolean ] ) [ ]
- (2) else if
- else if ( [boolean ] ) [ ]
- (3) else



else [     ]

(4) if                      else if     else                      .

(5) if                else if     else                      .

4) if                else if     boolean

(1) 4.2 Protocol Edit Panel     10. DB                      boolean

(2)                가

| Symbol    | Priority | Operand |             | Symbol | Priority | Operand |               |
|-----------|----------|---------|-------------|--------|----------|---------|---------------|
| ( )       | 1        | 1       |             | -      | 4        | 2       |               |
| +         | 2        | 1       |             | <<     | 5        | 2       | left shift    |
| -         | 2        | 1       |             | >>     | 5        | 2       | right shift   |
| ~         | 2        | 1       | bitwise not | <      | 6        | 2       | less than     |
| !         | 2        | 1       | logical not | >      | 6        | 2       | greater than  |
| (byte)    | 2        | 1       |             | <=     | 6        | 2       | less equal    |
| (short)   | 2        | 1       |             | >=     | 6        | 2       | greater equal |
| (integer) | 2        | 1       |             | ==     | 7        | 2       | equal         |
| (long)    | 2        | 1       |             | !=     | 7        | 2       | not equal     |
| (float)   | 2        | 1       |             | &      | 8        | 2       | bitwise and   |
| (double)  | 2        | 1       |             | ^      | 9        | 2       | exclusive or  |
| *         | 3        | 2       |             |        | 10       | 2       | bitwise or    |
| /         | 3        | 2       |             | &&     | 11       | 2       | logical and   |
| %         | 3        | 2       |             |        | 12       | 2       | logical or    |
| +         | 4        | 2       |             |        |          |         |               |

[     **2.18 Transfer**                      **boolean**                      ]

(3)                가

[Protocol Name].[Value] : Value                m + 0 or

) SPForManual.m0

:                ,                L                l                long

) 12, -24, 100L, 0x0b, 0x12341234ffL

:                ) -12.5, 0.

(4)                      boolean                      .

5) if, else if                else

(1) Transfer                      가                      .

(2)                if ... else ...                가                      .

(3)                      가                      .

6)

(1)                      {                }

(2)                      .

## 5. Transfer

- 1) Operand is duplicated.

가

) RPForManual.m100 = 100 SPForManual.m0;

- 2) Variable "[VARIABLE]" is not found in protocol

[VARIABLE] Protocol Value

) RPForManual.m1000 = SPForManual.m0; (m1000 Protocol Value

)

- 3) Operator "[OPERATOR]" is not supported.

) RPForManual.m100 = SPForManual.m0 &gt; 0; ('&gt;' .)

- 4) Operator "[OPERATOR]" has a missing operand.

가

) RPForManual.m100 = SPForManual.m0 +;

- 5) Operator "[OPERATOR]" must have the first operand.

가

) RPForManual.m100 = \* SPForManual.m0;

- 6) Operator "(" has no right parenthesis in pair.

( ) 가 ) RPForManual.m100 = (SPForManual.m0;

- 7) Operator ")" has no matching "(".

) ( 가 ) RPForManual.m100 = SPForManual.m0);

- 8) This operand is not proper type for operator "[OPERATOR]".

Type

) RPForManual.m100 = "abcd"; ( Value .)

- 9) The result of operation is not boolean.

if else if boolean 가 boolean

) if (RPForManual.m100)

- 10) Condition is null.

if else if boolean ) if ()

- 11) Operand "[OPERAND]" has wrong string format.

" 가 "

) RPForManual.m100 = "a;

- 12) Operand "[OPERAND]" has wrong character format.

' 가 '

) RPForManual.m100 = ' a;

- 13) Operand "[OPERAND]" has wrong transfer format.

Protocol Name

Transfer Statement

- Token .
- ) RPFForManual.m100 = 100; (RPFForManual.a가 Protocol Name .)
- 14) [VALUE] is not a value of a protocol.  
Protocol Value가 .  
) RPFForManual.m1000 = SPForManual.m0; (m1000 Value .)
- 15) [VALUE] is not a assignment("=").  
( = )가 .  
) RPFForManual.m100 \* SPForManual.m0;
- 16) if statement format is wrong.  
if .
- 17) "(" has no right parenthesis in pair.  
if else if boolean ")“가 .  
) if (RPFForManual.m100 > 0 {
- 18) Statement can not begin with "[TOKEN]".  
“.” if , else  
가 .  
) RPFForManual.m100 = SPForManual.m0  
\* RPFForManual.m100 = SPForManual.m0
- 19) "else if" statement should follow if or else if statement.  
else if if .
- 20) "else" statement should follow if or else if statement.  
else if .
- 21) "[CONDITION]" has no condition clause.  
if else if boolean .  
) if RPFForManual.m100 > 0) {
- 22) "{" has no right brace in pair.  
“}”가 .
- 23) “possible loss of precision”  
 ,  
Transfer 가  
Server Program (Deploy/Make Server ) Code Generator  
“possible loss of precision” 가 .  
 .  
) RPFForManual Protocol m100 Value Category 가 FIXED DATA Type Byte  
SPForManual Protocol m0 Value Category 가 FIXED DATA Type  
Integer Code Generator “possible loss of precision”  
가 .

MetaDevice

RPForManual.m100 = SPForManual.m0;

RPForManual.m100 = (byte) SPForManual.m0;  
Data

가

24)

- (1) Destination Protocol Value    Category 가 FIXED DATA    Type    Text(integer),  
TextHex(integer), Text(double)    Category 가 VARIABLE DATA    Type  
Byte Array(integer), Byte Array(double)    , UI Program  
Protocol Data    가
- (2) Destination Protocol    UI Program    가 가 Receive Protocol  
Protocol Value    가

6. Transfer

CANCEL

## 6. Semantics

Semantics Edit Panel      Device

Semantics      Admin Tables      hd Table

se\_name Field      Semantics Name

se\_name Field      Semantics Name

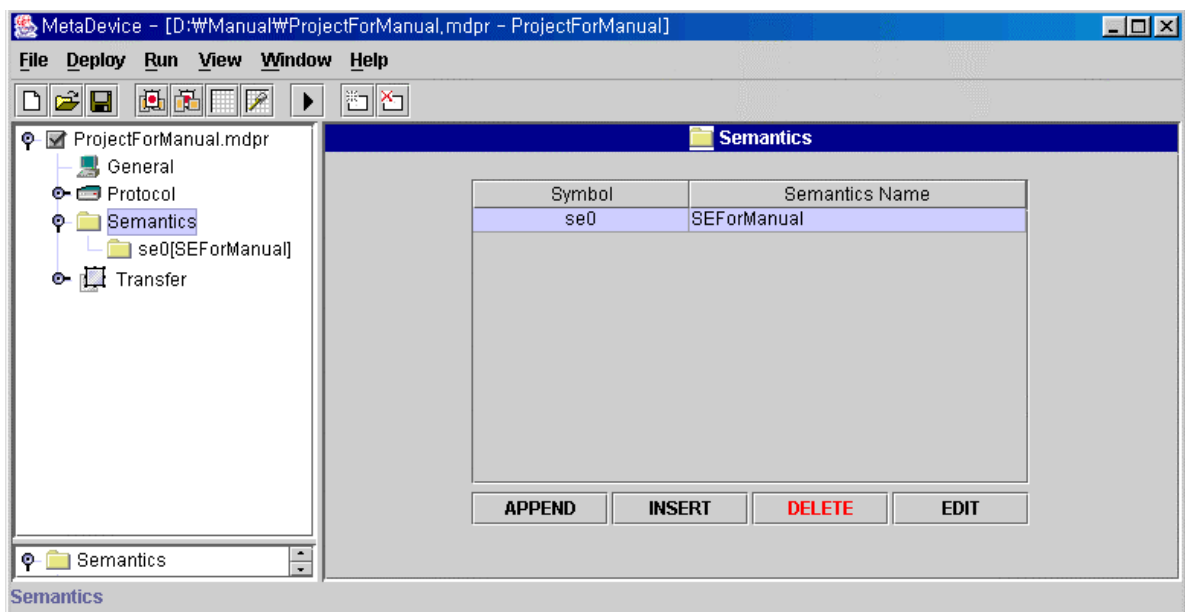
"[MAC1][MAC2][MAC3] machine uses not available semantics."

Semantics      Semantics Name

Semantics List Panel      Semantics      , Semantics Edit Panel

### 6.1 Semantics List Panel

Semantics      ,      Semantics Edit Panel      Panel



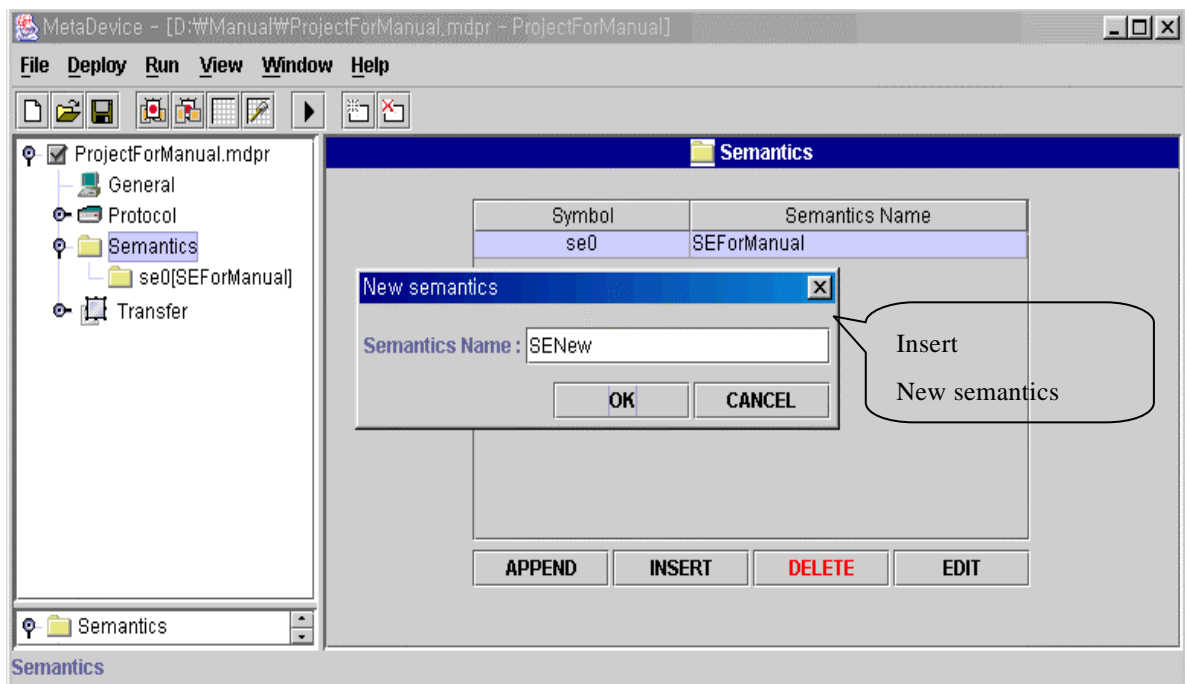
[ 2.30 Semantics List Panel ]

#### 1. Semantics List Panel

- 1) Project Panel      Semantics Node      Semantics List Panel
- 2) View/Semantics      Semantics List Panel

## 2. Semantics

- 1) Semantics List Panel      APPEND      New semantics ,  
      Semantics Name      OK      Semantics 가  
      Semantics List Panel      Semantics List      가 .
- 2) Semantics List Panel      INSERT      New semantics ,  
      Semantics Name      OK      Semantics 가  
      Semantics List Panel      Semantics      가 .



[ 2.31 New semantics ]

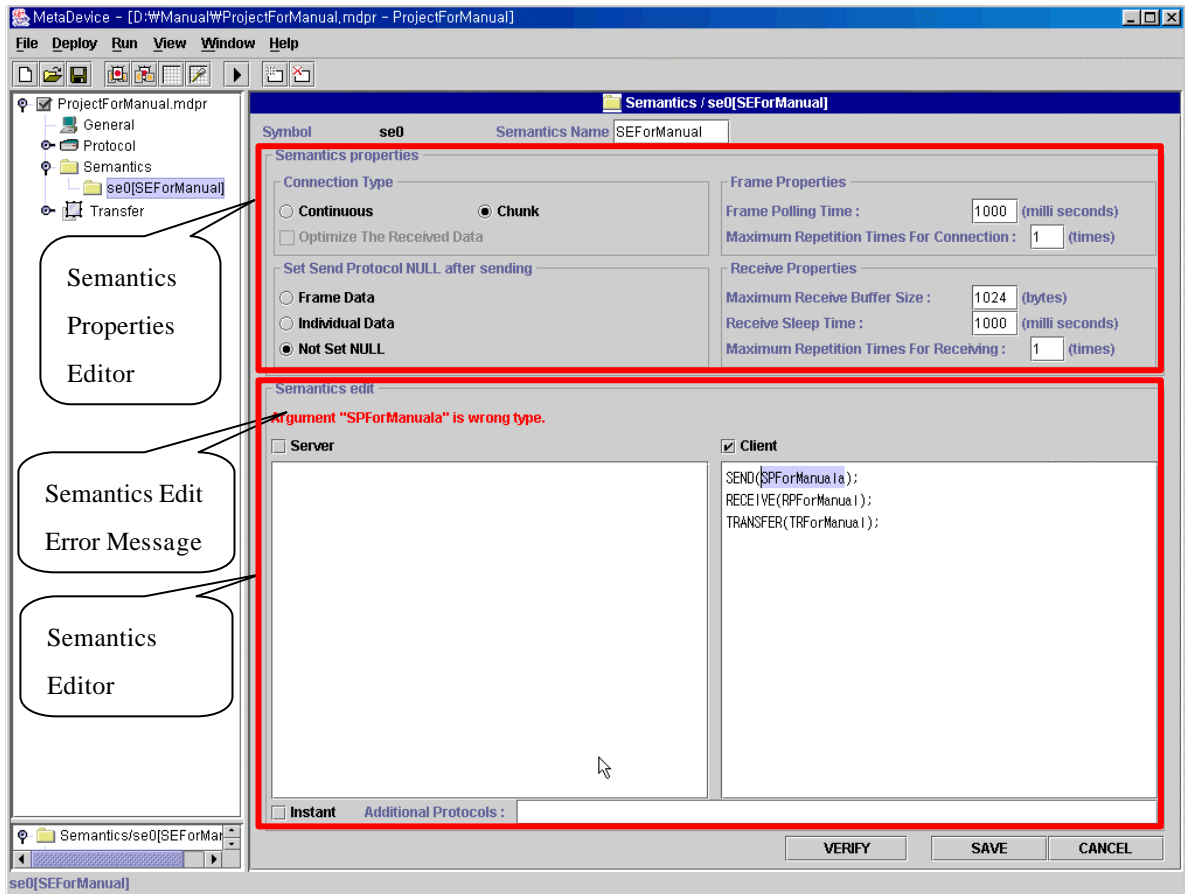
- 3) Semantics Name      Server Manager      . (3. General Property  
      3.1 Project Name      [Server Manager      ]      )

## 3. Semantics

- 1) Semantics List Panel      Semantics      DELETE .
- 2) Delete a row      Yes      Semantics List Panel  
      Semantics 가 .

## 6.2 Semantics Edit Panel

Semantics . Semantics Property Semantic Properties Editor  
 Semantics Semantics Editor Semantics Statement  
 Semantics Edit Error Message .



[ 2.32 Semantics Edit Panel ]

### 1. Semantics Edit Panel

- 1) Project Panel Semantics Node Semantics Node .
- 2) Semantics List Panel Semantics EDIT .
- 3) Semantics List Panel Semantics .

### 2. Semantics

- 1) Semantics Editor Semantics VERIFY .
- 2) Semantics Edit Error Message Semantics verification  
 successful 가 .
- 3) Semantics 가 Semantics Edit Error Message 가

[6. Semantics ]

### 3. Semantics

- 1) Semantics SAVE .
- 2) 가 .
- 3) 가 Semantics Edit Error Message .

### 4. Semantics Properties

#### 1) Connection Type

- (1) Continuous : Semantics Frame  
 Socket . (Semantics 가  
 가 . Sever/Instant Continuous 가  
 Server/Instant  
 Chunk .)
- (2) Chunk : Semantics Frame Socket
- (3) Optimize The Received Data : Server Program  
 Parsing Receive Protocol  
 Parsing .  
 가  
 . (Continuous .)

#### 2) Set Send Protocol NULL after sending

- (1) NULL Send Protocol Semantics (SEND)
- (2) Frame Data : Semantics Frame Semantics Send  
 Protocol NULL .
- (3) Individual Data : Send  
 Protocol NULL .
- (4) Not Set NULL : NULL UI Program Send  
 Protocol .
- (5) Send Protocol (Type FLAG, DELIMITER, CHECK SUM) Send  
 Data Property .  
 (Not Set NULL .)

#### 3) Frame Properties

- (1) Frame Polling Time : Semantics Frame Frame  
 1/1000 (msec) . (Semantics 가  
 Connection Type Chunk Instant  
 Semantics .)
- (2) Maximum Repetition Times For Connection : Connection Type Chunk



## Frame

### 4) Receive Properties

(1) Maximum Receive Buffer Size :

Buffer Size

(2) Receive Sleep Time :

가

1/1000 (msec)

(3) Maximum Repetition Times For Receiving :

가

(4)

가

가

Receive Sleep Time

(5)

가

Receive Sleep Time X Maximum Repetition Times For Receiving

### 5. Semantics

#### 1) Semantics

(1) Server Check Box, Client Check Box, Instant Check Box

(2) Server Check Box : Semantics 가

가

가

Server Semantics Editor

(3) Client Check Box : Semantics 가

Client Semantics Editor

(4) Instant Check Box : UI Program

Instant Message

. Instant Message

가

#### 2) (Statement)

(1) : SEND, RECEIVE, TRANSFER

(2) : IF, ELSE IF, ELSE, if, else if, if

(3) : { }

#### 3)

(1) SEND

Prototype : SEND(Send Protocol Name);

: Server Program Device Send Protocol

Data

(2) RECEIVE

Prototype : RECEIVE(Receive Protocol Name{, Receive Protocol Name...});

Receive Protocol Name . Receive  
Protocol Name \_MAC Receive Protocol 가 .  
: Server Program Device Receive Protocol

### (3) TRANSFER

Prototype1 : TRANSFER(Transfer Name);

: Semantics

Prototype2 : TRANSFER(Transfer Name, MAC Number String);

MAC Number String : String ) "04:08:E0"

: Device Source Protocol MAC Number String Device  
Destination Protocol .

Prototype3 : TRANSFER(Transfer Name, MAC Number String, Send Protocol Name);

: Device Source Protocol MAC Number String  
Destination Protocol Send Protocol instant  
Destination Device .

Prototype4 : TRANSFER(Transfer Name, MAC Number String, Send Protocol Name,  
Receive Protocol Name);

: Source Protocol MAC Number String  
Destination Protocol Send Protocol  
Receive Protocol instant Destination Device

### 4) IF, ELSE IF, ELSE

(1) IF RECEIVE , RECEIVE Data 가  
Receive Protocol 가

(2) IF

IF ( [Receive Protocol ] ) [ ]

(3) ELSE IF

ELSE IF ( [Receive Protocol ] ) [ ]

(4) ELSE

ELSE [ ]

### 5) IF, ELSE IF Receive Protocol

(1) 가

|| : logical or

(2) 가

RECEIVE Receive Protocol Name (Receive Protocol \_MAC )

Data (NO\_DATA\_RECEIVE, PARSE\_ERROR, CS\_ERROR, ALARM\_RECEIVE)

(3) NO\_DATA\_RECEIVE : Server Program RECEIVE Device  
Data .

(4) PARSE\_ERROR : Data RECEIVE Receive Protocol  
Receive Protocol .

(5) CS\_ERROR : Data Receive Protocol , Check Sum

(6) ALARM\_RECEIVE

6) if, else if, else

(1) if, else if, else IF, ELSE IF , Receive Protocol

Receive Protocol Value  
. IF, ELSE IF Receive Protocol Receive Protocol  
가 .

(2) if

if ( [boolean ] ) [ ]

(3) else if

else if ( [boolean ] ) [ ]

(4) else

else [ ]

7) if else if boolean

(1) 가

5. Transfer 5.2 Transfer Edit Panel 4. Transfer 4) if else if boolean

(2) 가

[Receive Protocol Name].[Value] : Receive Protocol Name IF ELSE IF  
Receive Protocol Receive Protocol Name, Value m + 0 or  
v + 0 or  
) RPFForManual.m0  
: , L I long  
) 12, -24, 100L, 0x0b, 0x12341234ffL  
: ) -12.5, 0.

(3) boolean .

8) IF, ELSE IF, ELSE, if, else if, else

(1) Semantics 가 .

(2) 가 .

9)

(1) { }

(2)

10) Additional Protocols

(1) instant message Transfer Semantics Statement SEND

RECEIVE Protocol .

(2) , Protocol .

) SPNew, RPNew, SPTransfer

## 6. Semantics

1) Statement can not begin with "[TOKEN]".

Semantics .

2) Function "[FUNCTION]" has no argument.

. ) SEND (SPForManual);

3) Function "[FUNCTION]" has no statement terminator ";".

가 “,” . ) SEND (SPForManual)

4) Function "[FUNCTION]" has wrong formatted argument.

Prototype Statement 가 .

5) Argument "[ARGUMENT]" is not the string type.

String Type Type 가 .

6) Argument "[ARGUMENT]" is not the character type.

char Type Type 가 .

7) Argument "[ARGUMENT]" is not the number type.

char Type Type 가 .

8) Argument "[ARGUMENT]" is wrong type.

Prototype Type 가 .

9) Argument "[ARGUMENT]" is duplicated.

RECEIVE Receive Protocol 가 .

10) "(" has no right parenthesis in pair.

( ) 가 . ) SEND (SPForManual;

11) "[CONDITION]" has no condition clause.

IF, ELSE IF, if, else if Receive Protocol boolean

. ) IF RPForManual || \_MAC) {

12) "[CONDITION]" has no statement.

IF, ELSE IF, ELSE, if, else if, else .

) IF RPForManual || \_MAC) {}

13) "{" has no right brace in pair.

“}”가

- 14) "[SEND PROTOCOL]" is not SEND PROTOCOL.

SEND                                      Send Protocol Name                                      Send Protocol

- 15) SEND statement is not allowed at HOST server.

Server Statement                      SEND

- 16) RECEIVE statement should follow SEND statement at HOST client.

Client Statement                                      SEND                                      RECEIVE

- 17) "[MAC]" is not a proper MAC number for transfer.

TRANSFER                                      MAC Number String

- 18) "[RECEIVE PROTOCOL]" is duplicated.

IF                      Receive Protocol                                      Receive Protocol

- 19) IF statement should follow RECEIVE statement.

IF                      RECEIVE

- 20) IF statement should not contain receive protocol not specified at RECEIVE statement.

RECEIVE                                      Receive Protocol                      IF                      Receive  
Protocol                      Receive Protocol  
    ) RECEIVE(\_MAC);  
    IF (RPForManual) {...}  
    (RECEIVE      RPForManual                      IF                      .)

- 21) ELSE IF statement should follow IF or ELSE IF statement.

IF              ELSE IF              ELSE IF

- 22) ELSE statement should follow IF or ELSE IF statement.

IF              ELSE IF              ELSE

- 23) "if" statement should belong to IF or ELSE IF statement.

if                      IF, ELSE IF

- 24) "[PROTOCOL]" in condition of if statement does not belong to protocols related to IF statement.

IF                      Receive Protocol                                      Receive Protocol                      if  
boolean  
    ) IF(RPForManual) {  
        if (RPNew.m0 > 100 { ...}  
    }

(if boolean RPNew 가 IF Receive Protocol  
.)

25) "else if" statement should follow if or else if statement.

if else if else if .

26) "else" statement should follow if or else if statement.

if else if else .

27) There are more than two protocols related to IF statement.

if 가 IF ELSE IF Receive Protocol Receive  
Protocol 가 .  
) IF (RP1 || RP2) {  
if (RP1.m0 > 100) { ...  
(IF Receive Protocol RP1 RP2 Receive Protocol  
if else if .)

28) "else if" statement should follow if or else if statement.

else if if, else if .

29) "else" statement should follow if or else if statement.

else if, else if .

30) Addition protocols format is wrong. Enter the protocol name seperated by ",".

Additional Protocols , Protocol  
.

31) "[PROTOCOL]" protocol is not registered.

Additional Protocols Protocol .

32) if, else if boolean 5. Transfer 5.2 Transfer Edit  
Panel 5. Transfer .

## 7. Semantics

CANCEL .

## **3      UI Manager**

## 1. UI Manager

### 1.1 UI Manager

UI Manager

Property

GUI

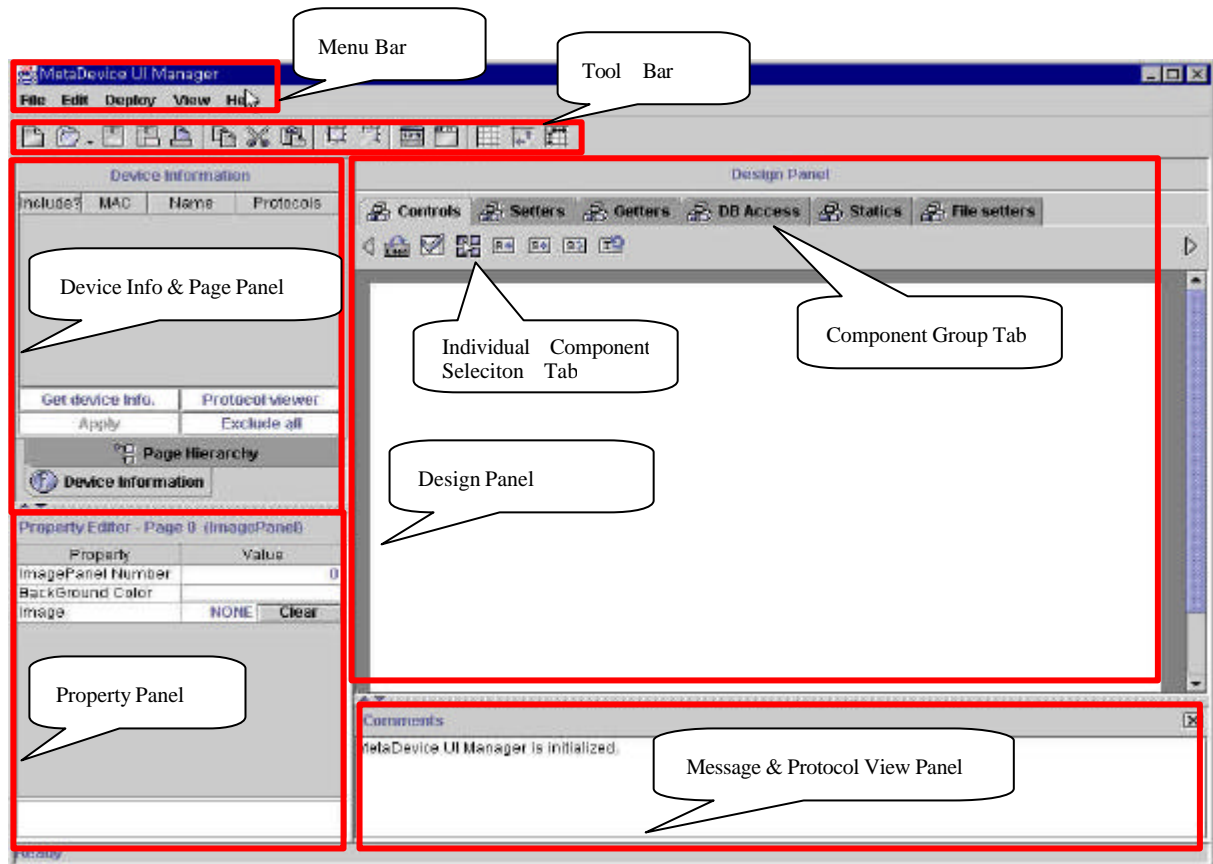
UI Manager [ 3.1 ]

"Menu Bar", "Tool Bar", "Device Info & Page Panel", "Property Panel", "Design Panel" Design Panel Component Group

"Component Group Tab"

Component

"Individual Component Selection Tab"



### [ 3.1 UIManager ]

- Menu Bar : MDU File Open/Save, Design UI Component Applet/Application Deploy  
MDU File Bar
- Tool Bar : Menu Bar UI Design Component Pop Up, Pop Down / Cut & Paste Component Bar
- Device Info & Page Panel : UI Design Server Manager M DPR File Design Panel
- Property Panel : Component Property / (Component Double Click )



- Message & Protocol View Panel :

- Design Panel :

“Component Group Tab” “Individual Component Selection Tab”

- Component Group Tab : Component Group 6 가 Component Group Individual Component Selection Item Component Selection Tab

- Individual Component Selection Tab : Design Panel Design Panel

가

## 1.2

UI Manager

Server Manager

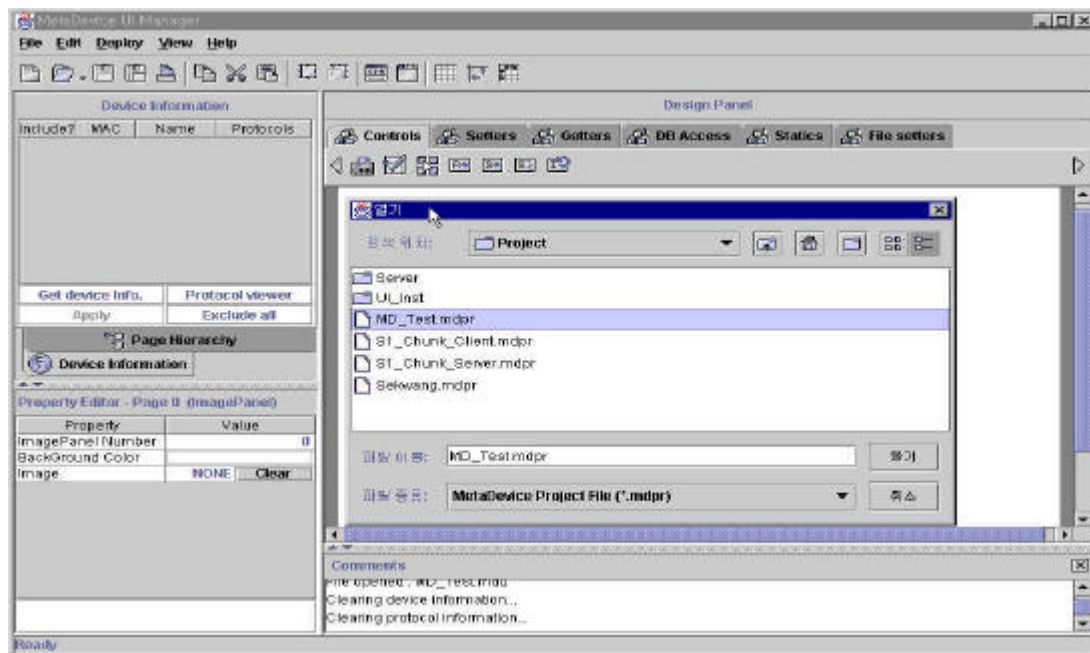
MDPR File

DB

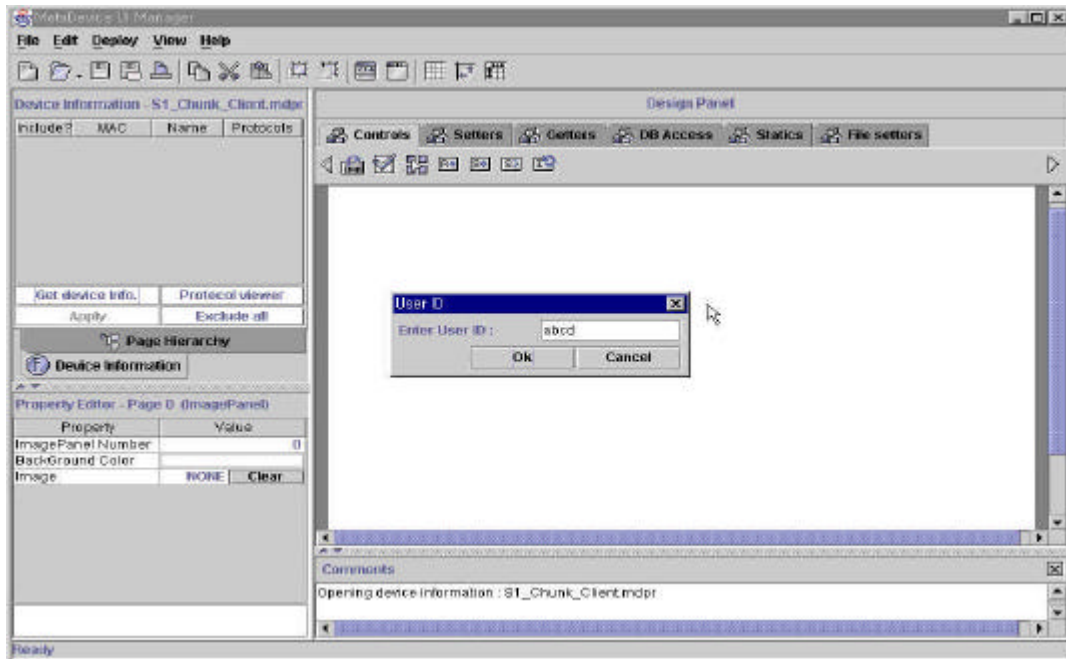
가

Deploy 가 가

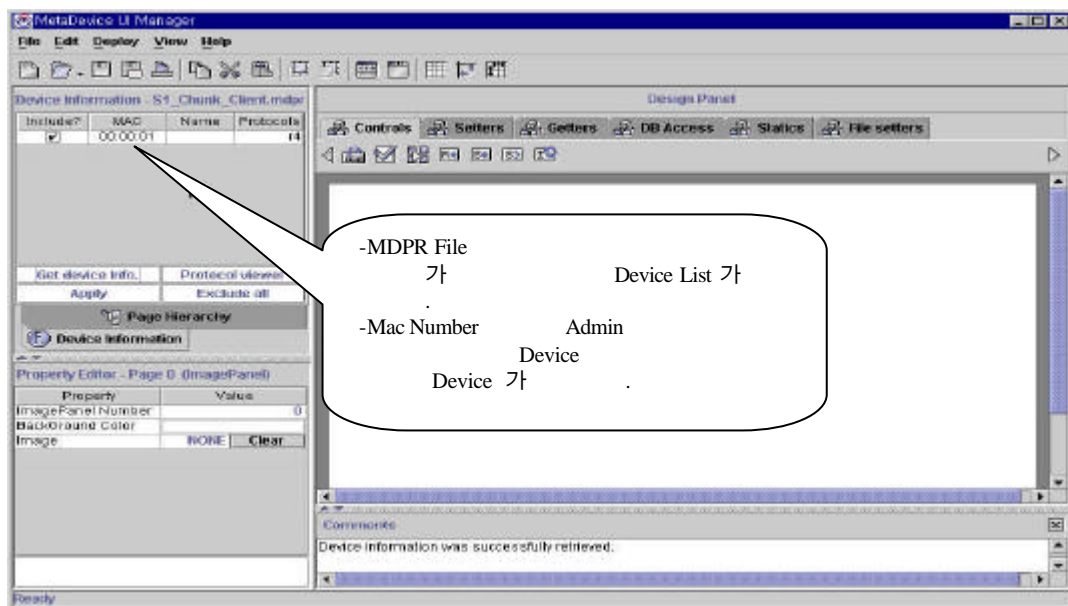
. [ 3.2.1 ] ~[ 3.2.3 ] “Device Information” Button MDPR 가



[ 3.2.1 MDPR File ]



[ 3.2.2 ]



[ 3.2.3 MDPR ]

UI Design 가

|                           |   |                       |
|---------------------------|---|-----------------------|
| (MAC Number)              | ( | Protocol Symbol       |
| )                         | . | (Server Protocol Data |
| UI Manager Component Data | 1 | 3.5                   |
|                           | . | )                     |

## (1) Data Send

### (1.1)

가 “Device Selector” “Setters” , “Send Button” . [

## 3.3 ] Multiple Device

UI

가

“Rotary Gauge Component”

가

Send

“DataSendButton”

“DataMulitSendButton”

. Data Send

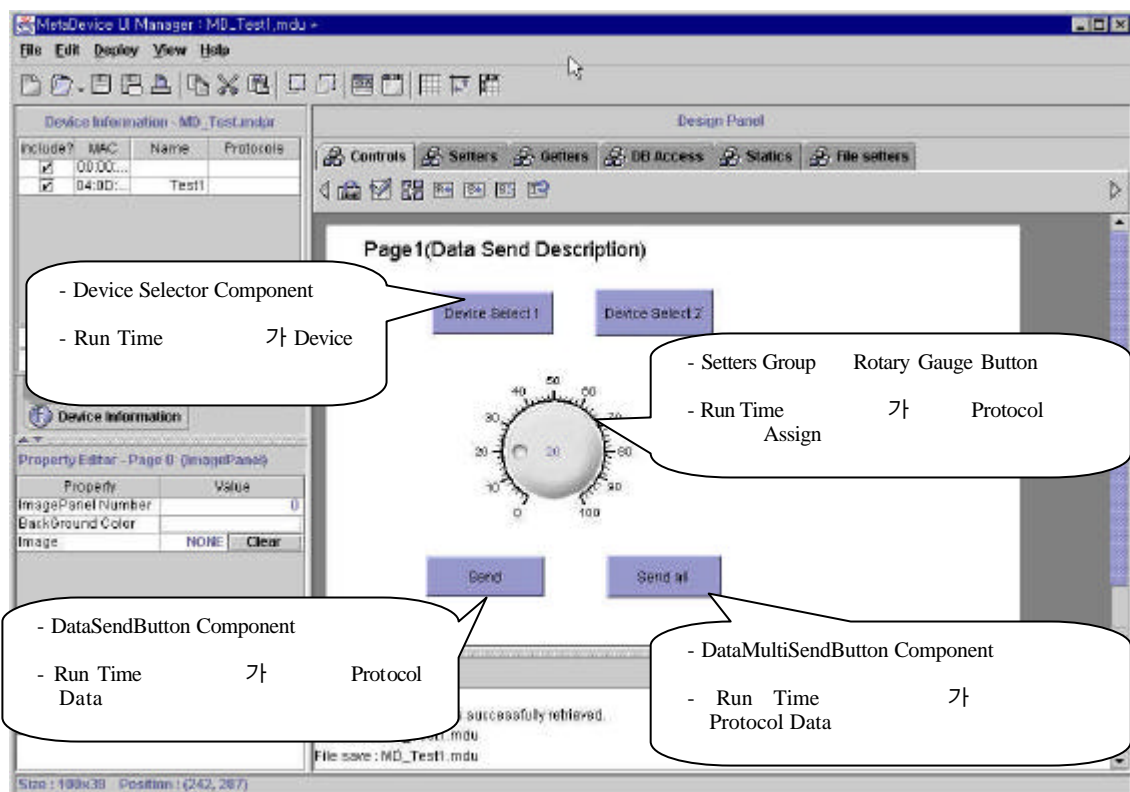
Data

Receive

가

Data Receive

가

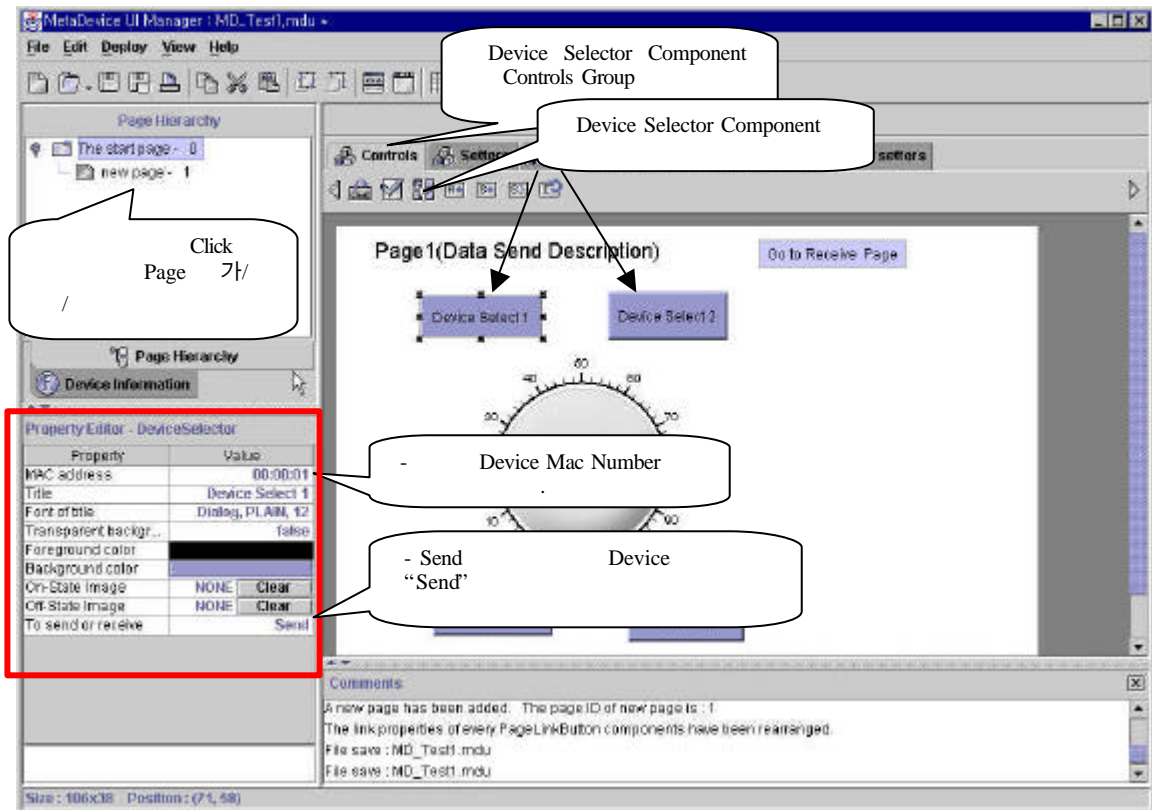


[ 3.3

]

## (1.2) Component Property

### - DeviceSelector Component

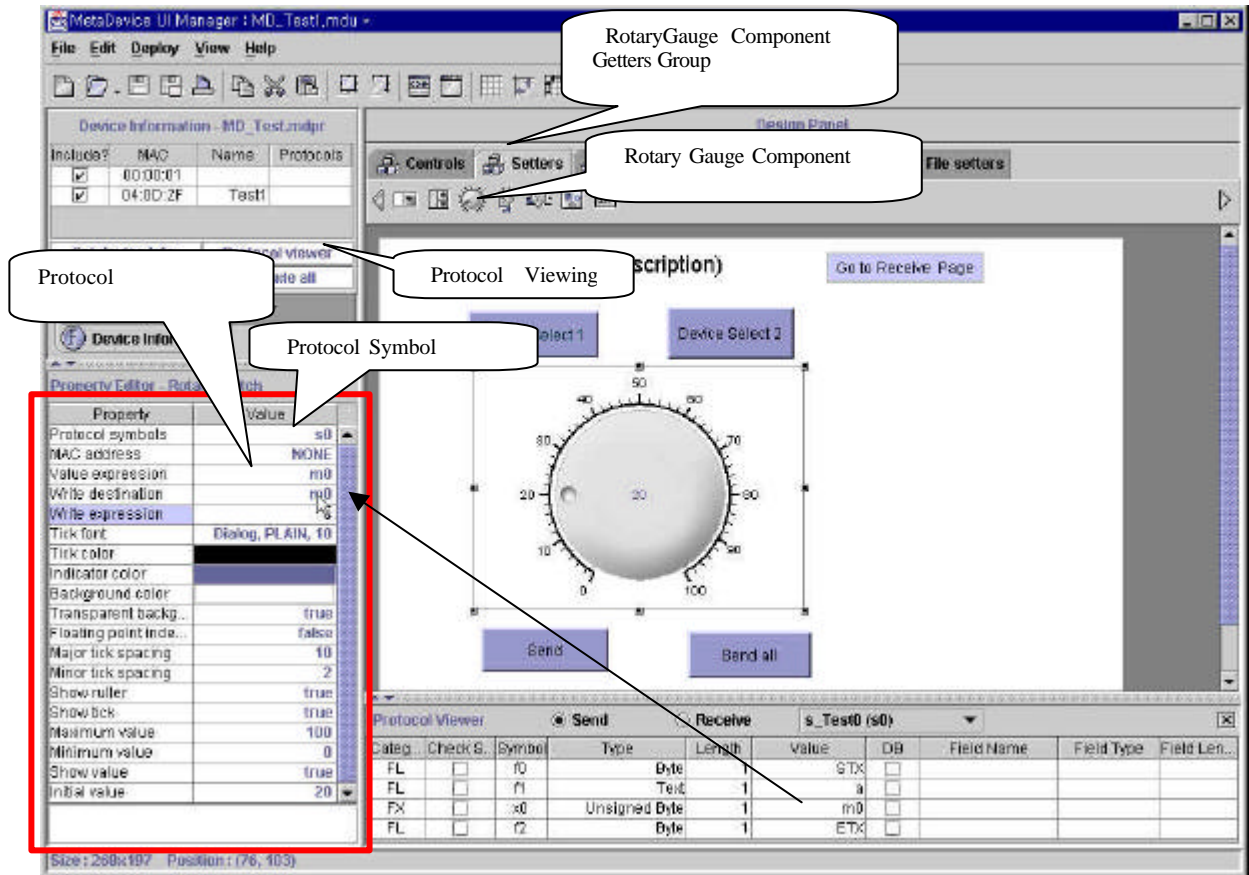


### [ 3.4.1 Device Selector Component]

.MAC address : Mac Number , Admin  
가 Mac Number .  
Mac Number  
가  
"00:00:01"  
.Title : Button Text  
.Font of title : Title Font  
.Transparent background :  
true :  
false:  
.Foreground color : Title Text  
.Background color :  
.On State Image: Button On Image, Image Color .  
.Off State Image: Button Off Image, Image Color .  
.To Send or Receive : Device Selector Button Send Mode Send , Receive

Mode Receive

RotaryGauge Component



### [ 3.4.1 RotaryGauge Component]

.Protocol symbols : Protocol symbol . Protocol Symbol

Protocol Viwer ..

.MAC address : Mac Number . Mac Number  
 Mac Number Device Mac Number 가  
"NONE" "DeviceSelector"

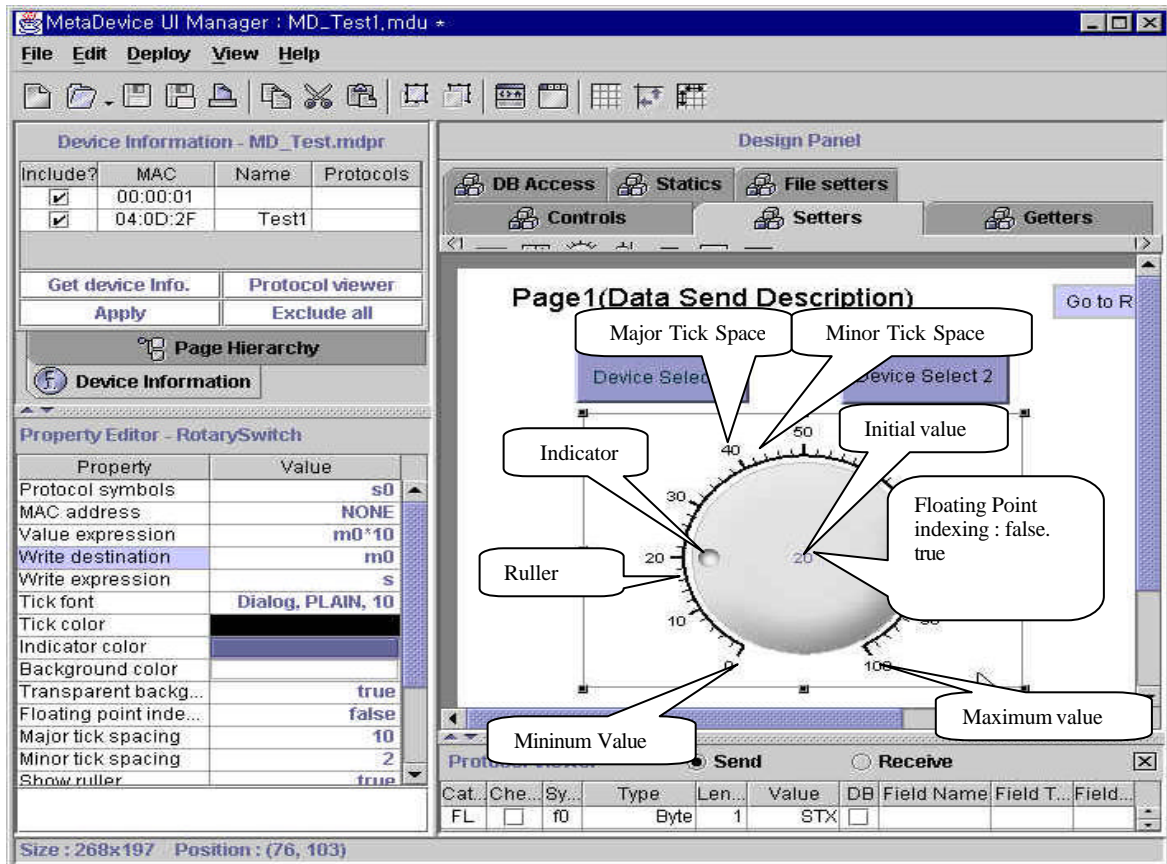
Device Selector Button Device .

.Value expression: 가

.Write expression: .  
 ) Value expression m0\*2 Write expression m0

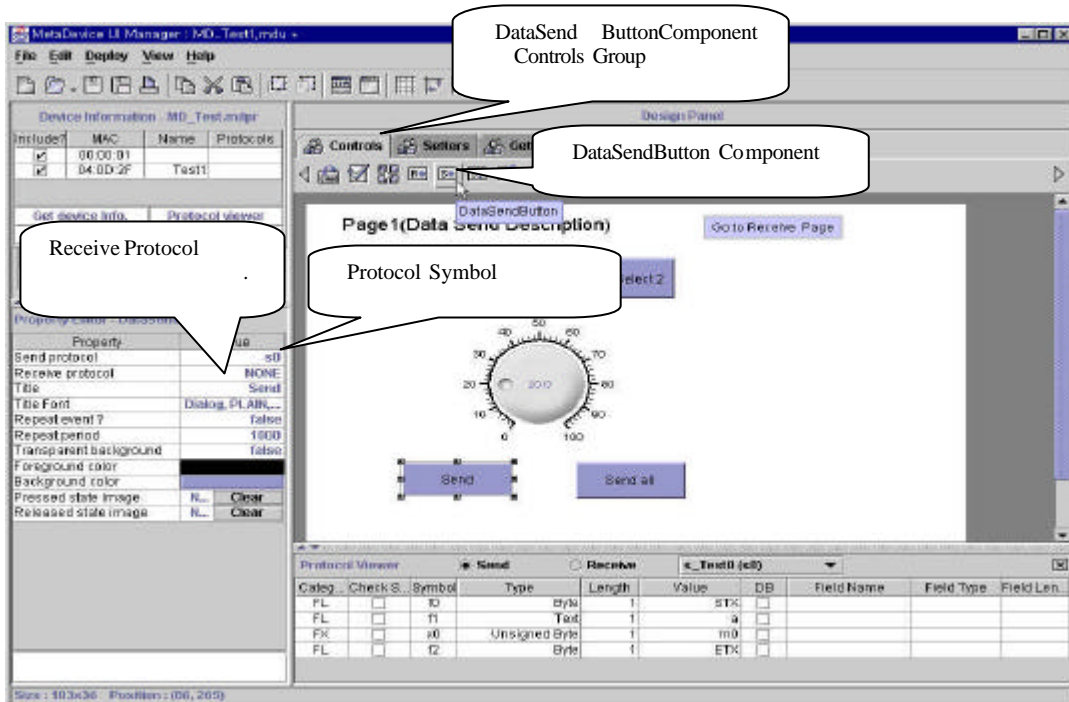
Gauge 20 10





[ 3.4.2 Rotary Gauge Component Detail ]

#### DataSendButton Component



[ 3.4.3 DataSendButton Component ]

## MetaDevice

.Send Protocol : Protocol Symbol

.Receive Protocol :

"NONE"

Receive

Receive Protocol Symbol

. Protocol Symbol

Monitoring

Receive

.Title :

.Title Font : Title Font

.Repeat event? :

true :Device Selector Button

Setters Component

false: Send

.Repeat period : Repeat event 가 true

1 : 1000

.Transparent background :

true :

false:

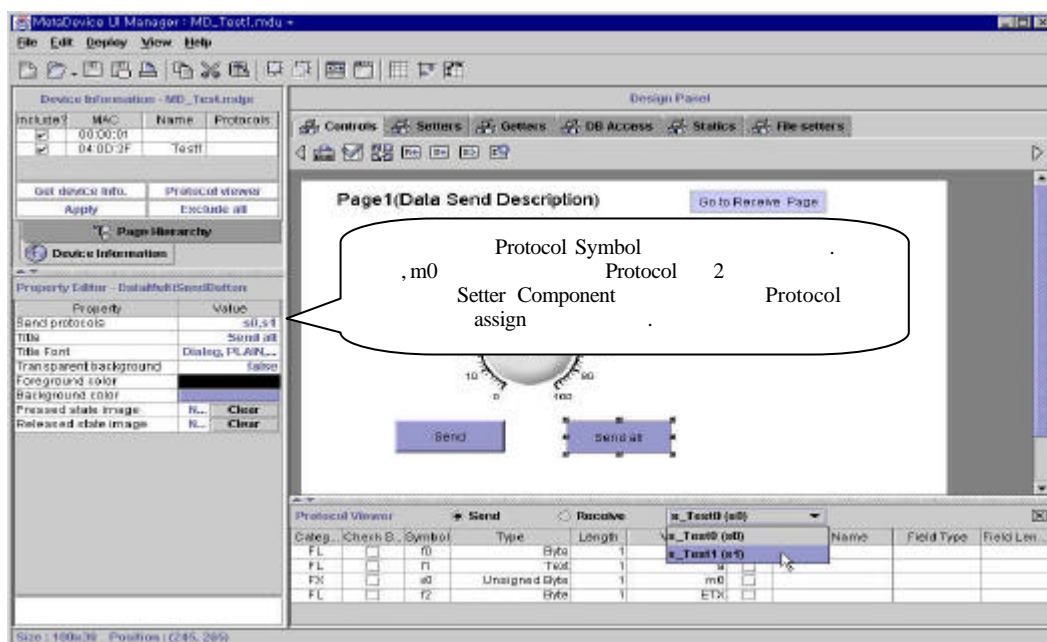
.Foreground color : Title Text

.Background color :

.Pressed State Image: Click Image

.Released State Image: Image

## DataMultiSendButton Component



## [ 3.4.4 DataMultiSendButton Component ]

## MetaDevice

.Send Protocol : 2                      Protocol Symbol                      ..

.Title : Button

.Title Font : Title Font

.Transparent background :  
                                         true :  
                                         false:                      .

.Foreground color : Title Text

.Background color :

.Pressed State Image:                      Image

.Released State Image:                      Image



(2) Data Receive

(2.1)

가

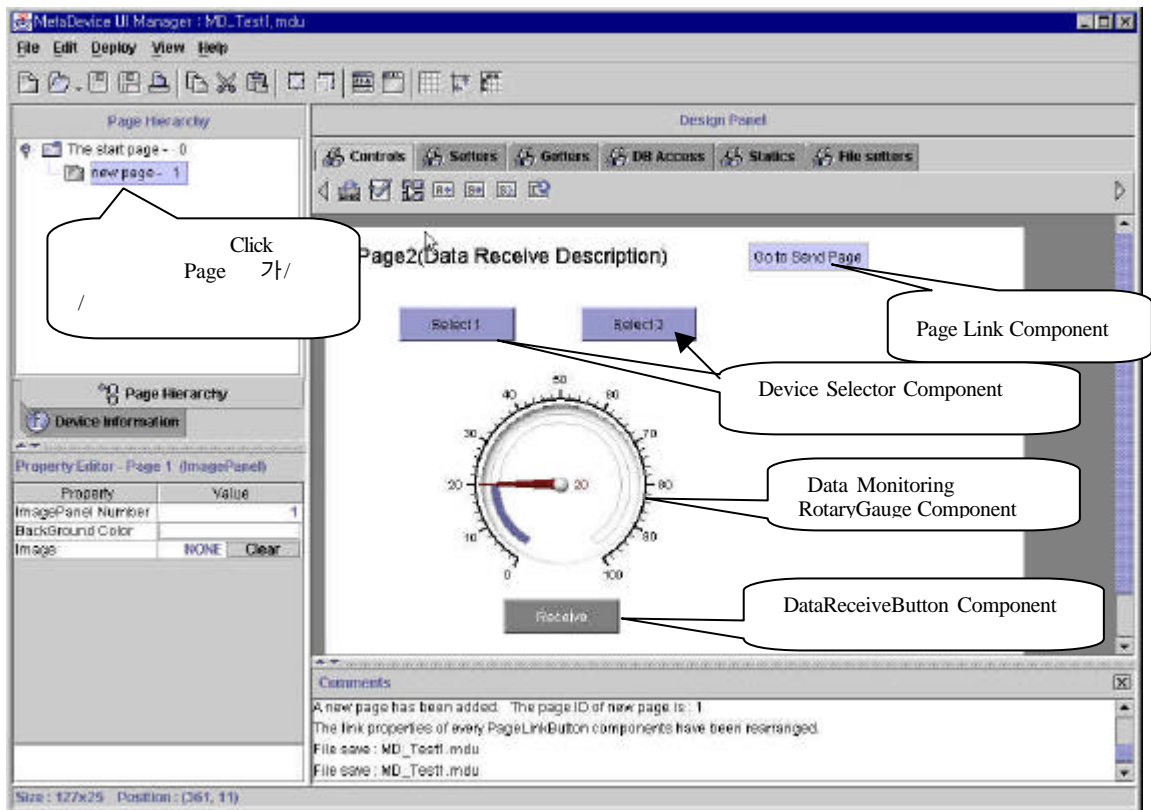
PC 가

“ReceiveButton” , “Device Selection” “Getters” Group

Getters Component . [ 3.4 ]

UI . Data Receive 가

Data Receive 가

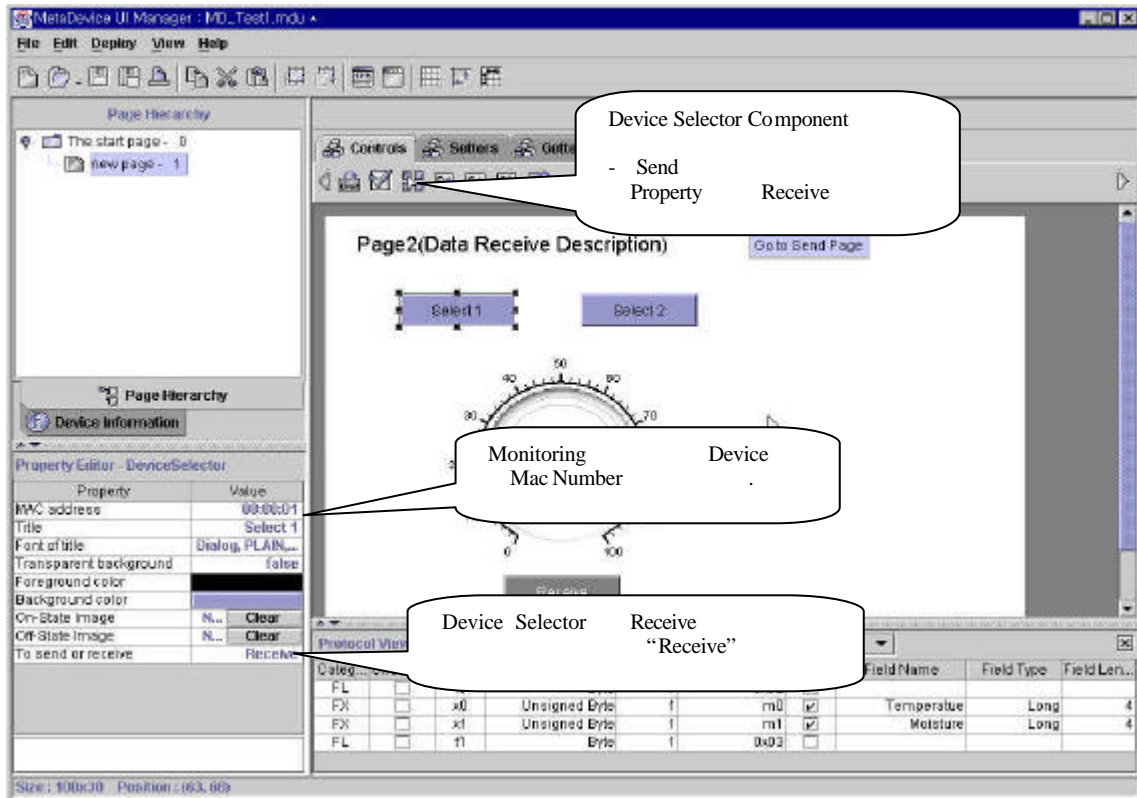


[ 3.5 ]

## (2.2) Component Property

-

### DeviceSelector Component



### [ 3.5.1 DeviceSelector Component ]

.MAC address :                      Mac Number                      , Admin  
;                      가                      Mac Number                      .

.Title : Button

.Font of title : Title Font

.Transparent background :  
                                         true :  
                                         false:

.Foreground color : Title Text

.Background color :

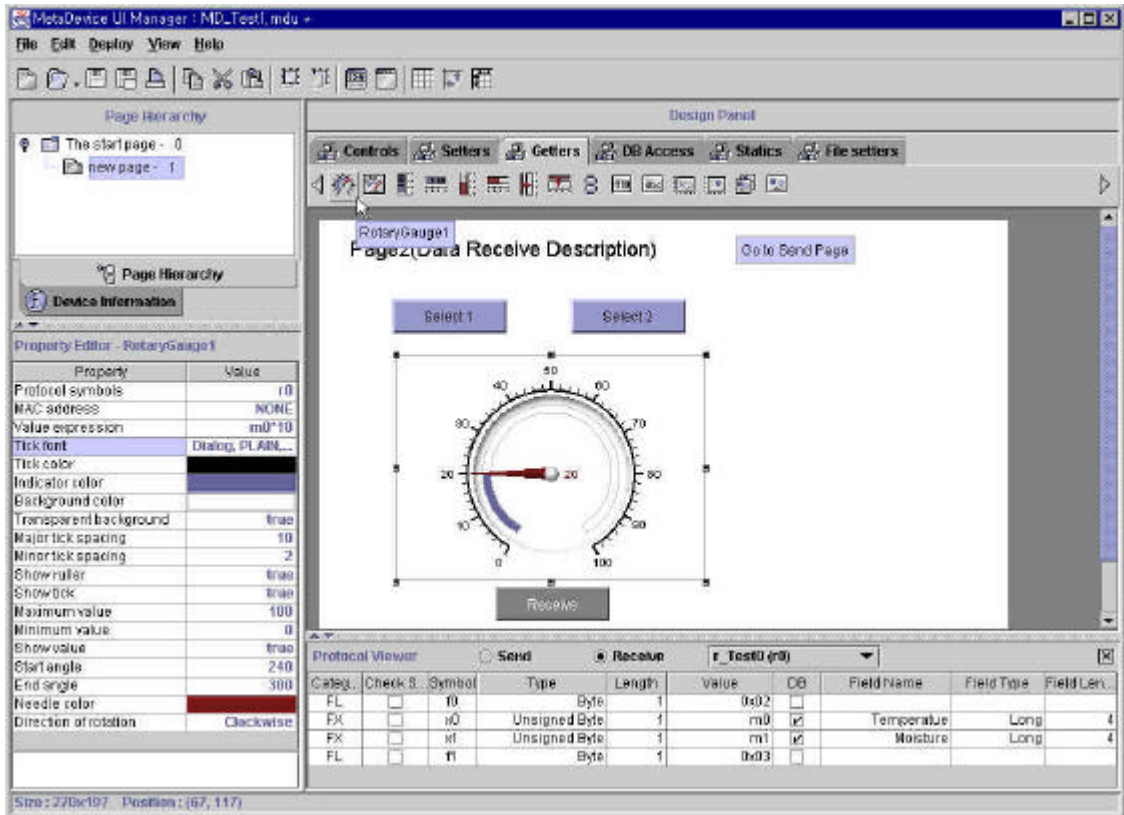
.On State Image: Button On                      Image, Image                      Color                      .

.Off State Image: Button Off                      Image, Image                      Color                      .

.To Send or Receive : Device Selector Button                      Send Mode                      Send                      , Receive  
                                         Mode                      Receive

: Receive Device Selector                      . ,

## Getters Group RotaryGauge1

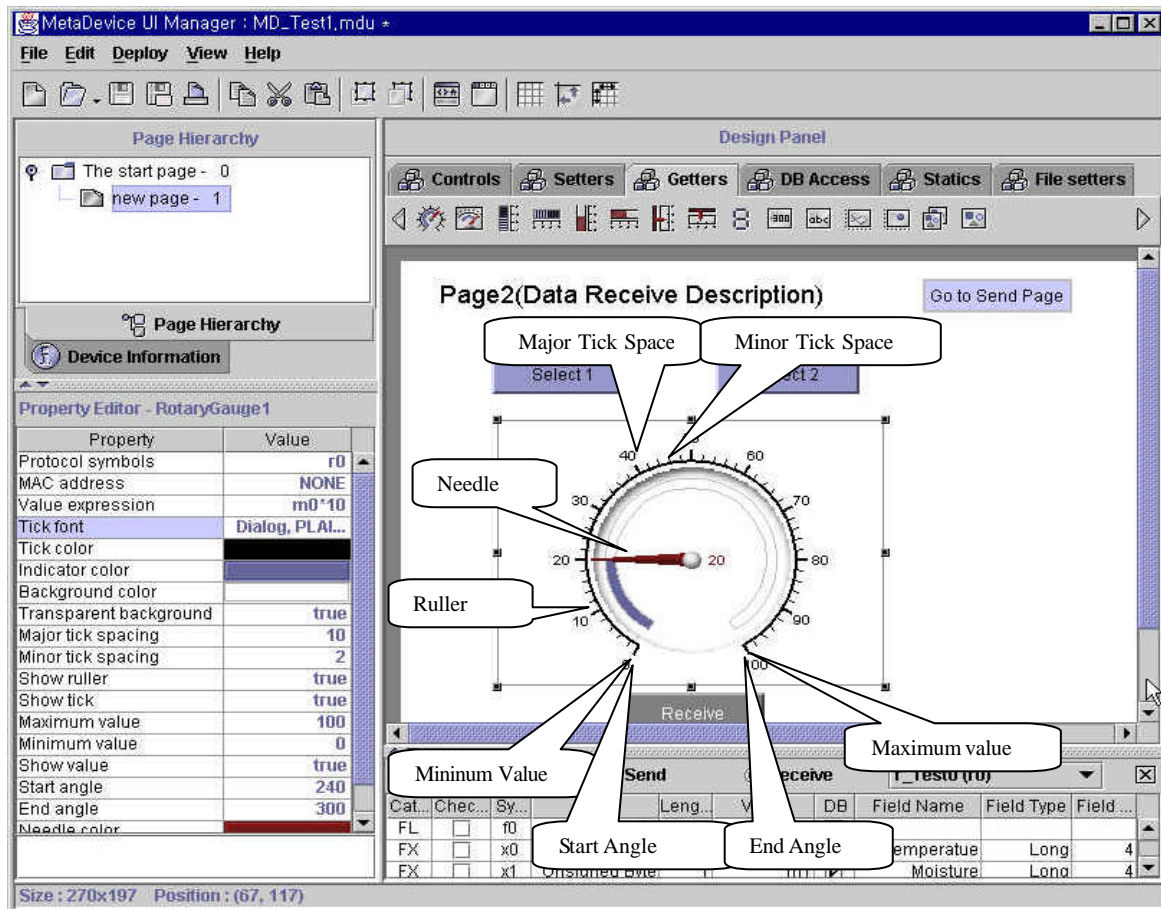


### [ 3.5.2 RotaryGauge Component ]

.Protocol symbols : Protocol symbol . Protocol Symbol  
Protocol Viwer Receive Protocol 가

.MAC address : Mac Number . Mac Number  
가  
Device . Mac Number 가  
"NONE" "DeviceSelector"  
Device Selector

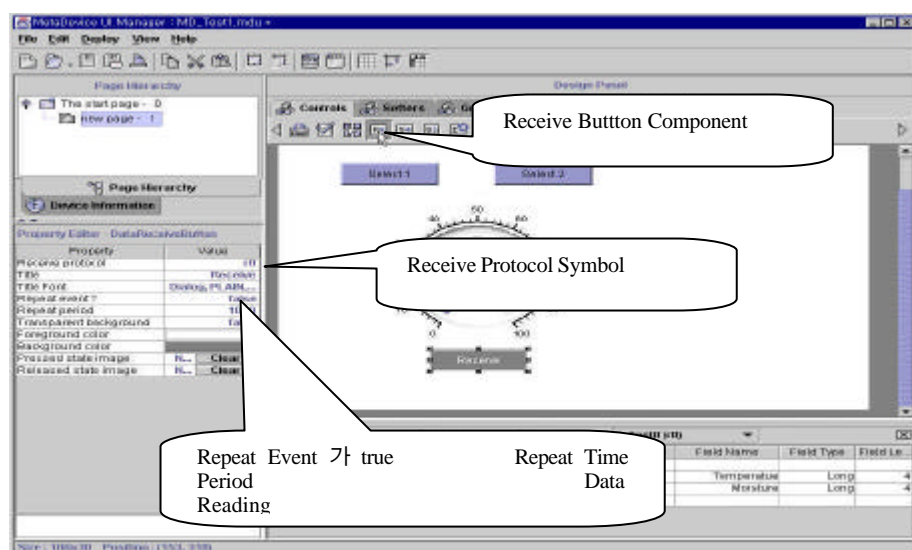
.Value expression: 가



### [ 3.5.3 RotaryGauge Component Detail]

ReceiveButton

Receive



### [ 3.5.4 Receive Button Component]

```
.Receive Protocol : Receive Protocol Symbol .
.Title : Button
.Title Font : Title Font
.Repeat event? :
 true :Device Selector
 false: Receive Button .
.Repeat period : Repeat event 가 true .
 1 : 1000
.Transparent background :
 true :
 false: .
.Foreground color : Title Text Color
.Background color :
.Pressed State Image:
.Released State Image:
```

### (3) Value Expression Detail

```
(MDU Applet Application) MetaDevice
```

Receive

“Value expression” Property

“Value expression” Property

2 가

m<address> v<address>

**m<address>**

- , (Double)

- “Value expression” Property

가

((m100 -10) /5 + (m100 + 10) /10)

- 가

RotaryGauge1, RotaryGauge2, VerticalLinearGauge1,2,3 HorizontalLinearGauge1,2,3

SevenSegmentDisplay, LabelValueGetter, Graph2D, DataMappingPanel

ImageDisplayValueGetter, ImageON/OFFGauge

**v<address>**

- Text Text , 가

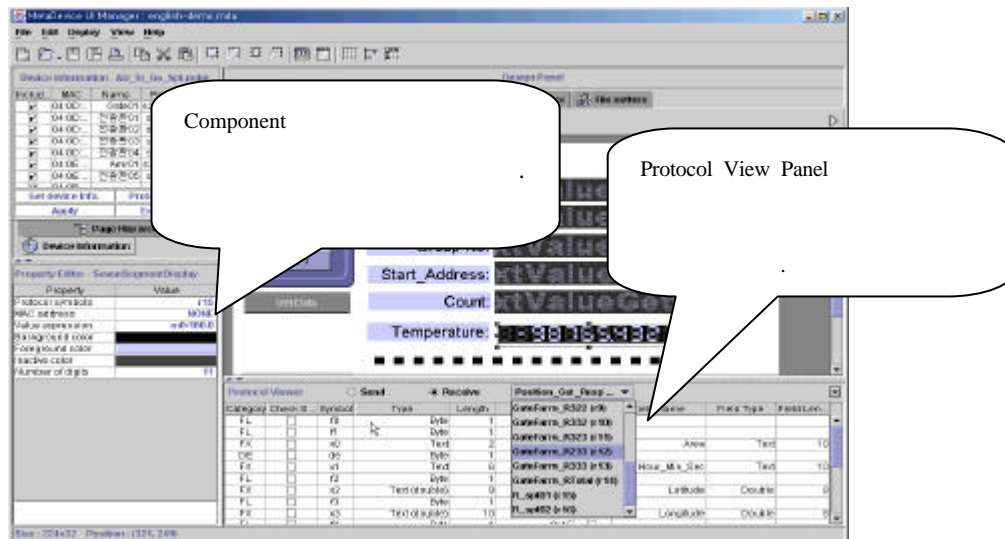
- .Value expression Text 가(+)

가

) v0 + “ABCD”

- 가

TextLabelValueGetter



### [ 3.6.1 Value expression ]

(4) 가/ /

MDU

가

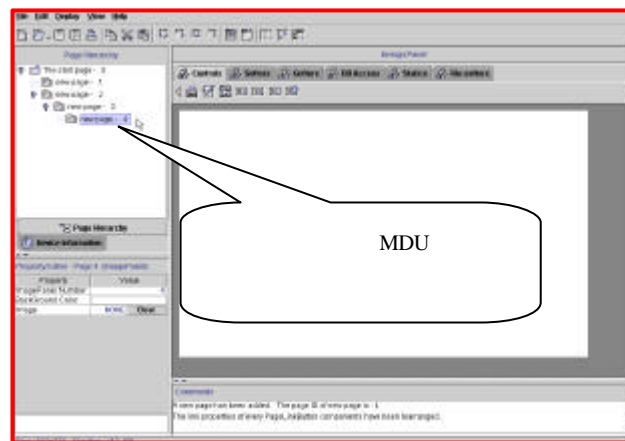
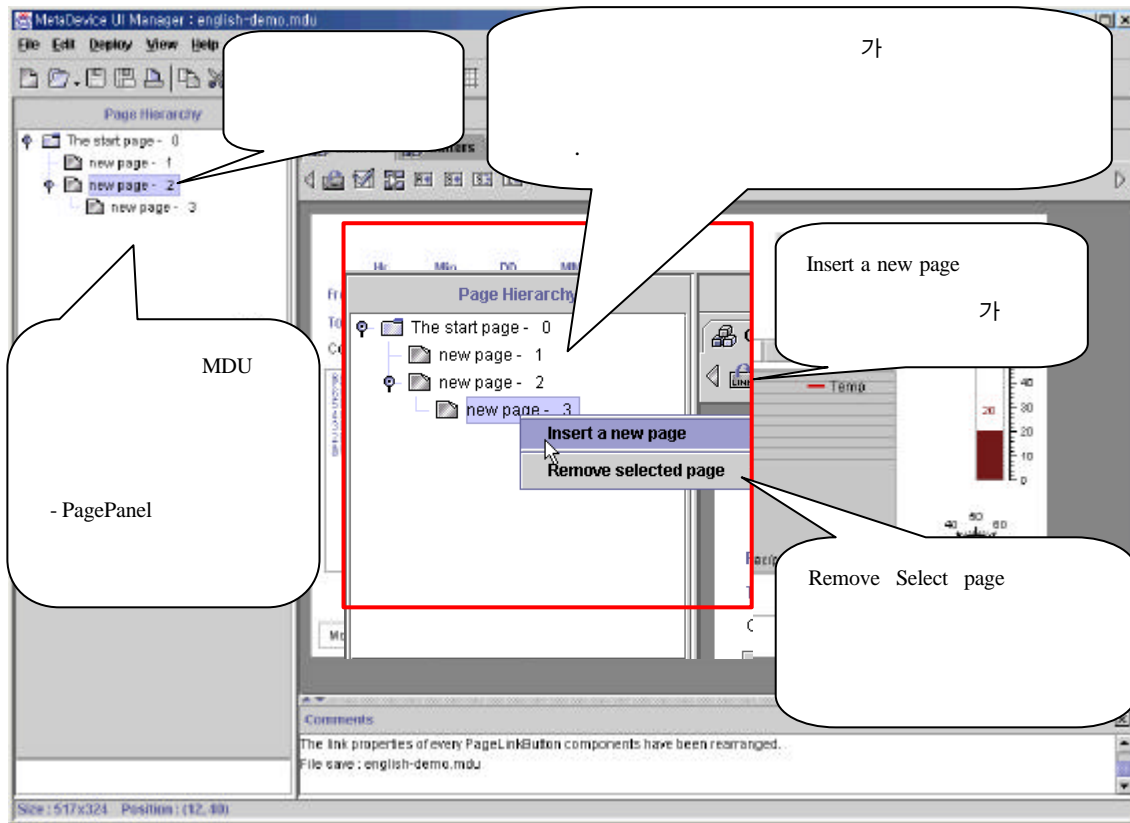
가

## Grouping

가

PageLinkButton

“Page to move” Property



[ 3.6.2 가 ]

## 2. Menu Bar

Menu Bar UI Manager

[ 3.7.1 ]

가

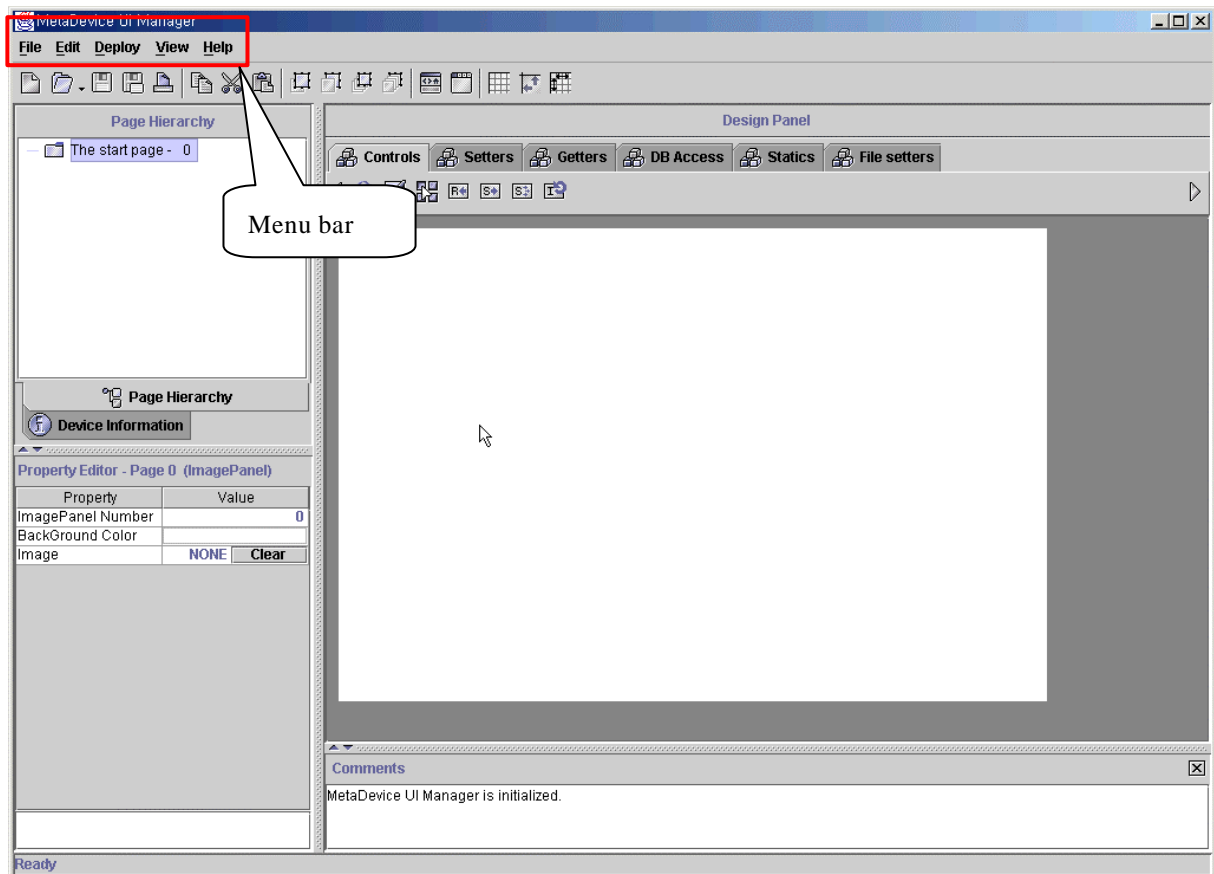
가

Menu Bar

Tool Bar

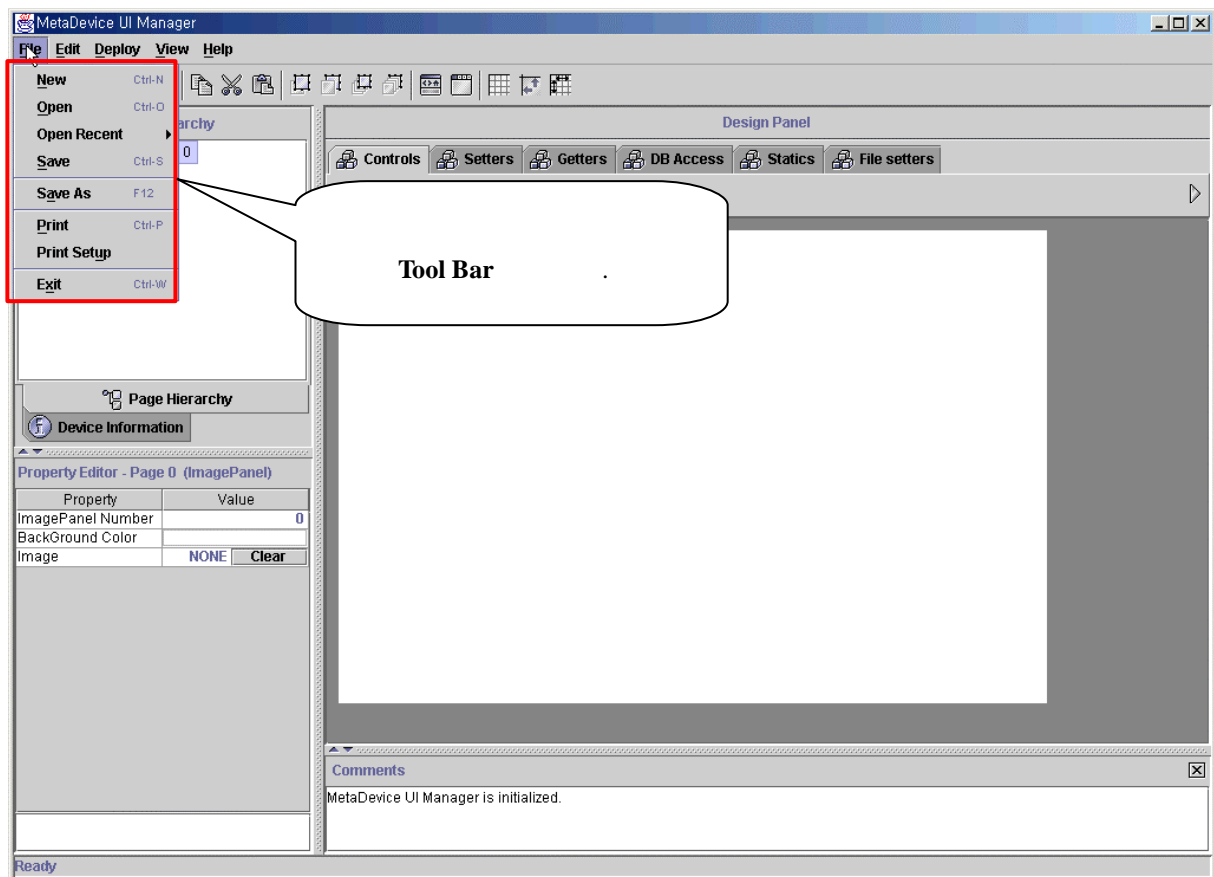
[ 3.7.2 ]

가



[ 3.7.1 Menu Bar ]





### [ 3.7.2 ]

#### (1) File

( "MDU" )

##### (1.1) New

MDU

##### (1.2) Open

MDU

##### (1.3) Open Recent

MDU

##### (1.4) Save

MDU

##### (1.5) Save As

MDU

(1.6) Print

Design Panel

(1.7) PrintSetup

(1.8) Exit

UI Manager

(2) Edit

(2.1) Cut

(2.2) Copy

(2.3) Paste

DesignPanel

(2.4) Select All

DesignPanel

Component

(2.5) Delete

DesignPanel

(3) Deploy

MDU

Applet

Application

(3.1) Make Applet

MDU

Applet

(3.2) Make Application

MDU

Application

(4) View

Design Panel

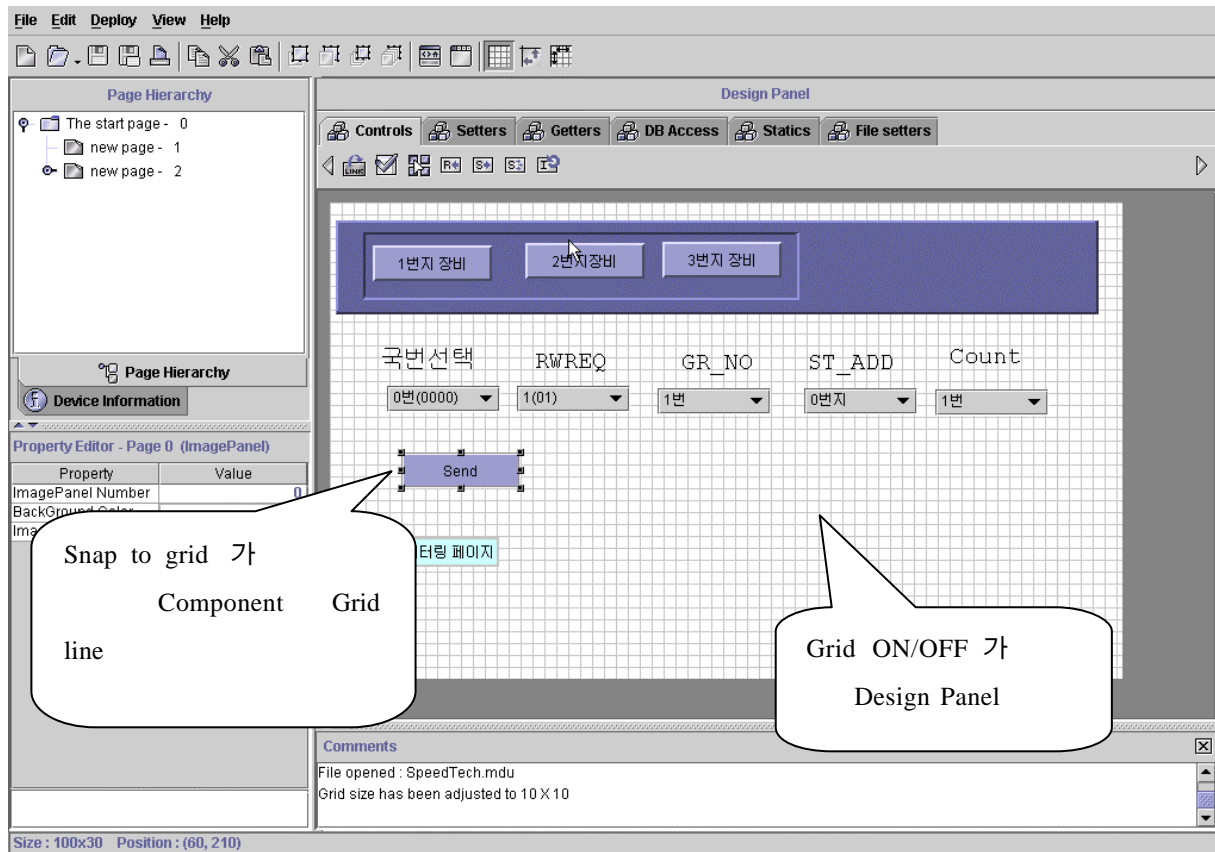
[ 3.7.3 ]

(4.1) Grid ON/OFF

Design Panel

(4.2) Grid property

(4.3) Snap to Grid



### [ 3.7.3 Grid ON/OFF ]

#### (5) Help

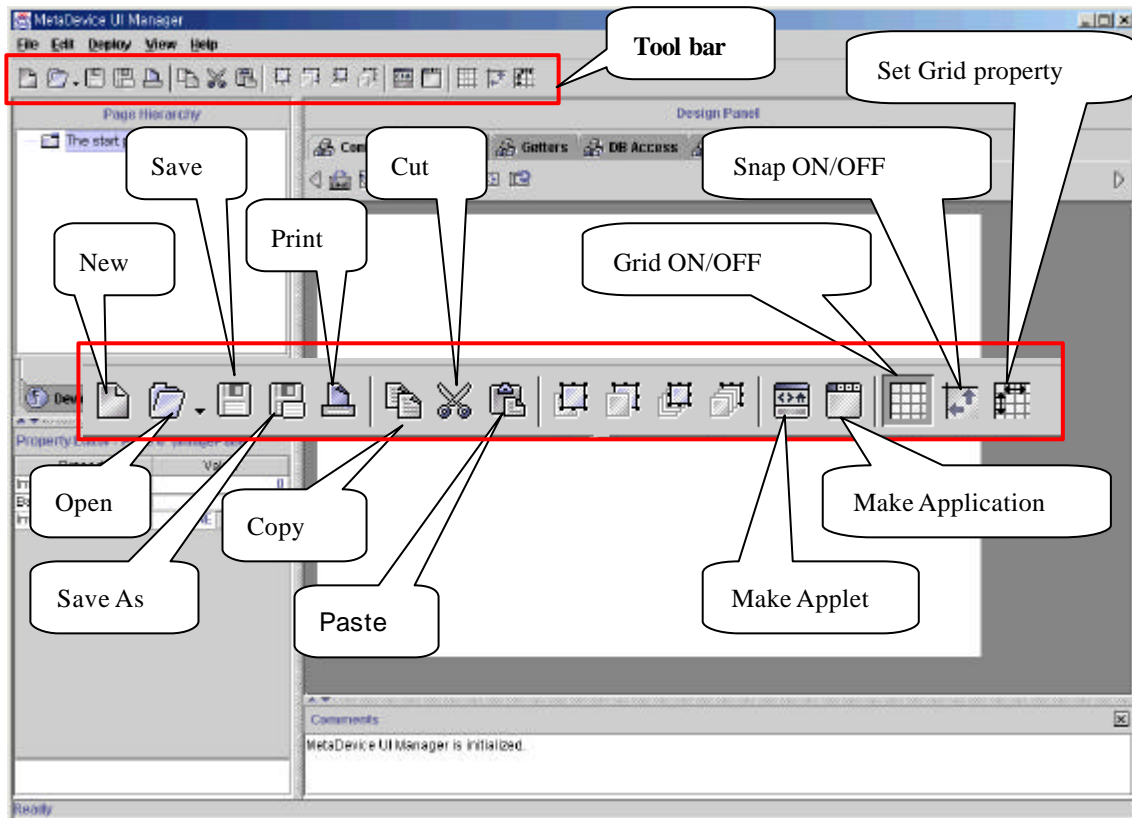
##### (5.1) Help topics

##### (5.2) About

MetaDevice

### 3. Tool Bar

Tool Bar UI Manager Tool Bar [ 3.8 ] Tool  
 Bar 가 . Save  
 , Save As MDU  
 . Tool Bar Meue Bar .



[ 3.8 Tool bar ]



Increase Z-order Selected components by 1 :



Decrease Z-order Selected components by 1 :



Make the Z-order Selected components top most :



Make the Z-order Selected components bottom most :



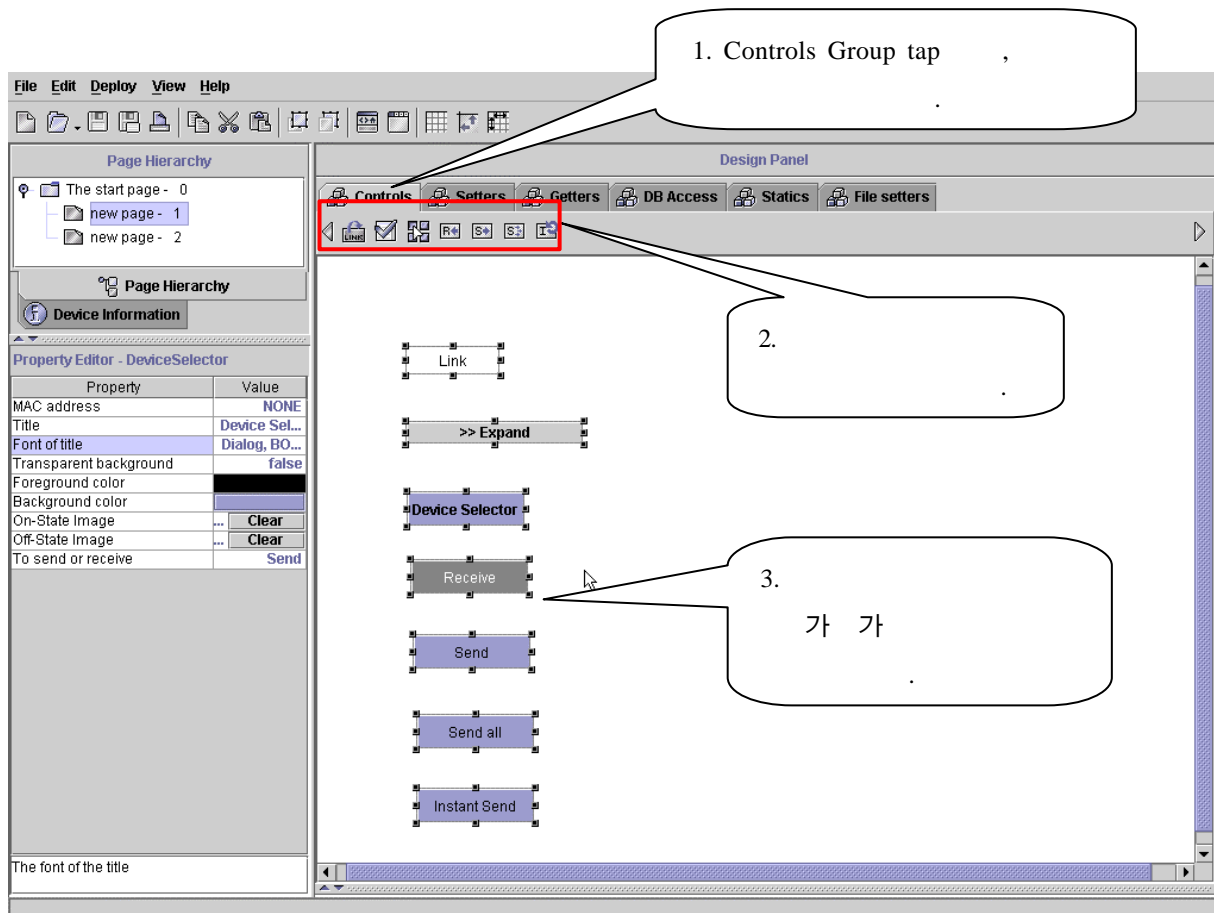
### (3) Controls Component UI 가

- Design Panel Controls

- DesignPanel

가

- , Property



### [ 3.9.2 Controls Component 가 ]

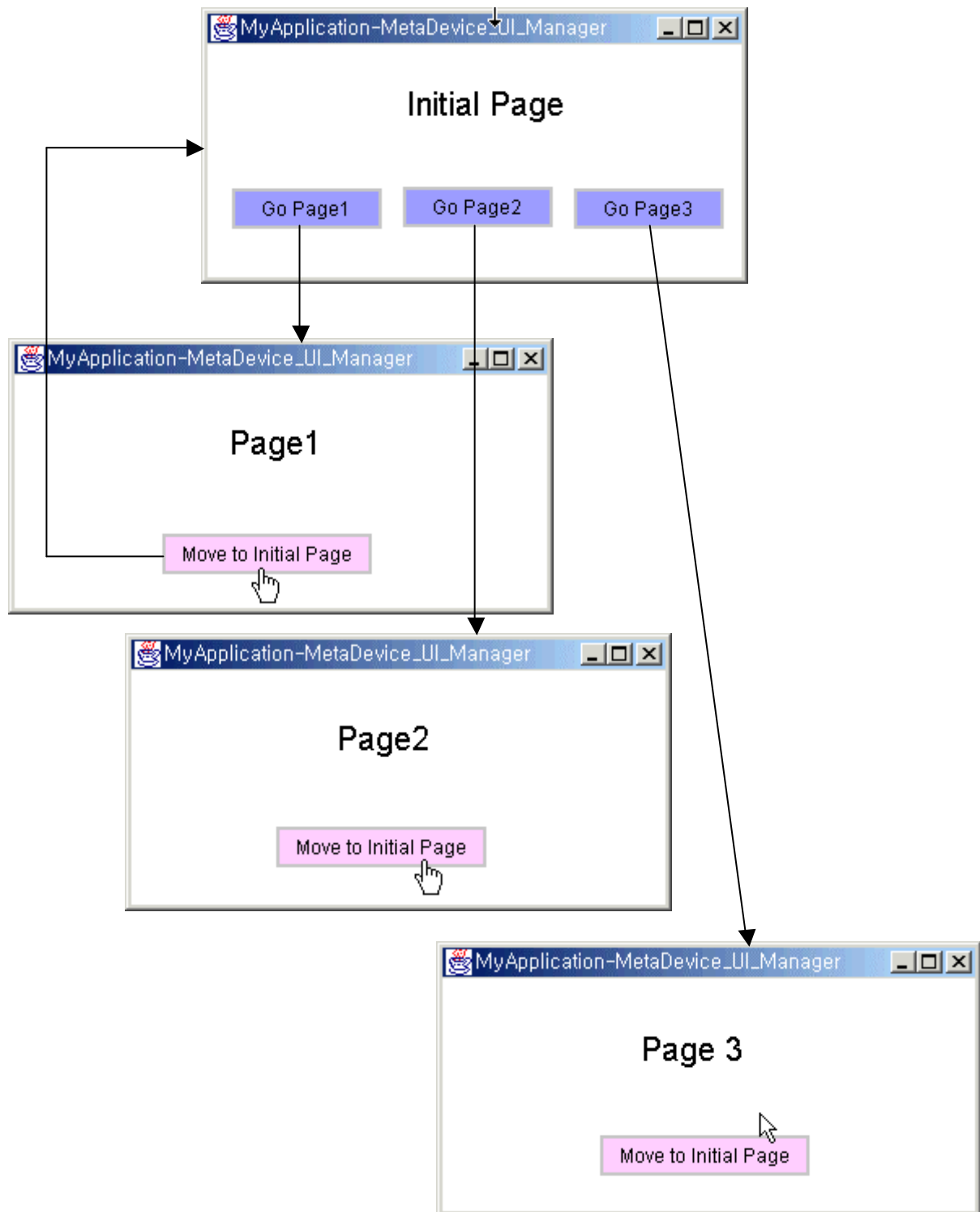
#### 4.1 PageLinkButton

(1)

Applet, Application

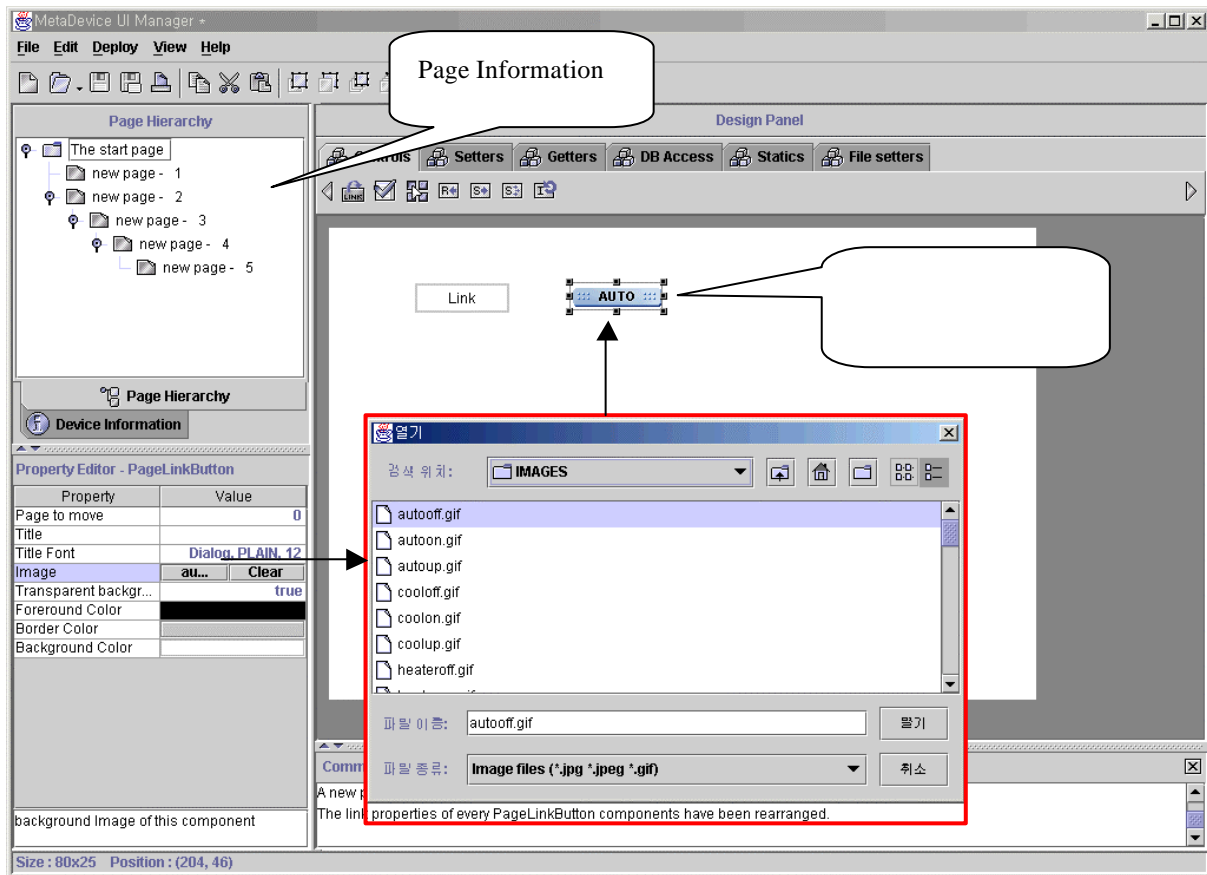
UI

Component

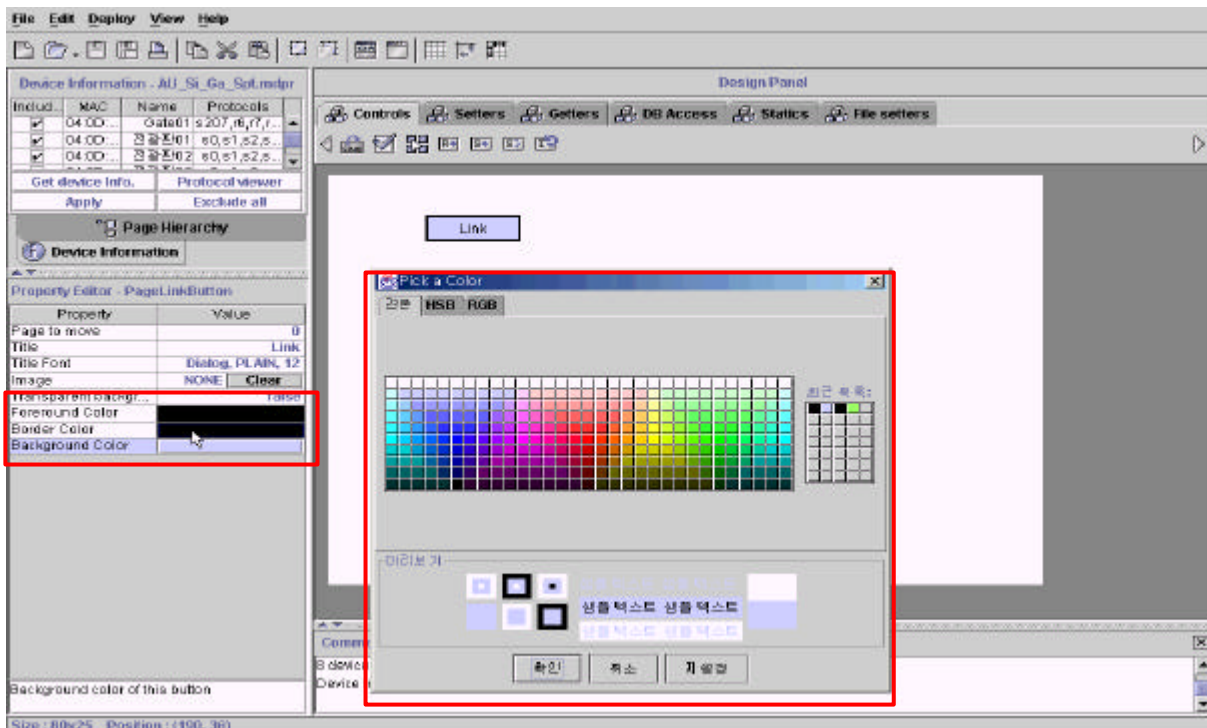


[ 3.9.3 PageLinkButton ]

## (2)Property



### [ 3.9.4 PageLinkButton property ]



### [ 3.9.5 PageLinkButton property Color ]



## MetaDevice

- Page to Move :
- Title :
- Title Font :
- Image : (.gif, .jpg, .jpeg)

- Transparent background : True

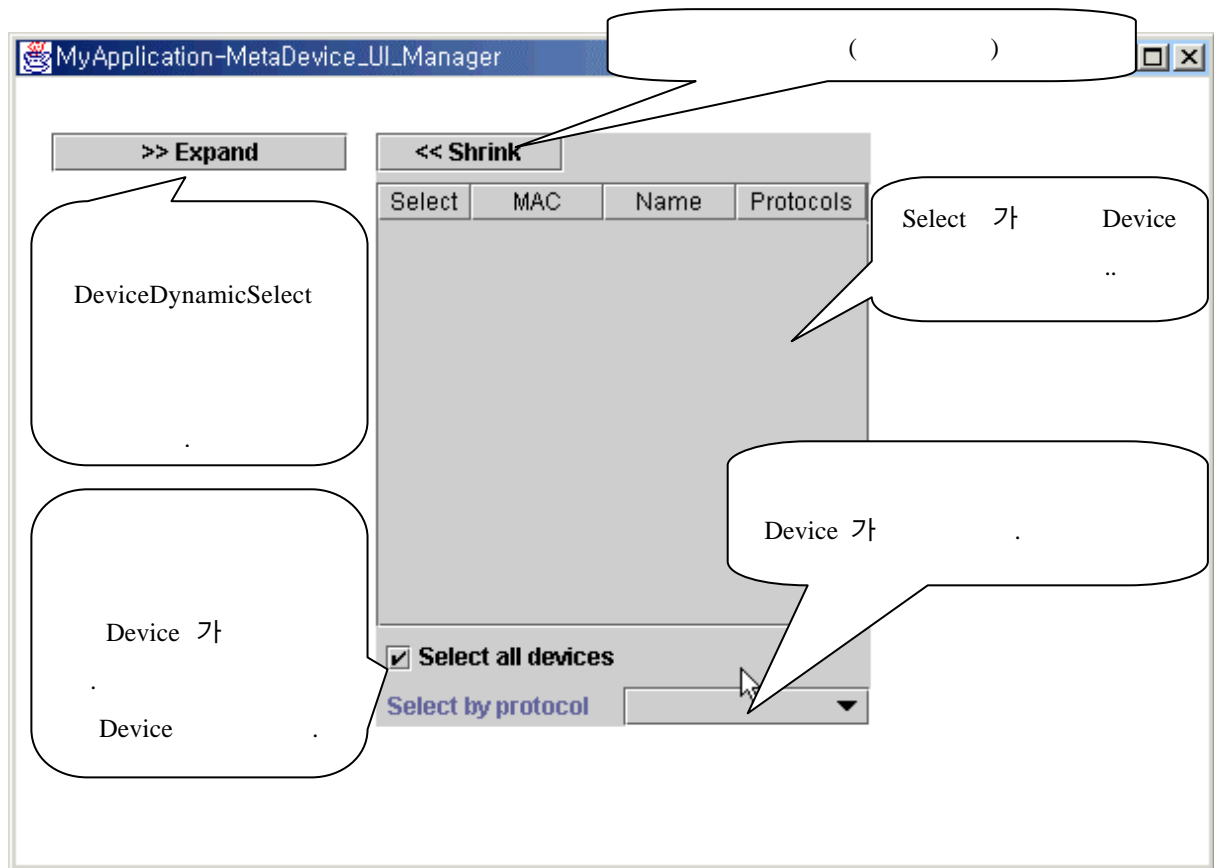
Transparent background

- Foreground Color :
- Border Color :
- Background Color :

## 4.2 DeviceDynamicSelector

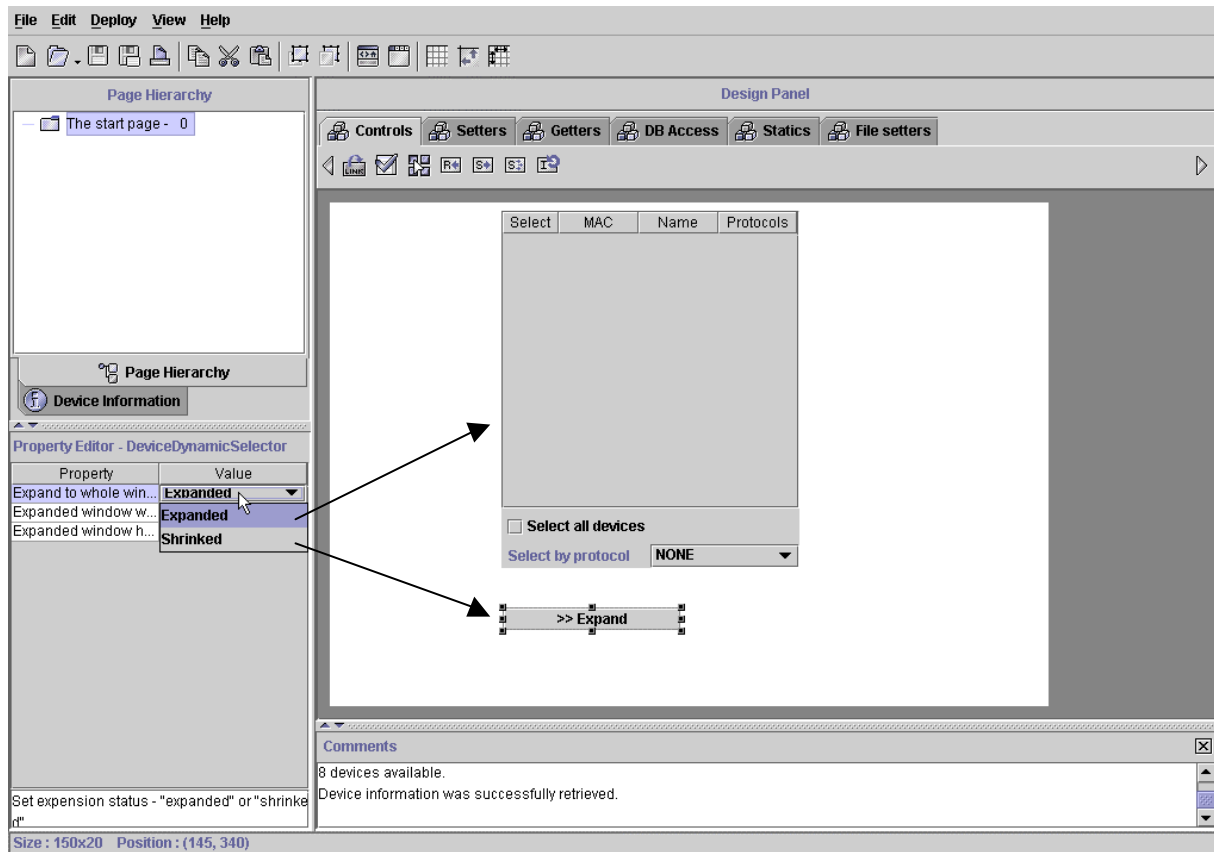
(1)

Applet      Application



[ 3.10.1 DeviceDynamicSelector ]

## (2) Property



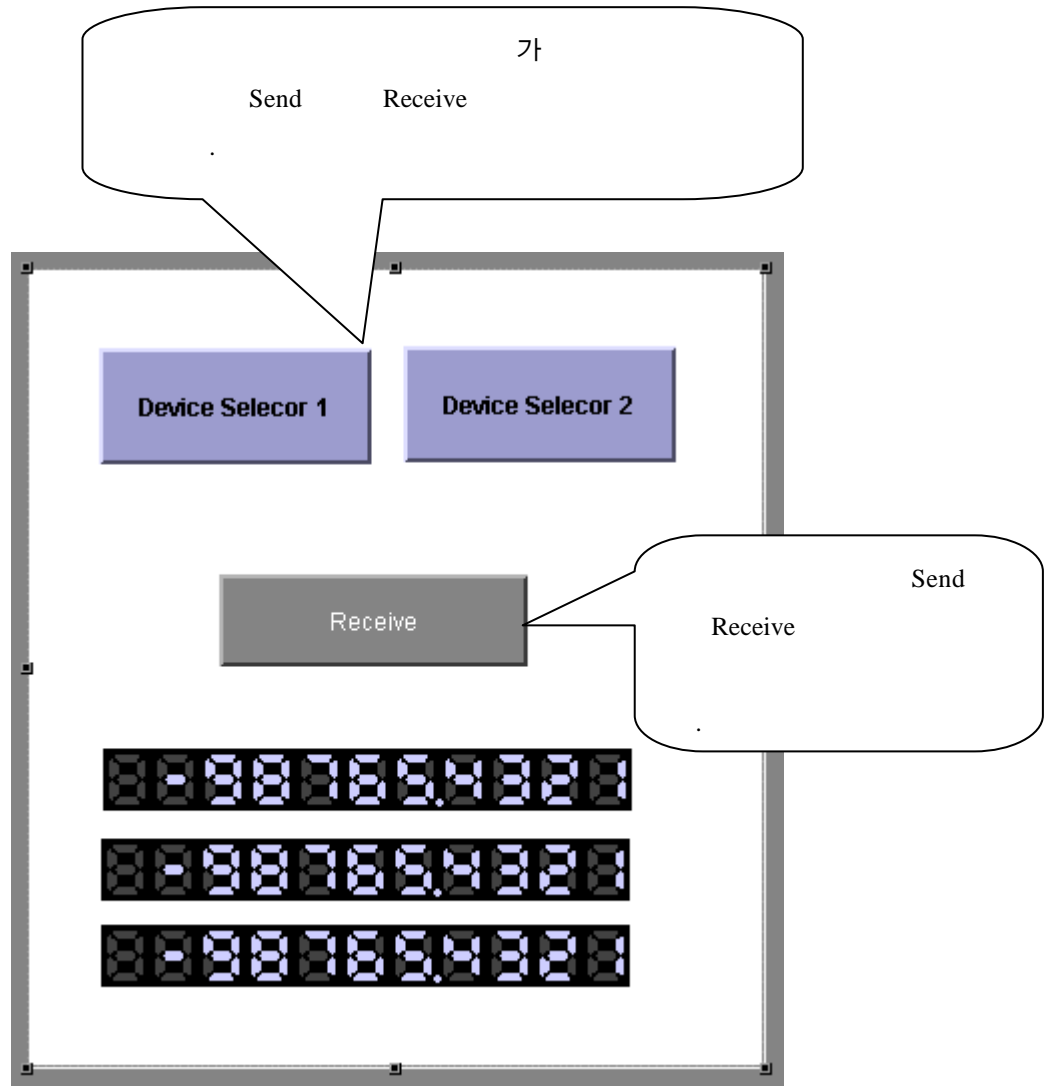
## [ 3.10.2 DeviceDynamicSelector Property ]

- Expand to Whole window :
- Expand to Window width :
- Expand to Window height :

### 4.3 DeviceSelector

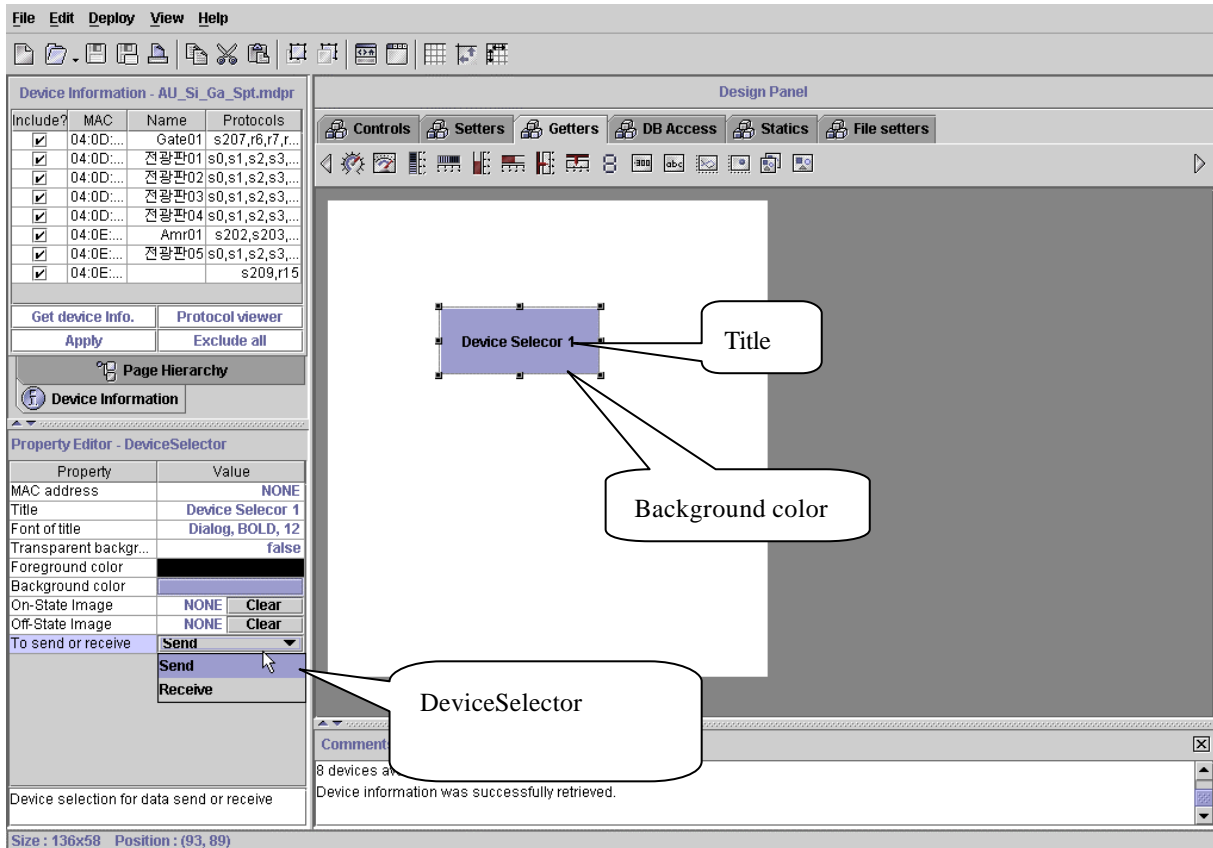
(1) DeviceSelector

Applet      Application      , Admin      id



[ 3.11.1 DeviceSelector ]

## (2) Property



### [ 3.11.2 DeviceSelector Property ]

- MAC address : MAC address , Admin

가 MAC Address .

MAC address 가 .

“00:00:01” .

- Transparent background : True

.

- On-State Image: ( \*.gif, \*.jpg, \*.jpeg) .

.

- Off-State Image : ,

- To send or receive : (Send) ,

(Receive)

(Receive)

Applet, Application .

Property Receive .

#### 4.4 DataReceiveButton

(1)

Applet, Application

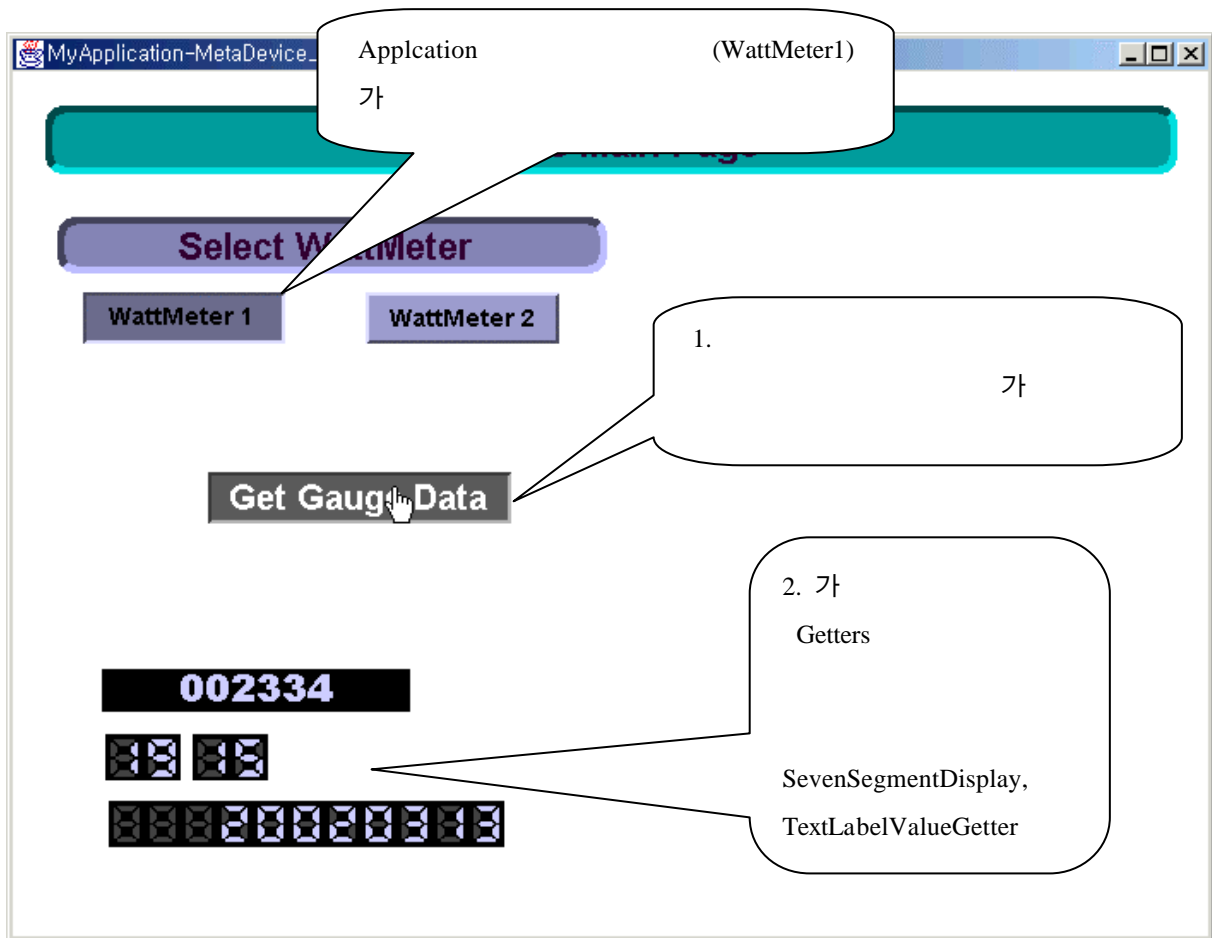
. Repeat Event

가

,

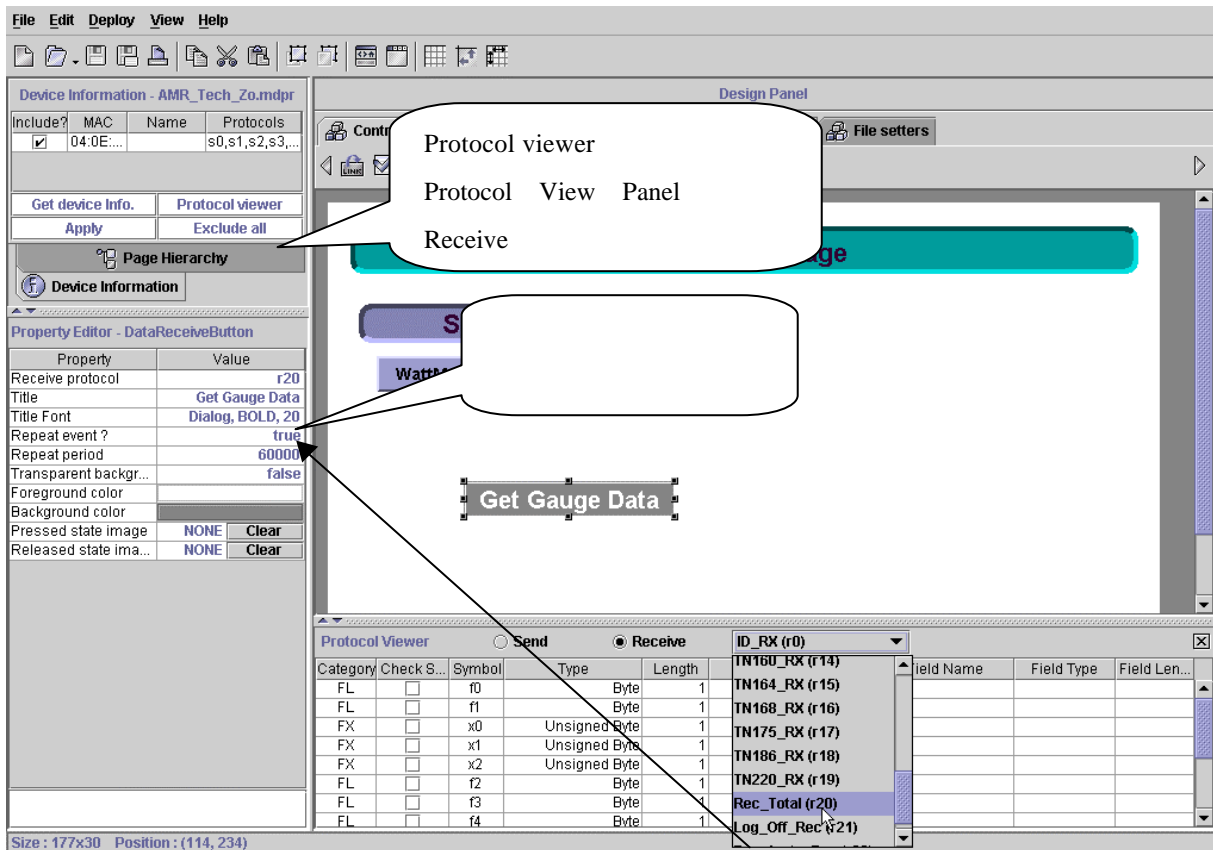
가

가



[ 3.12.1 DataReceiveButton ]

## (2) Property



### [ 3.12.2 DataReceiveButton Property ]

- Receive protocol : 가 .
- Title :
- Repeat event : true ( Repeat period : Value)  
가 , false
- Repeat period : Repeat event 가 True .

#### 4.5 DataSendButton

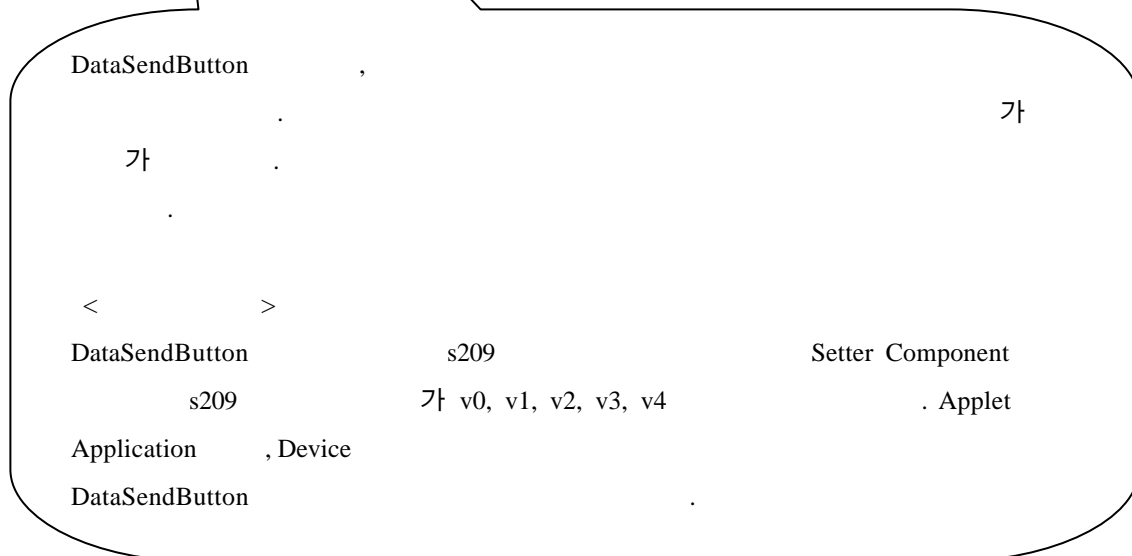
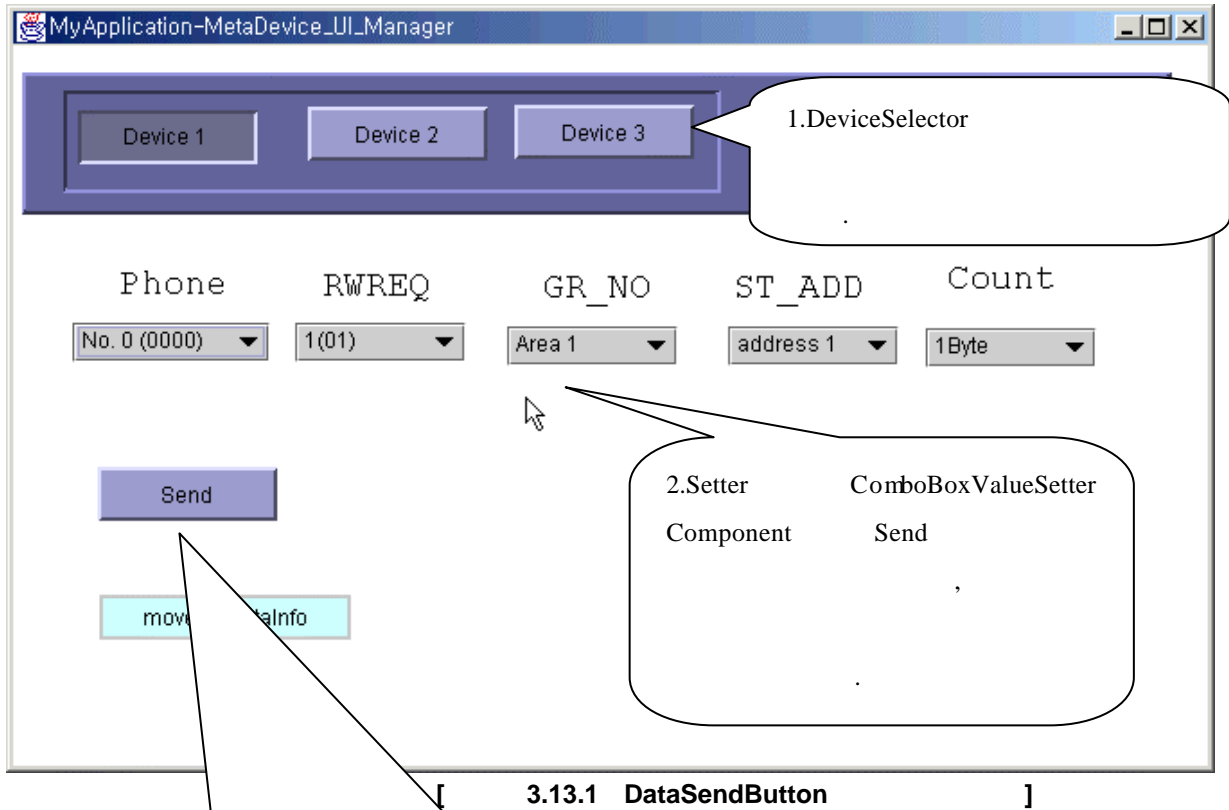
(1)

Setters Component

(Send)

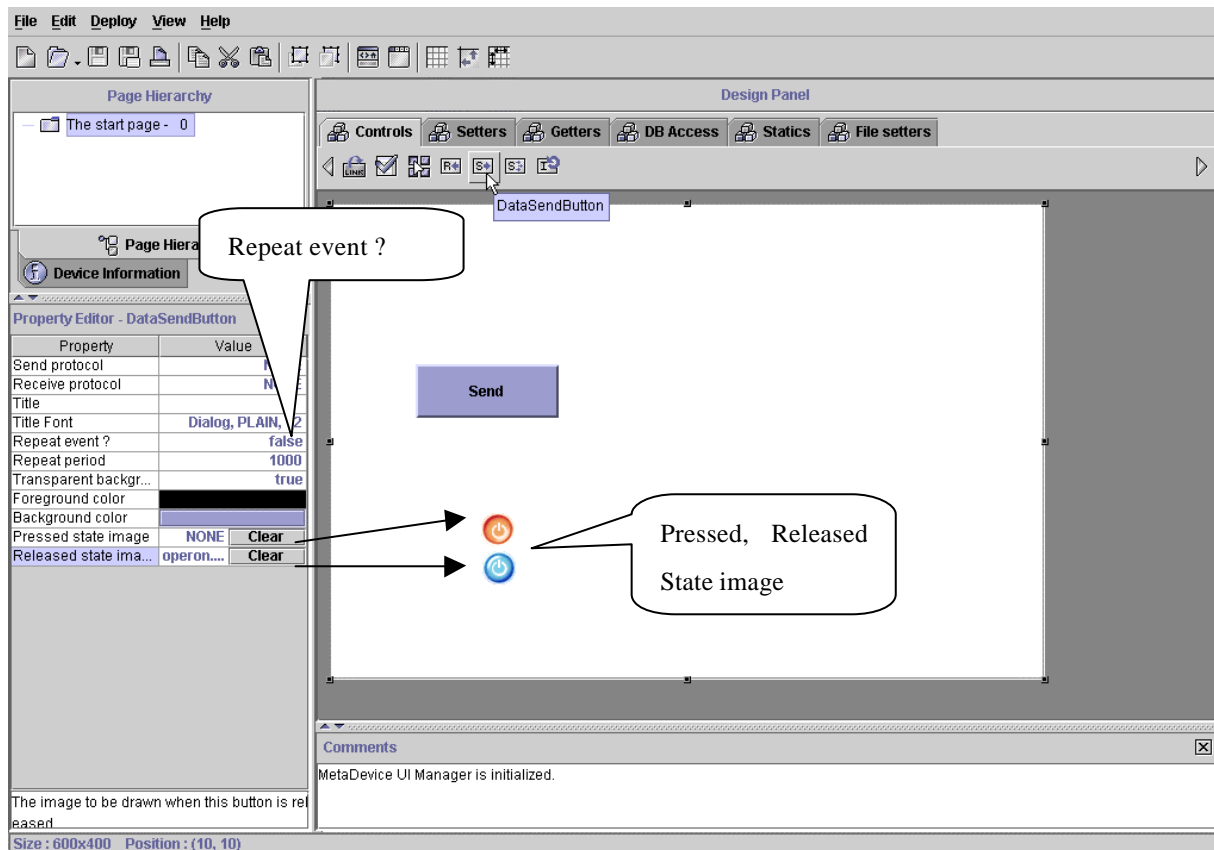
(m0, m1..

v1, v2..)





## (2) Property



### [ 3.13.2 DataSendButton Property ]

- Send protocol : .( 가 )
- Receive protocol : Send protocol .
- Repeat event : true ( Repeat period : Value )  
, false event( )
- Repeat period : Repeat event 가 True (milli  
Second) event .
- Transparent background : True
- Foreground Color :
- Background Color :
- Pressed State Image :
- Released state Image : 가

#### 4.6 DataMultiSendButton

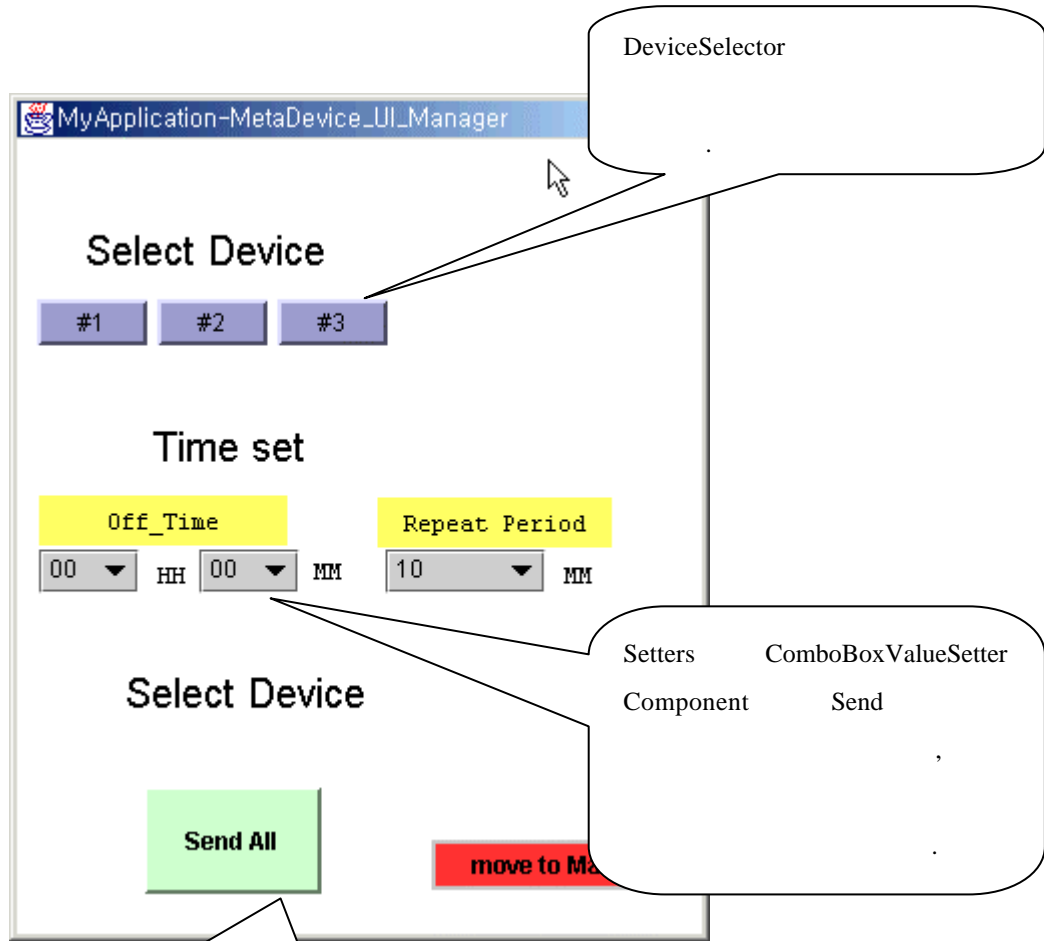
(1)

Setters Component

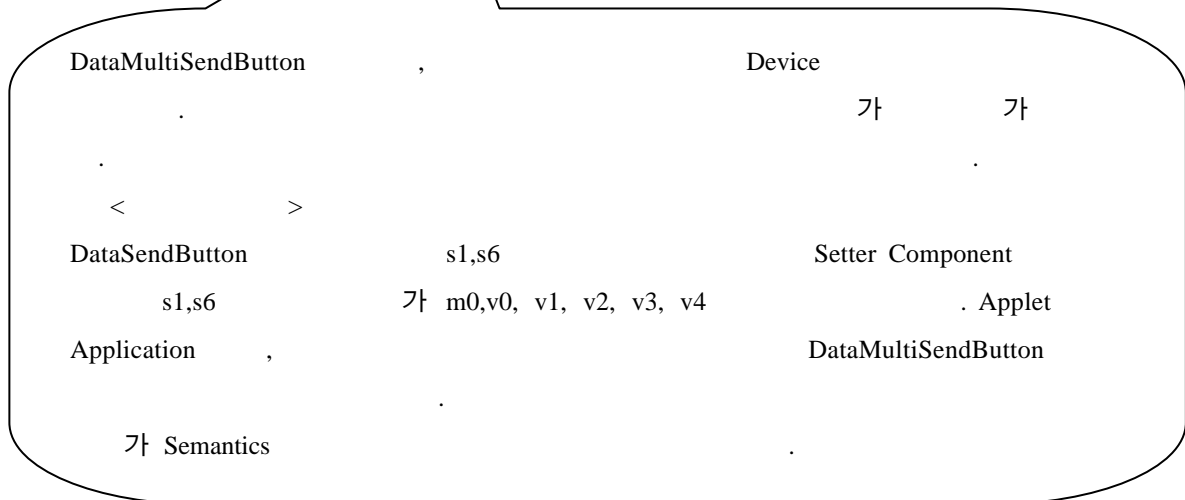
(Send)

(m0, m1..

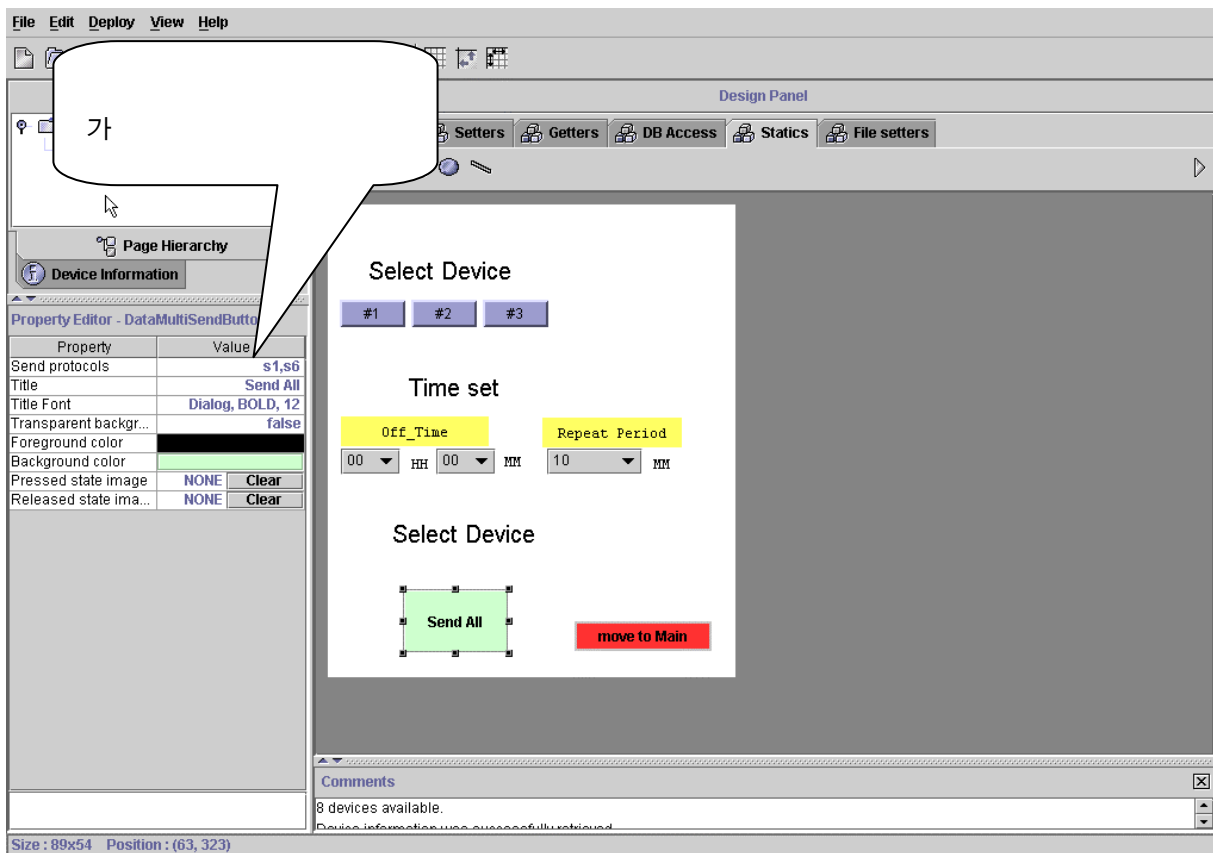
v1, v2..)



[ 3.14.1 DataMultiSendButton ]



## (2) Property



### [ 3.14.2 DataMultiSendButton Property ]

- Send protocol : .( 가 )
- Pressed State Image :
- Released state Image : 가

#### 4.7 InstantDataSendButton

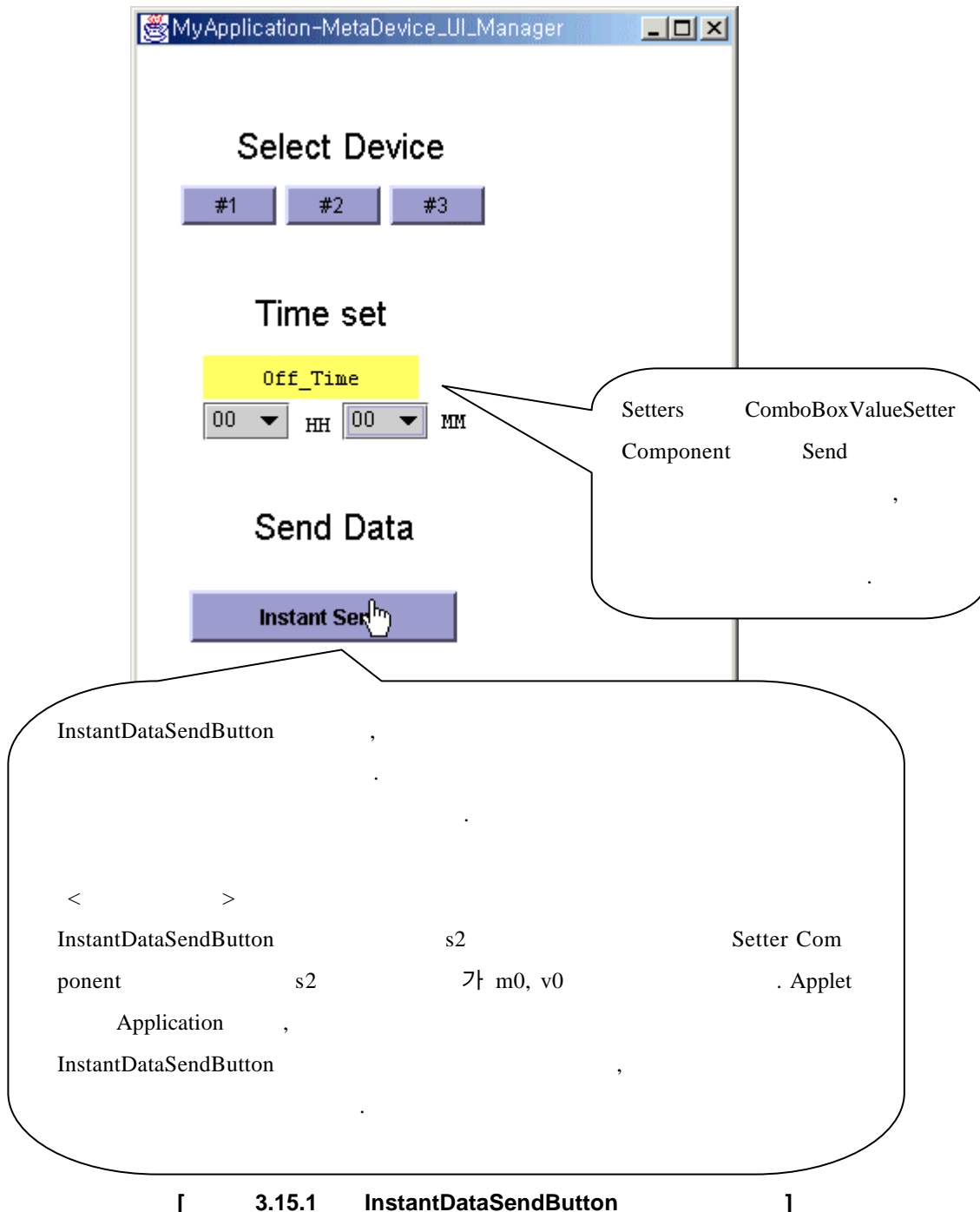
(1)

Setters Component

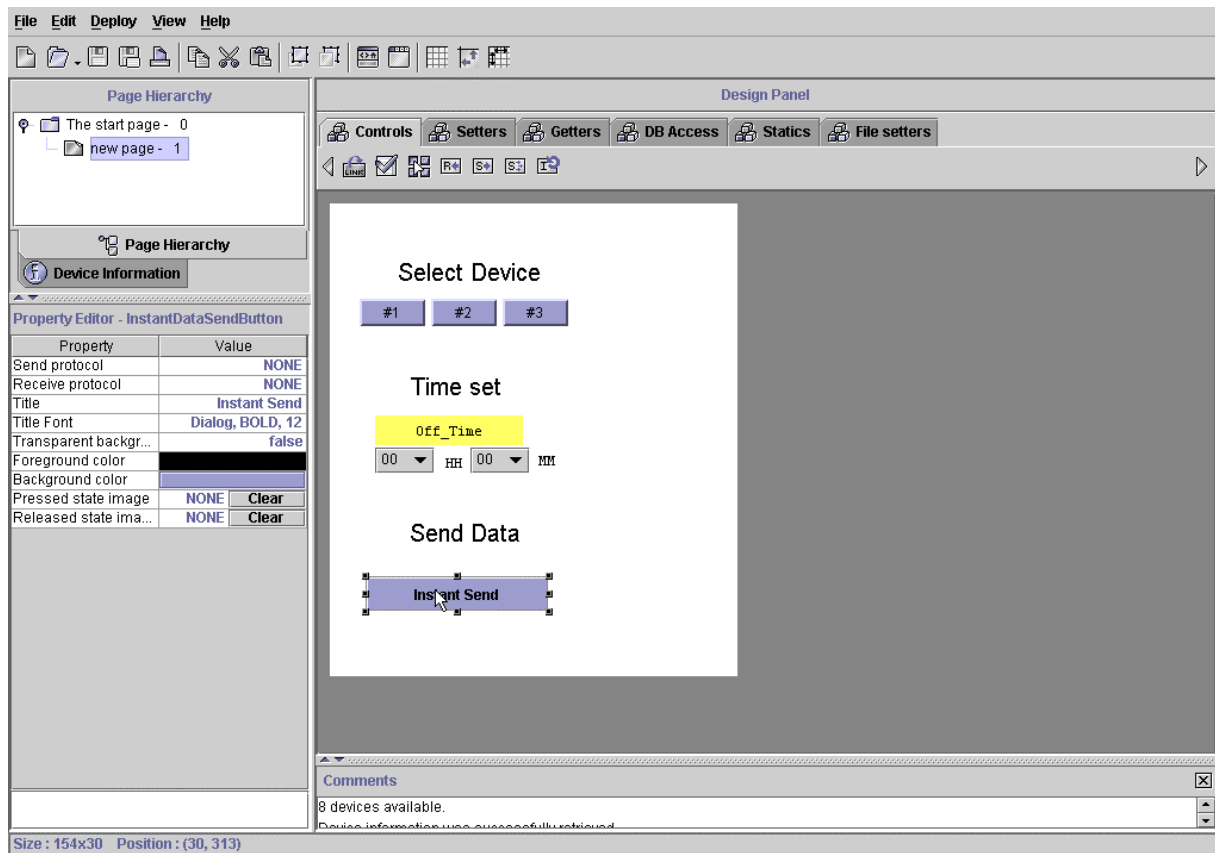
(Send)

(m0, m1..

v1, v2..)



## (2) Property



### [ 3.15.2 InstantDataSendButton Property ]

- Send protocol : .( 가 )
- Receive protocol : .(Receive Data가  
NONE )
- Pressed State Image :
- Released state Image : 가

## 5. Setters Component Group

### (1) Setters Component ?

Applet      Application

가

### (2) Setters Component

- ComboBoxValueSetter :

가

- SpinValueSetter : up/down

- Rotary Switch :

- VerticalSliderSwitch :

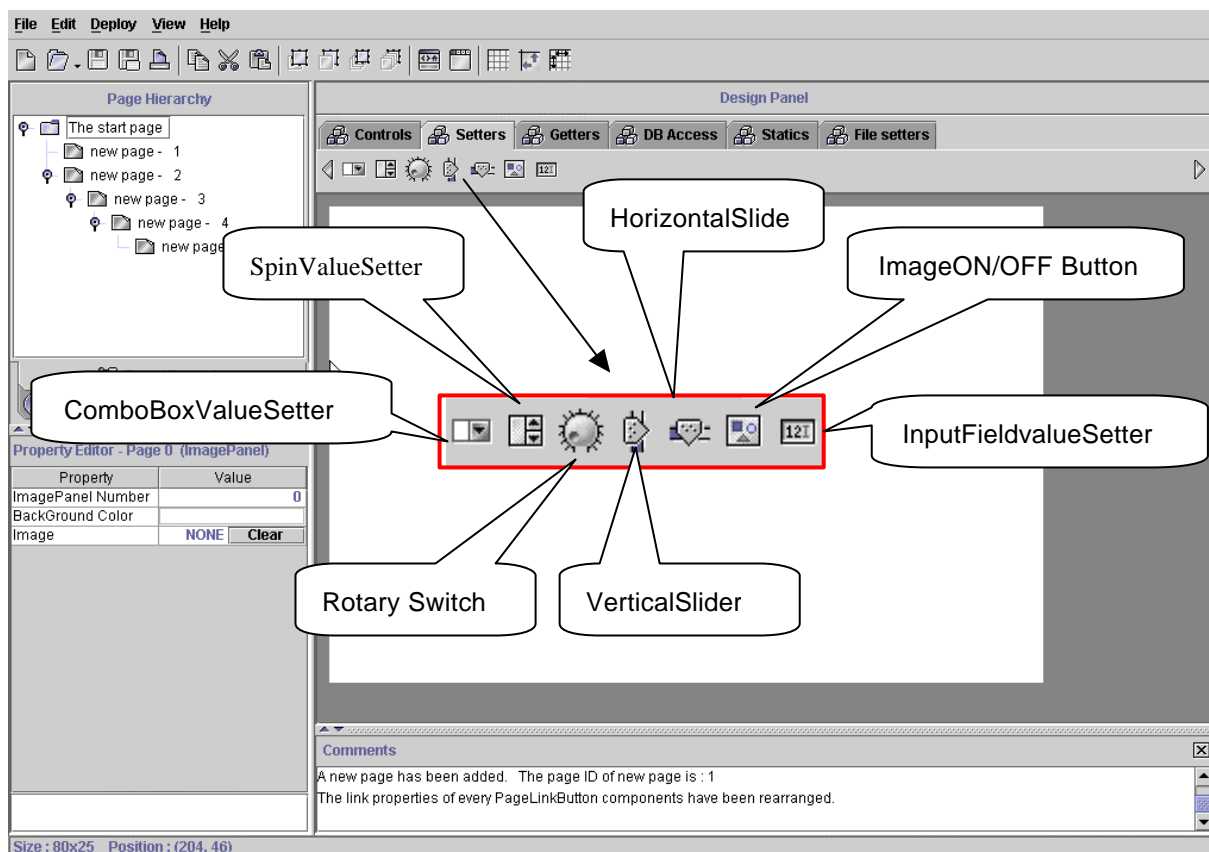
- HorizontalSliderSwitch :

- ImageON/OFF Button :

0

1

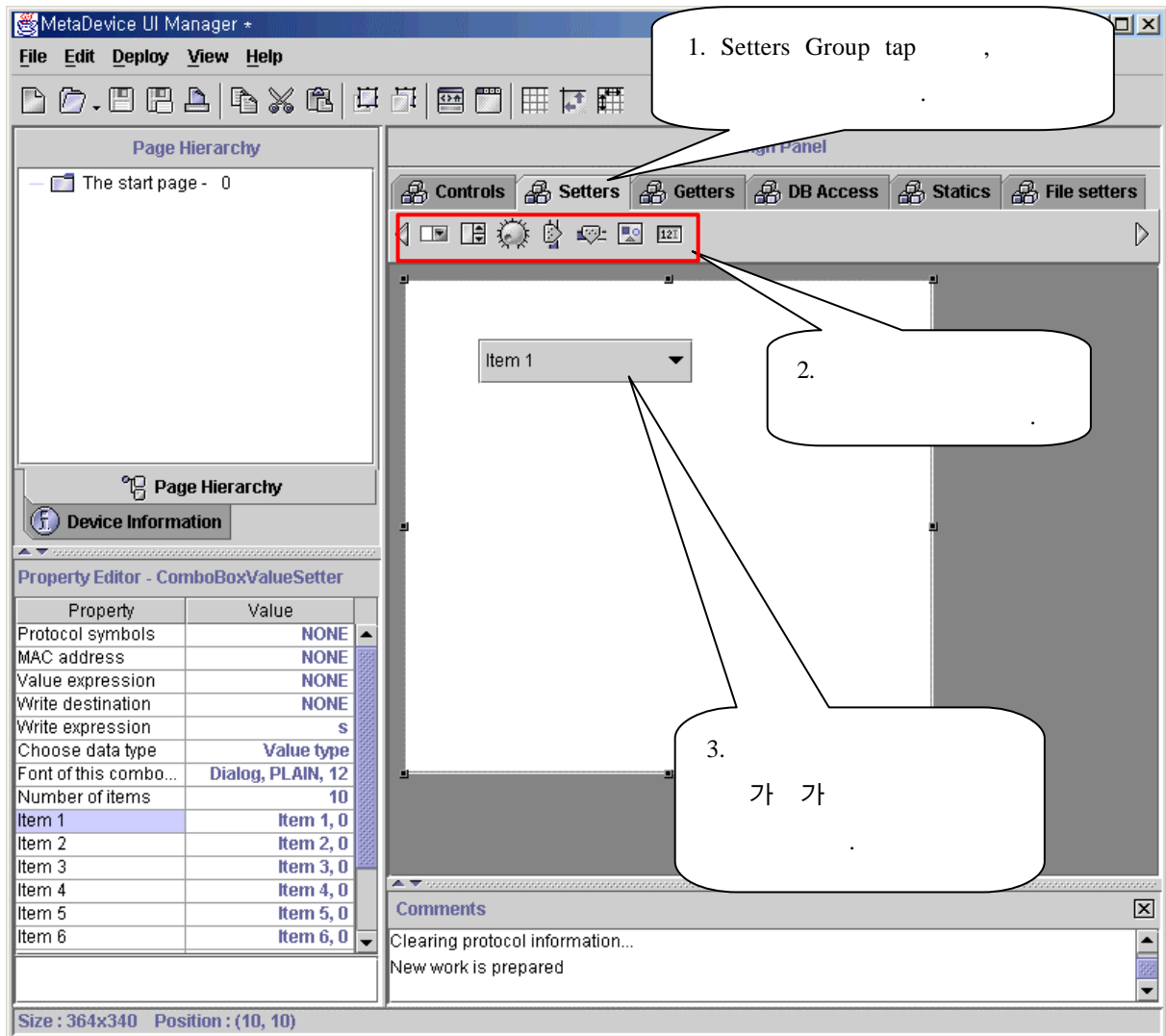
- InputFieldvalueSetter : type



[ 3.16.1 Setters Component ]

### (3) Setters Component UI 가

- Design Panel Setters .
- Setters Component DesignPanel 가
- Property .



[ 3.16.2 ComboBoxValueSetter 가 ]

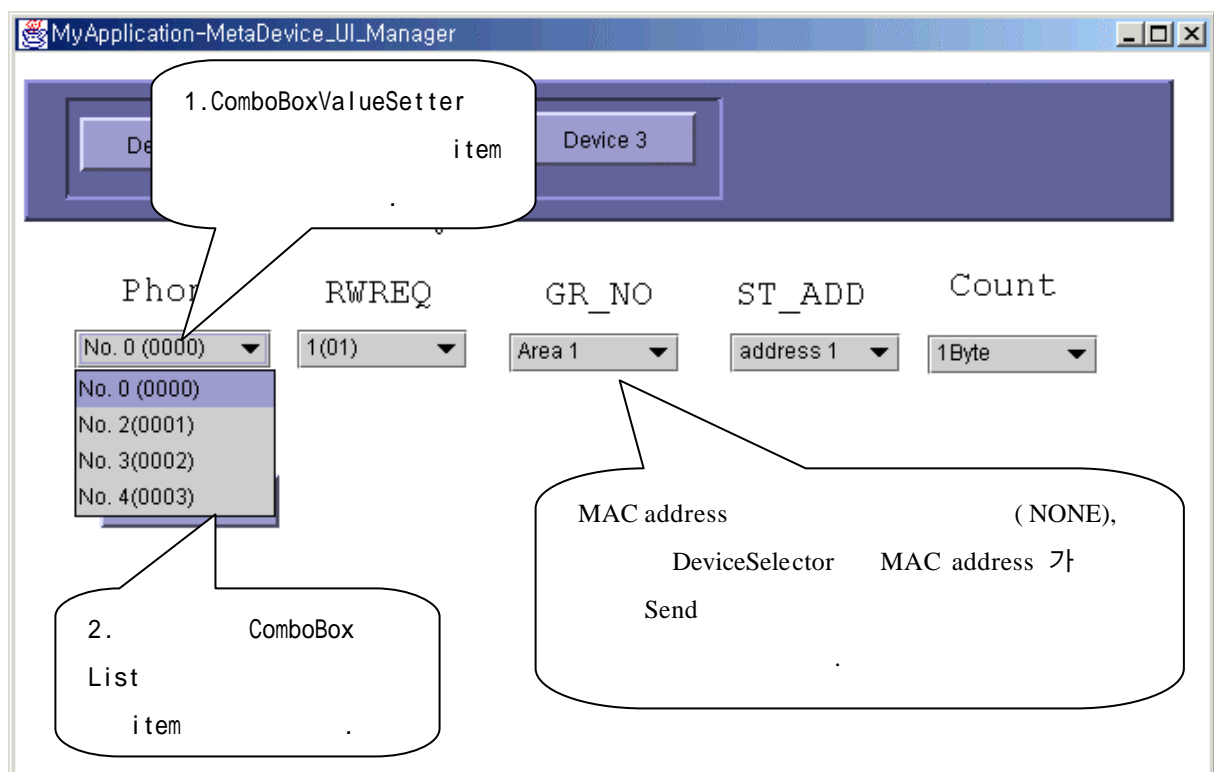
## 5.1 ComboBoxValueSetter

### (1) ComboBoxValueSetter

|                  |           |   |               |
|------------------|-----------|---|---------------|
| Choose Data Type | Text Type | , | V0, v1, v2 .. |
| (Text Value)     | .         |   |               |

Choose Data Type      Value Type      ,      m0, m1, m2 ..  
(integer, short, long, double.. Value Type)

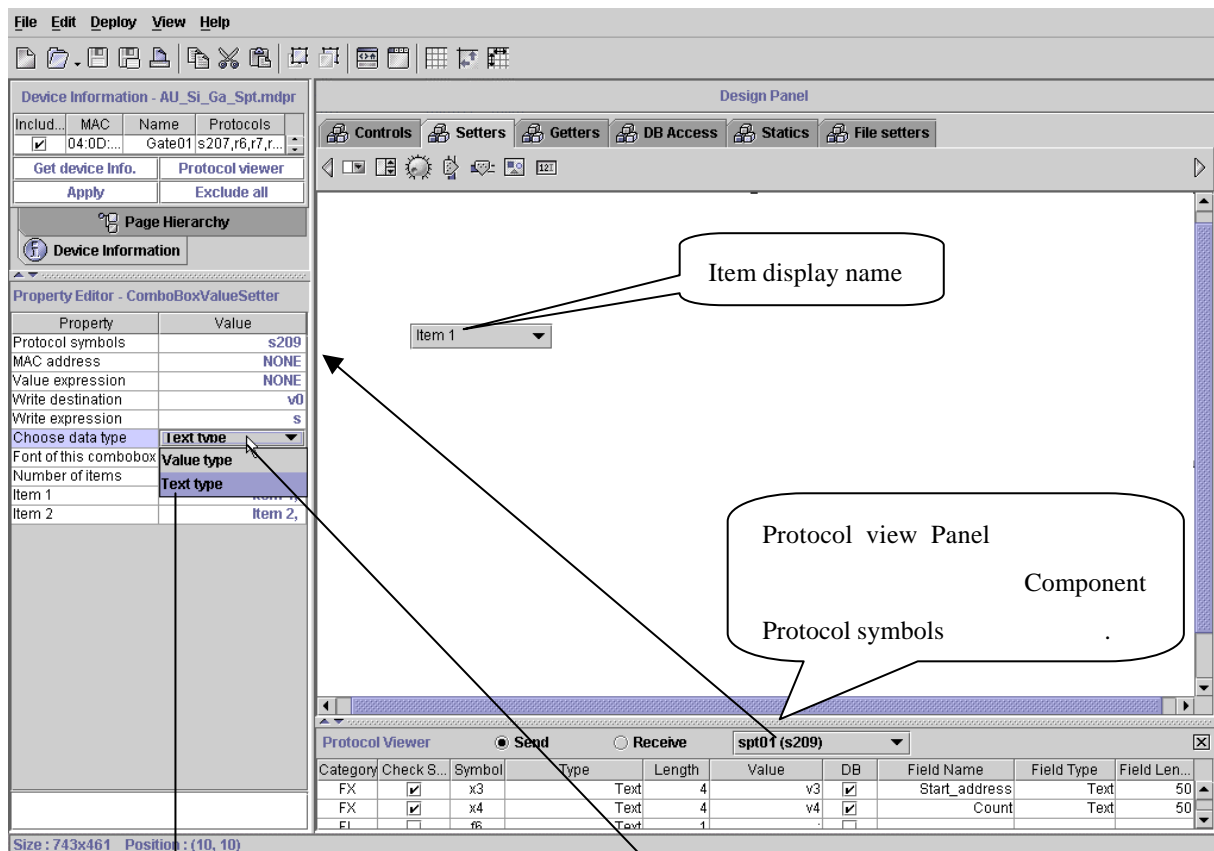
```
ComboBoxValueSetter item() .
```



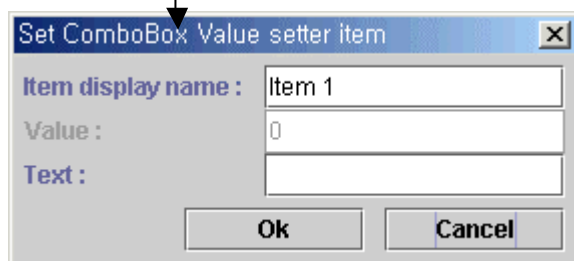
### [ 3.17.1 ComboBoxValueSetter ]



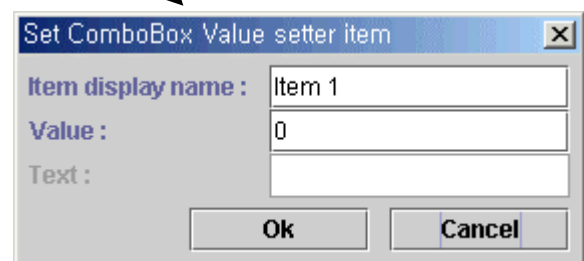
(2) ComboBoxValueSetter Property



[ 3.17.2 ComboBoxValueSetter Property ]



[ 3.17.3 Text Type ]



[ 3.17.4 Value Type ]

## MetaDevice

-Protocol symbols :

-MAC address :

MAC

( NONE ), Applet

Application

DeviceSelector

MAC

-Value expression : Setters Component

-Write destination :

-Write expression : S

IS

가

s :

IS :

“!”

(not)

v0,v1..

-Choose data type : ComboBox

-Font of this comboBoxvalueSetter : ComboBox

Text type :

Value Type :

-Number of items : ComboBox

Item

item

가

-item1.. : choose data type

item

가

Text type

[ 3.17.3]

DisplayName

Text

Value type

[ 3.17.4]

DisplayName

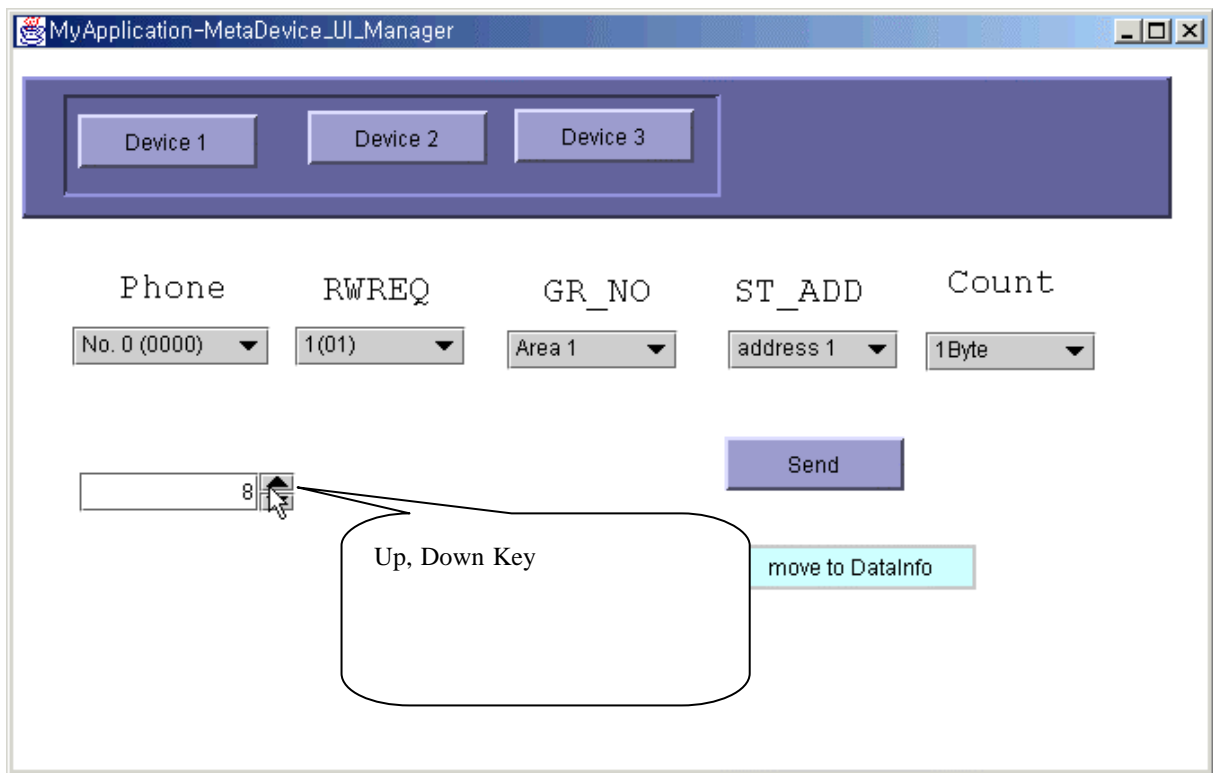
Value

## 5.2 SpinValueSetter

(1) spinValueSetter

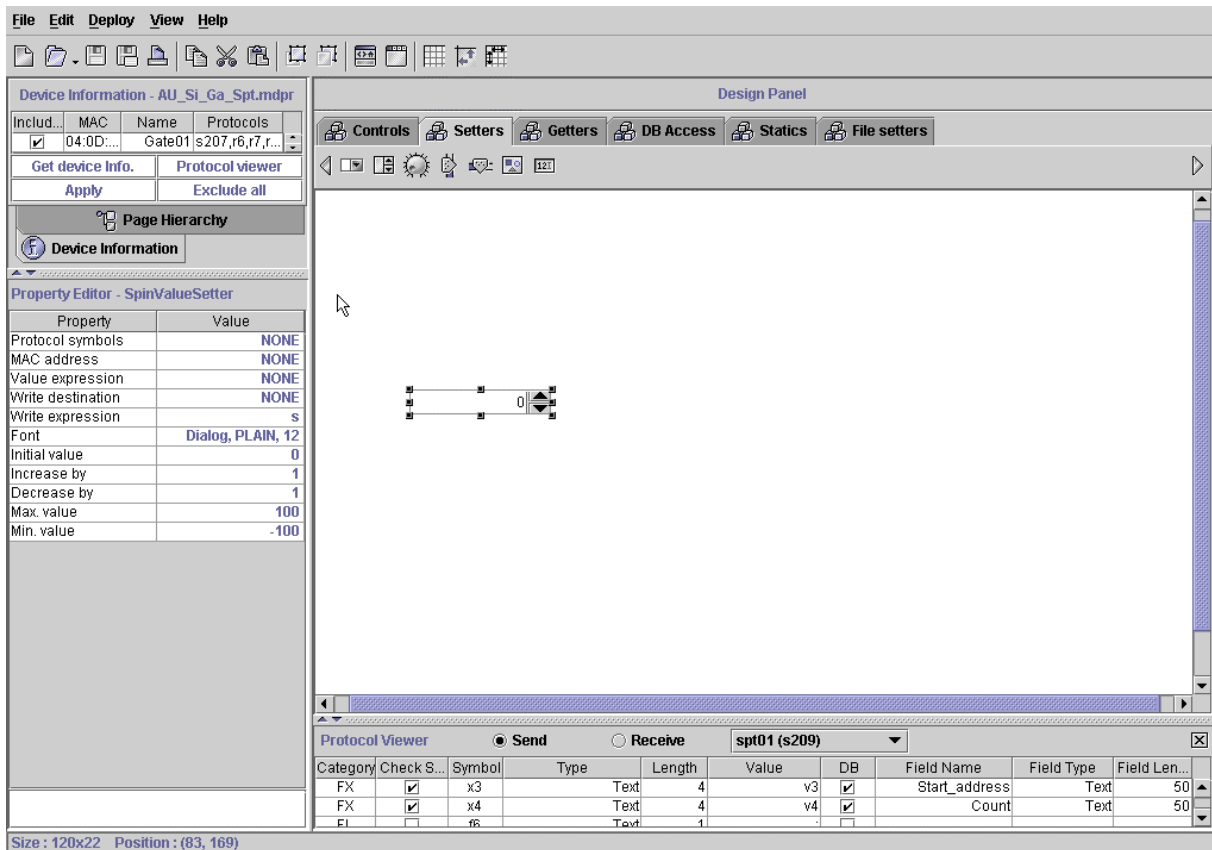
Up, Down key

m0, m1, .. Max Min



[ 3.18.1 SpinValueSetter ]

## (2) Property

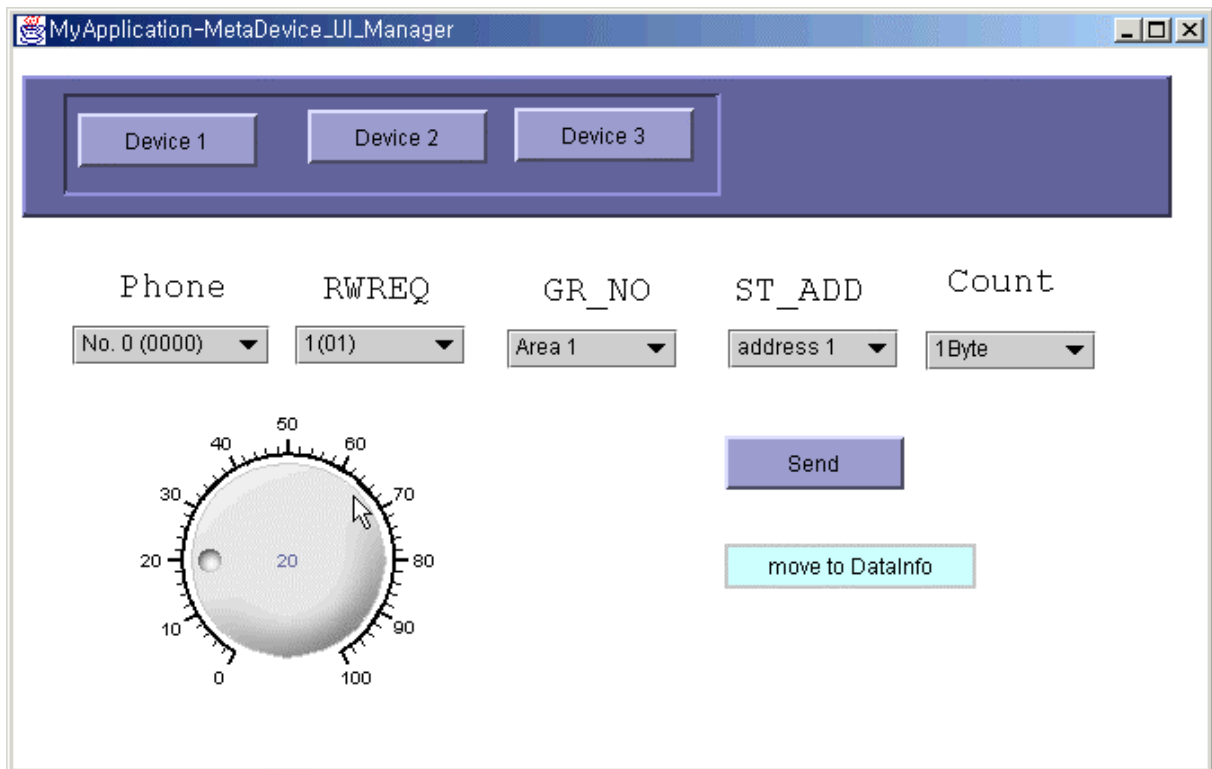


## [ 3.18.2 SpinValueSetter Property ]

- Font :
- Initial Value :
- Increase by :   가
- Decrease by :
- Max value :
- Min value :

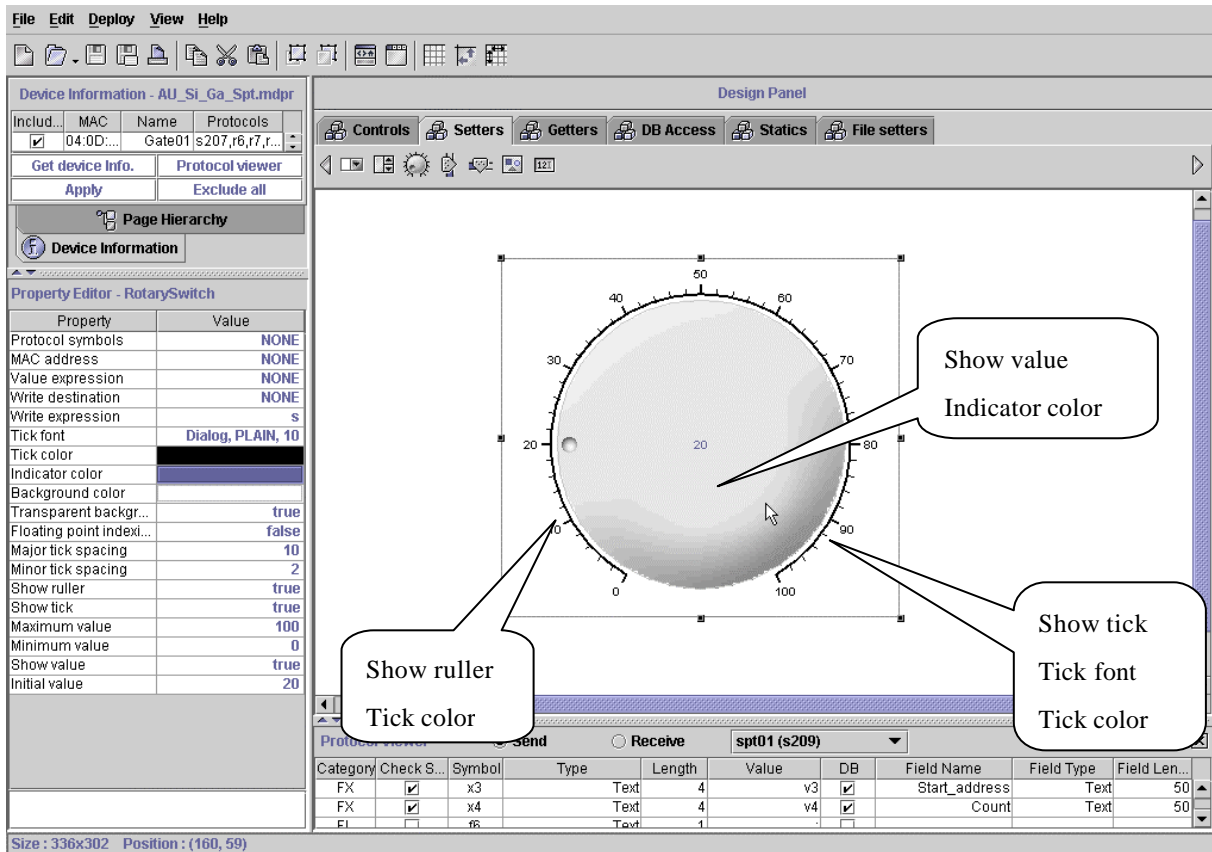
### 5.3 RotarySwitch

(1)



[ 3.19.1 RotarySwitch ]

## (2) Property



## [ 3.19.2 RotarySwitch Property ]

-Floating point indexing : True

-Major tick spacing :

-Minor tick spacing :

-show ruller : True

-show tick : True

Major tick Spacing

가

-Maximum value :

-Minimum value :

-show value : (indicator) 가

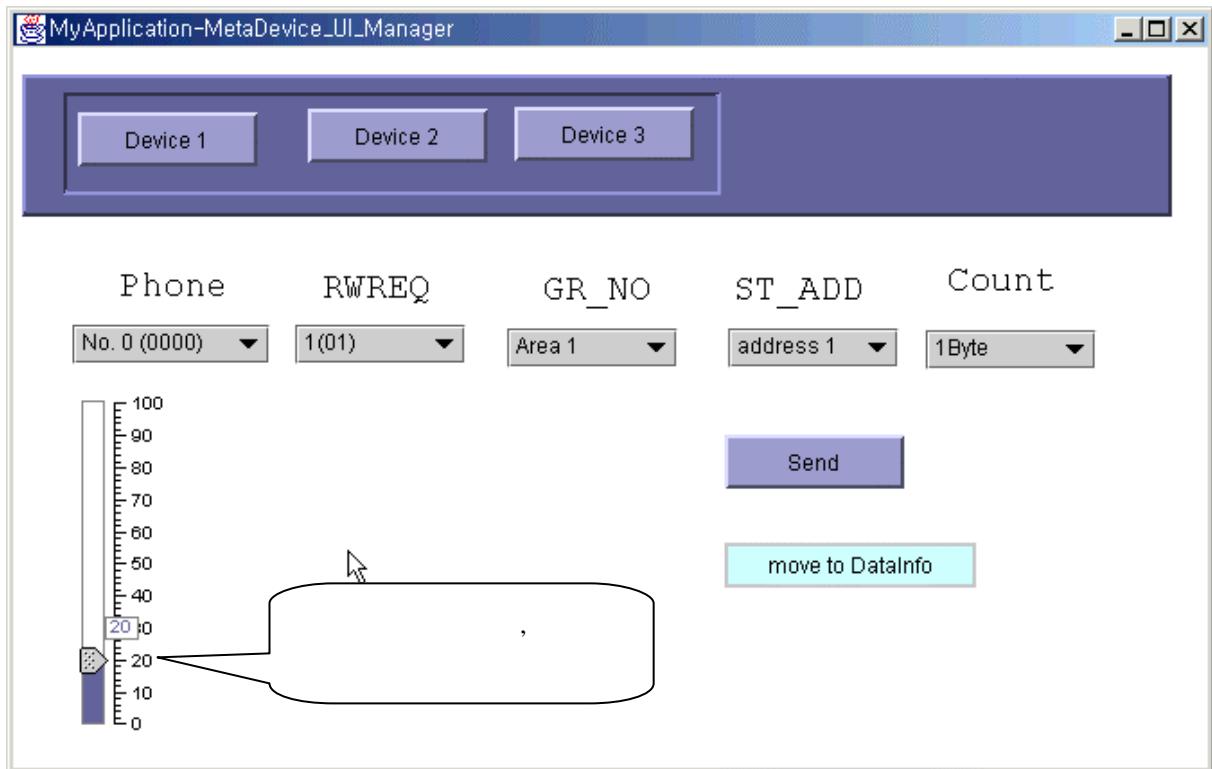
-Initial value :

## 5.4 VerticalSliderSwitch

(1)

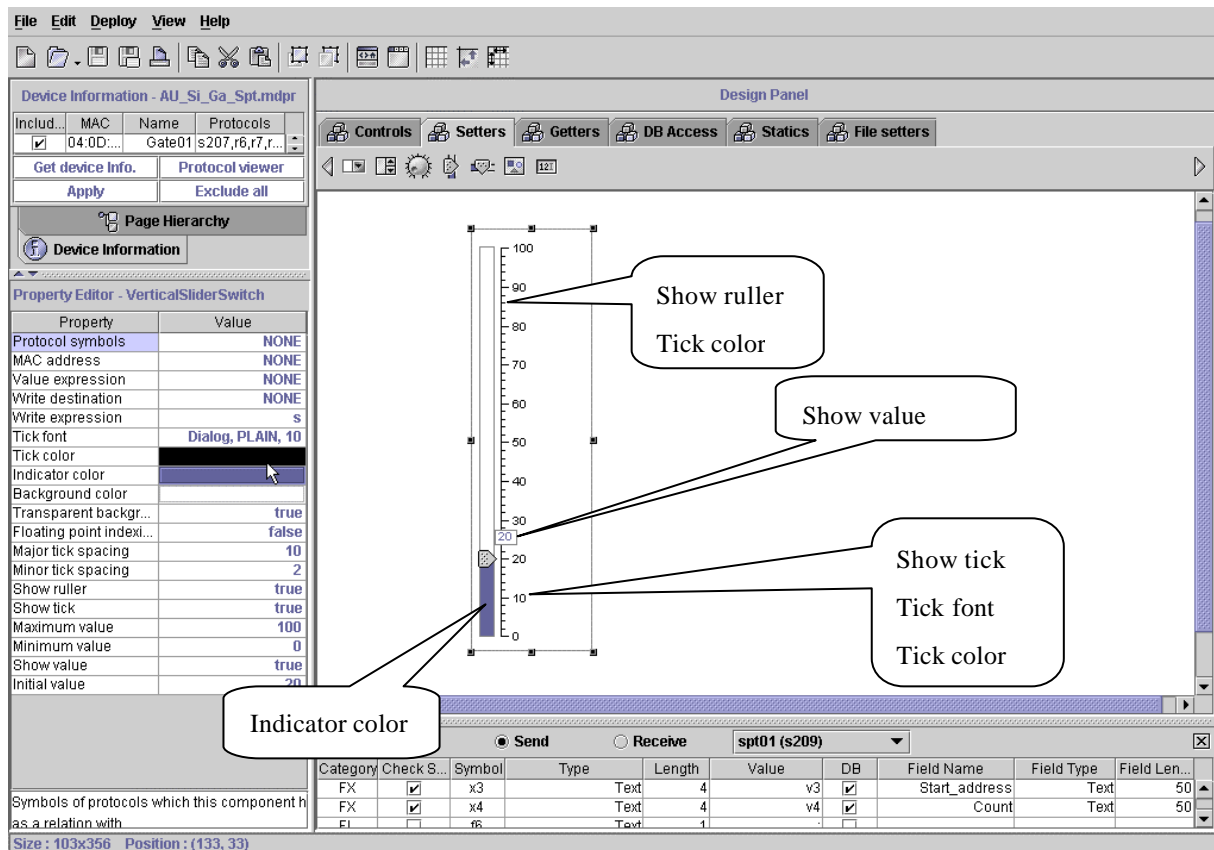
,

(m0, m1..)



[ 3.20.1 VerticalSliderswitch ]

## (2) Property



### [ 3.20.2 VerticalSliderSwitch Property ]

-Floating point indexing : True

-show ruller : True

-show tick : True

Major tick Spacing

가

-Maximum value :

-Minimum value :

-show value : True

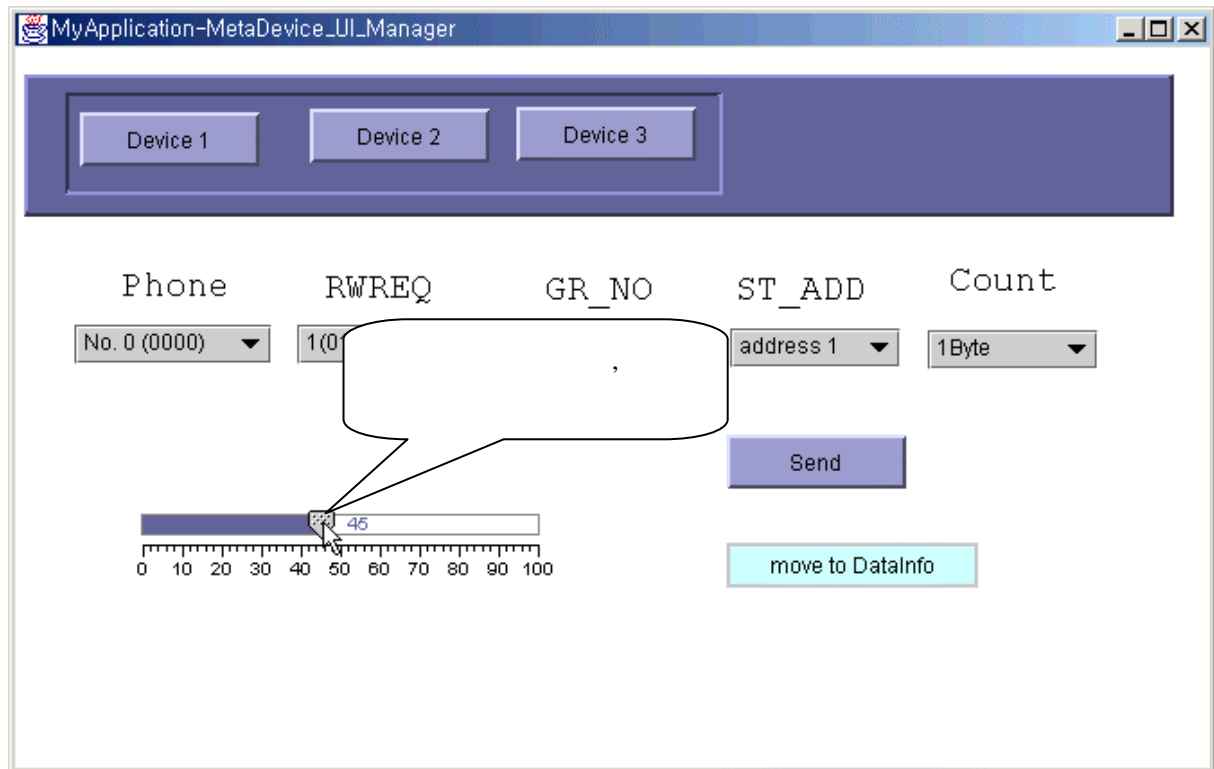
-Initial value :



## 5.5 HorizontalSliderSwitch

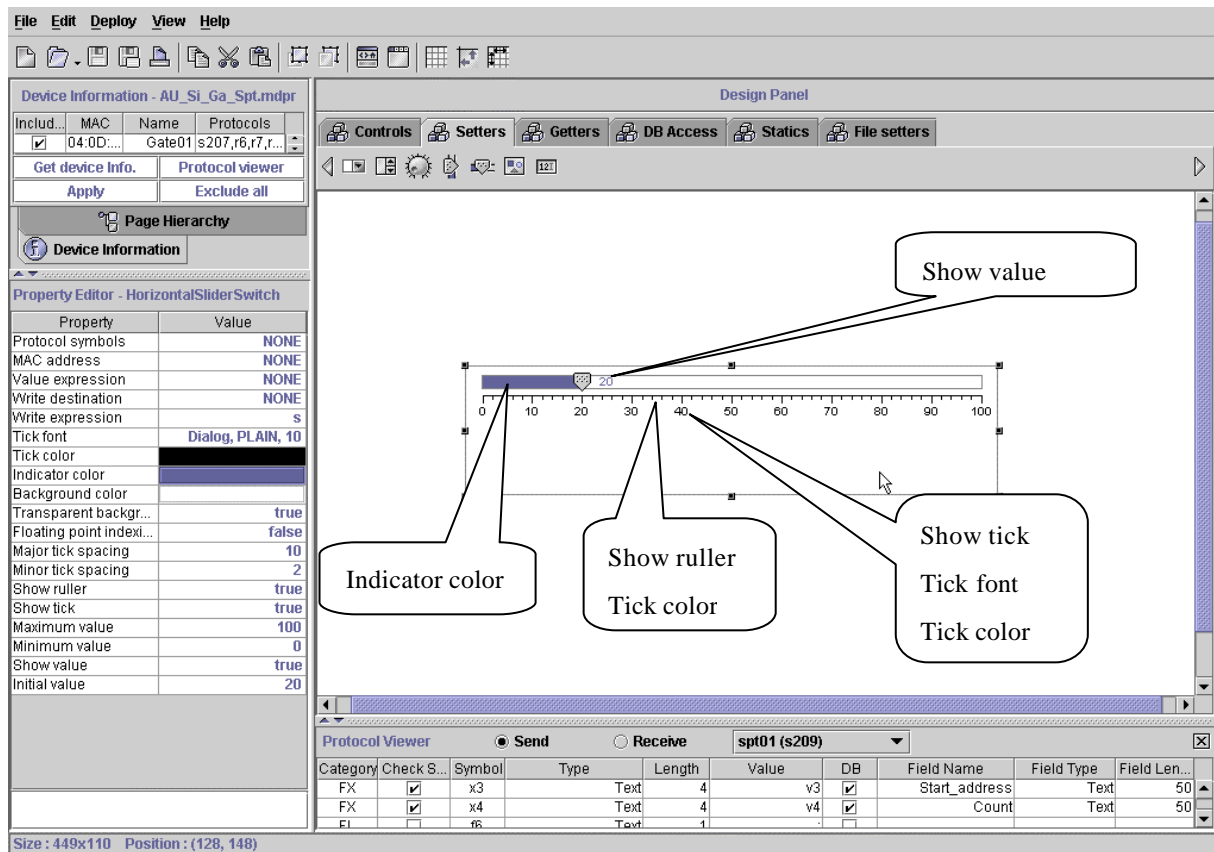
(1)

, (m0, m1 ..) .



[ 3.21.1 HorizontalSliderSwitch ]

## (2) Property



### [ 3.21.2 HorizontalSliderSwitch Property ]

-Floating point indexing : True

-Major tick spacing :

-Miner tick spacing :

-show ruller : True

-show tick : True

Major tick Spacing

가

-Maximum value :

-Minimum value :

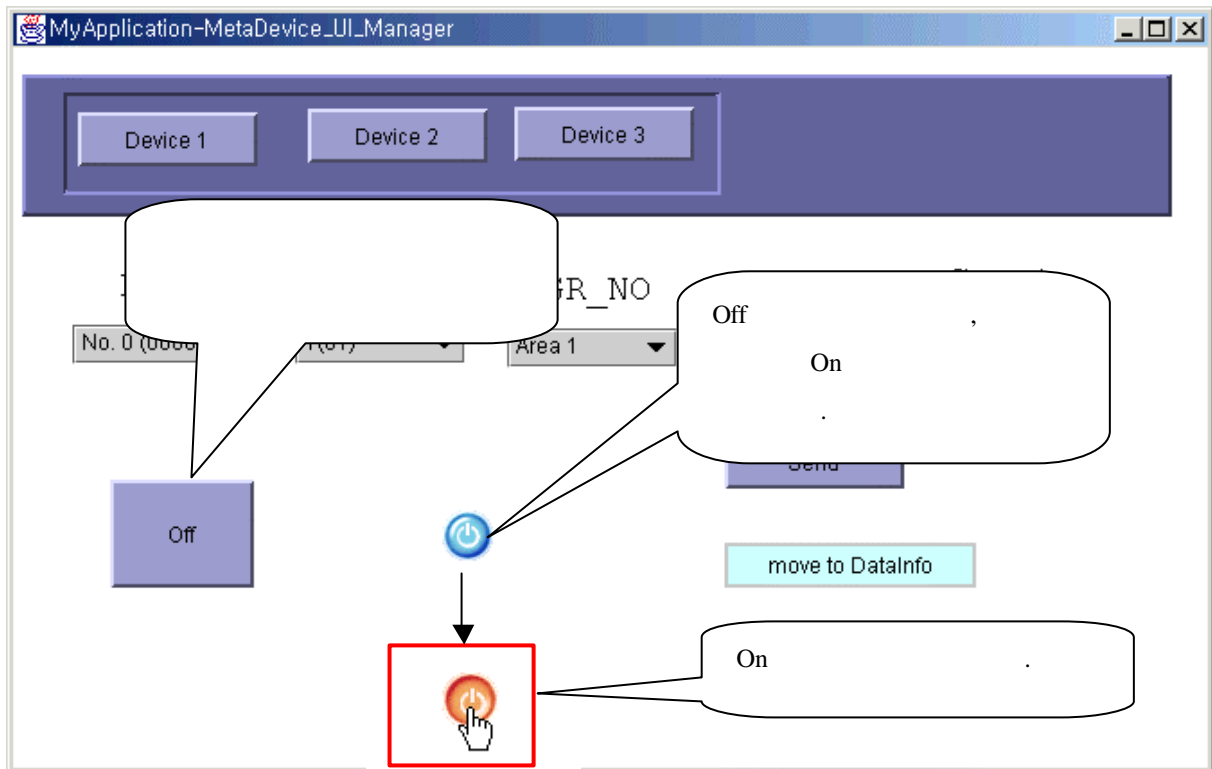
-show value : True

-Initial value :

## 5.6. ImageOnOffButton

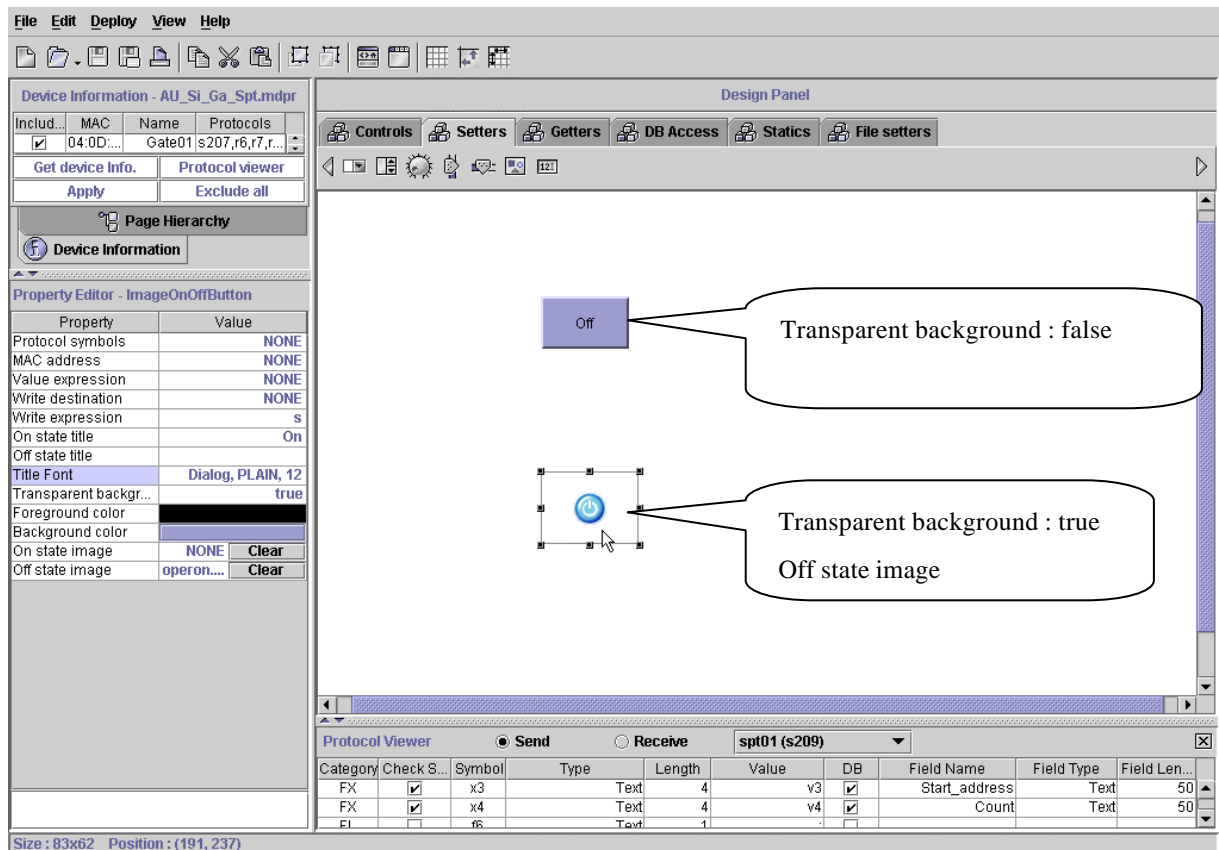
(1) ImageOnOffButton

(m0, m1 ..)      0      1



[ 3.22.1 ImageOnOffButton ]

## (2) Property



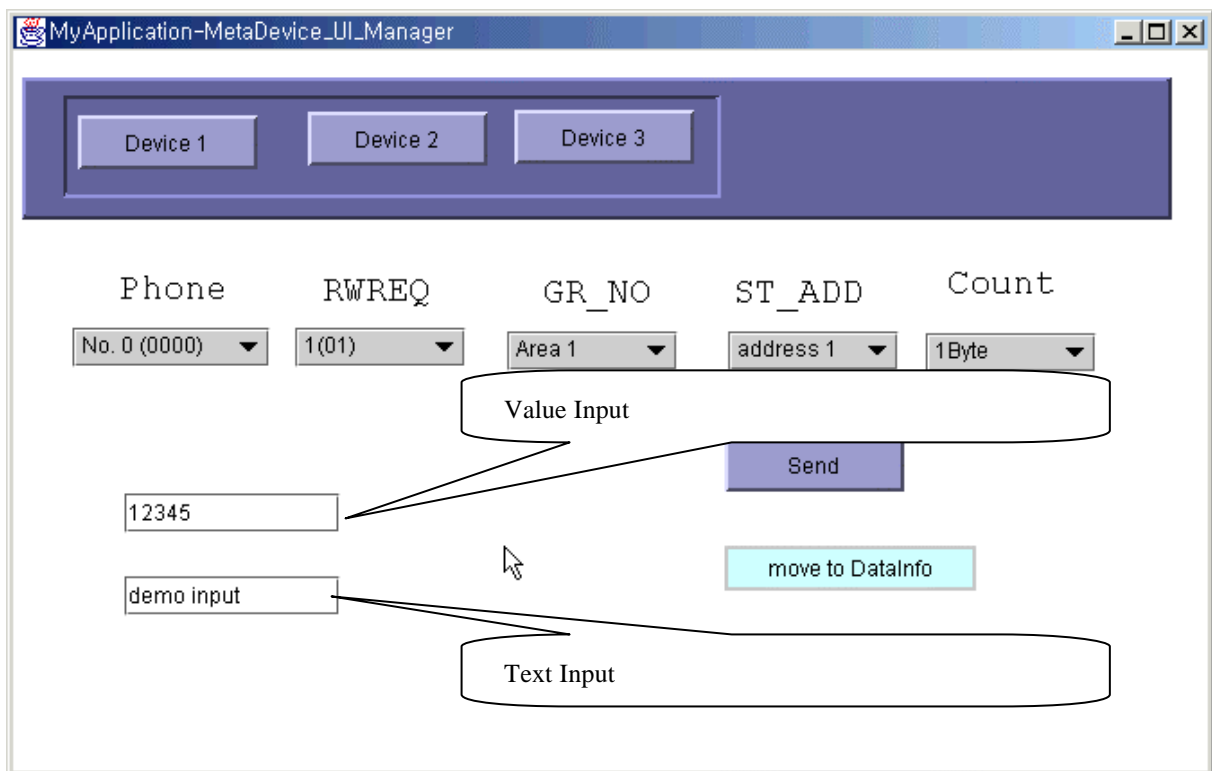
## [ 3.22.2 ImageOnOffButton Property ]

- On State Title : On
- Off State Title : Off
- Title Font :
- Foreground color :
- Background color :
- On state image : On
- Off state image : Off

## 5.7 InputFieldValueSetter

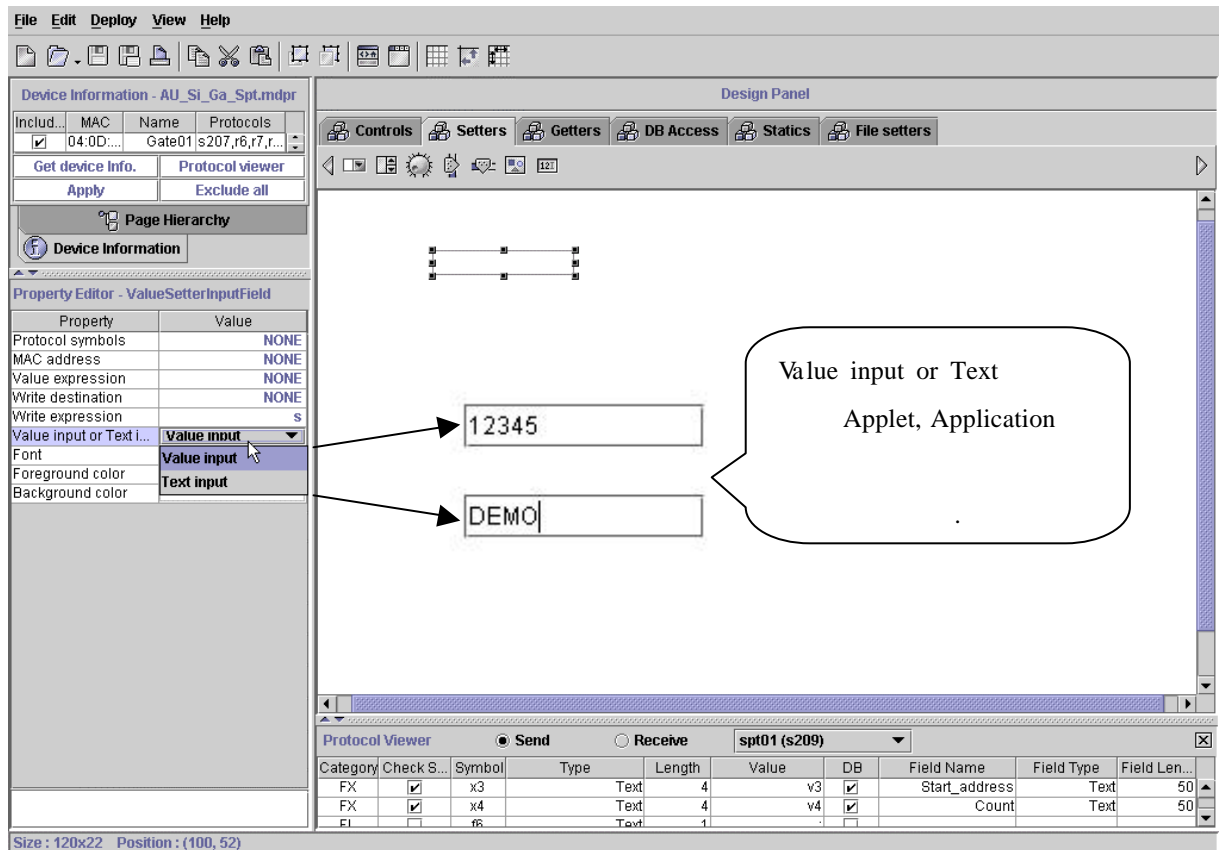
(1)

Data Type (Text input) , (Value input)  
 ( Text input : v0, v1 .. value input : m0, m1 ..)



[ 3.23.1 InputFieldValueSetter ]

## (2) Property



## [ 3.23.2 InputFieldValueSetter Property ]

- Value input or Text input: Value input

Text input

## 6. Getters Component Group

### (1) Getters Component ?

Receive

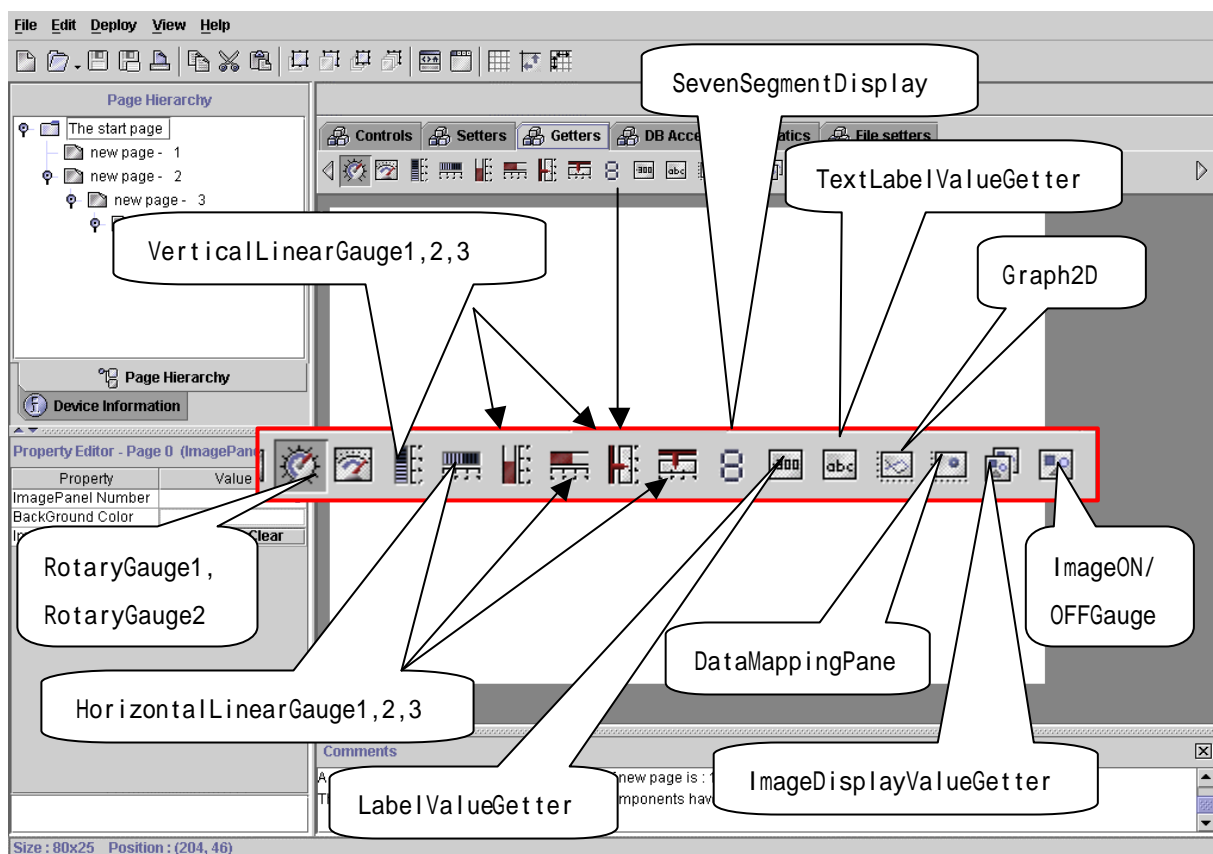
### (2) Getters Component

- RotaryGauge1, RotaryGauge2 :
- VerticalLinearGauge1,2,3 :
- HorizontalLinearGauge1,2,3 :
- SevenSegmentDisplay :
- LabelValueGetter :
- TextLabelValueGetter:
- Graph2D :
- DataMappingPanel :
- ImageDisplayValueGetter :
- ImageON/OFFGauge :

2

ON

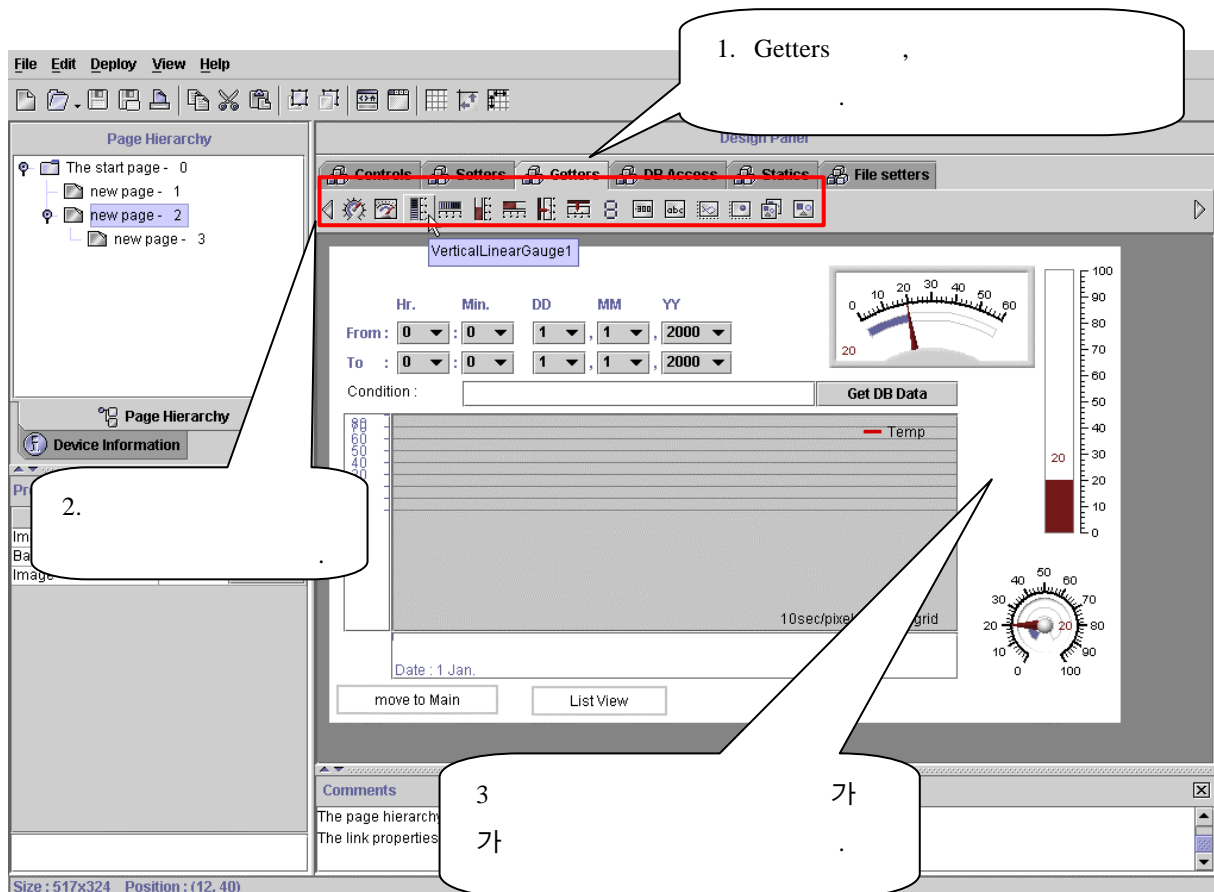
OFF



[ 3.24.1 Getters Component ]

### (3) Getters Component UI 가

- Design Panel Group tab Getters .
- Getters Component Components 가
- Property .



### [ 3.24.2 RotaryGaug1,2 가 ]



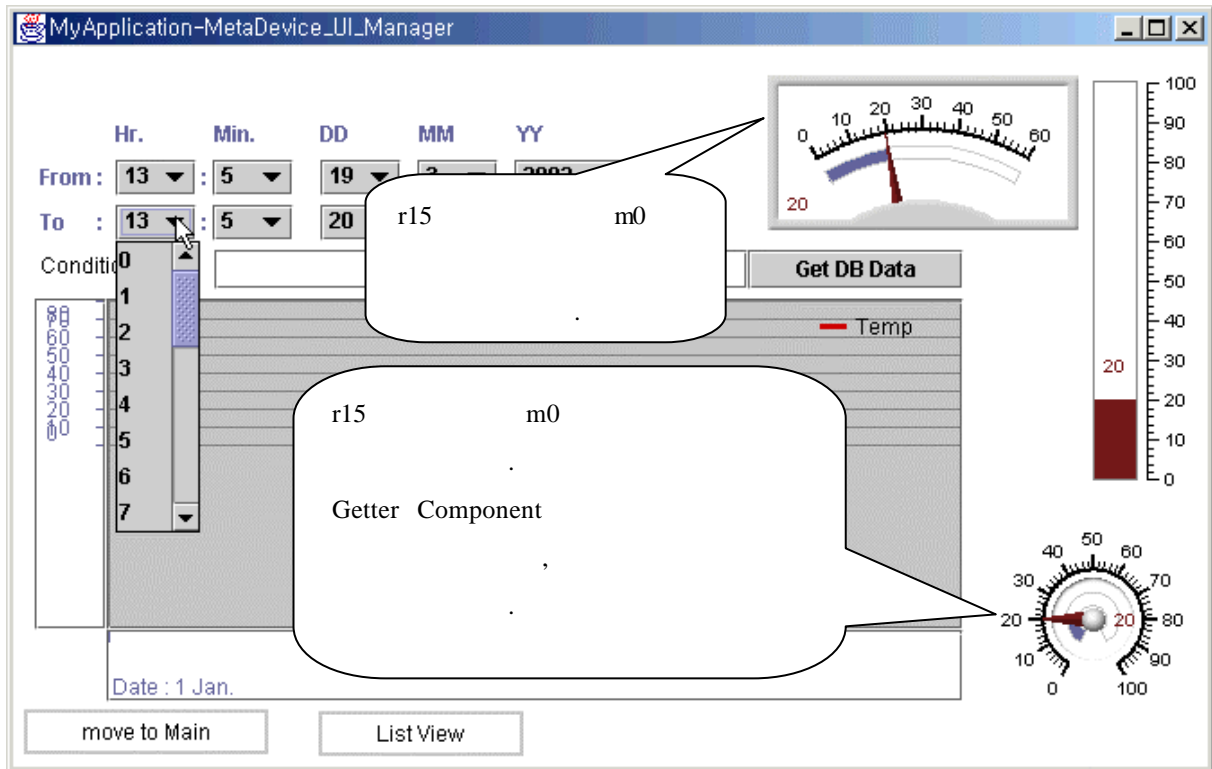
## 6.1 RotaryGauge1, RotaryGauge2

(1)

Receive

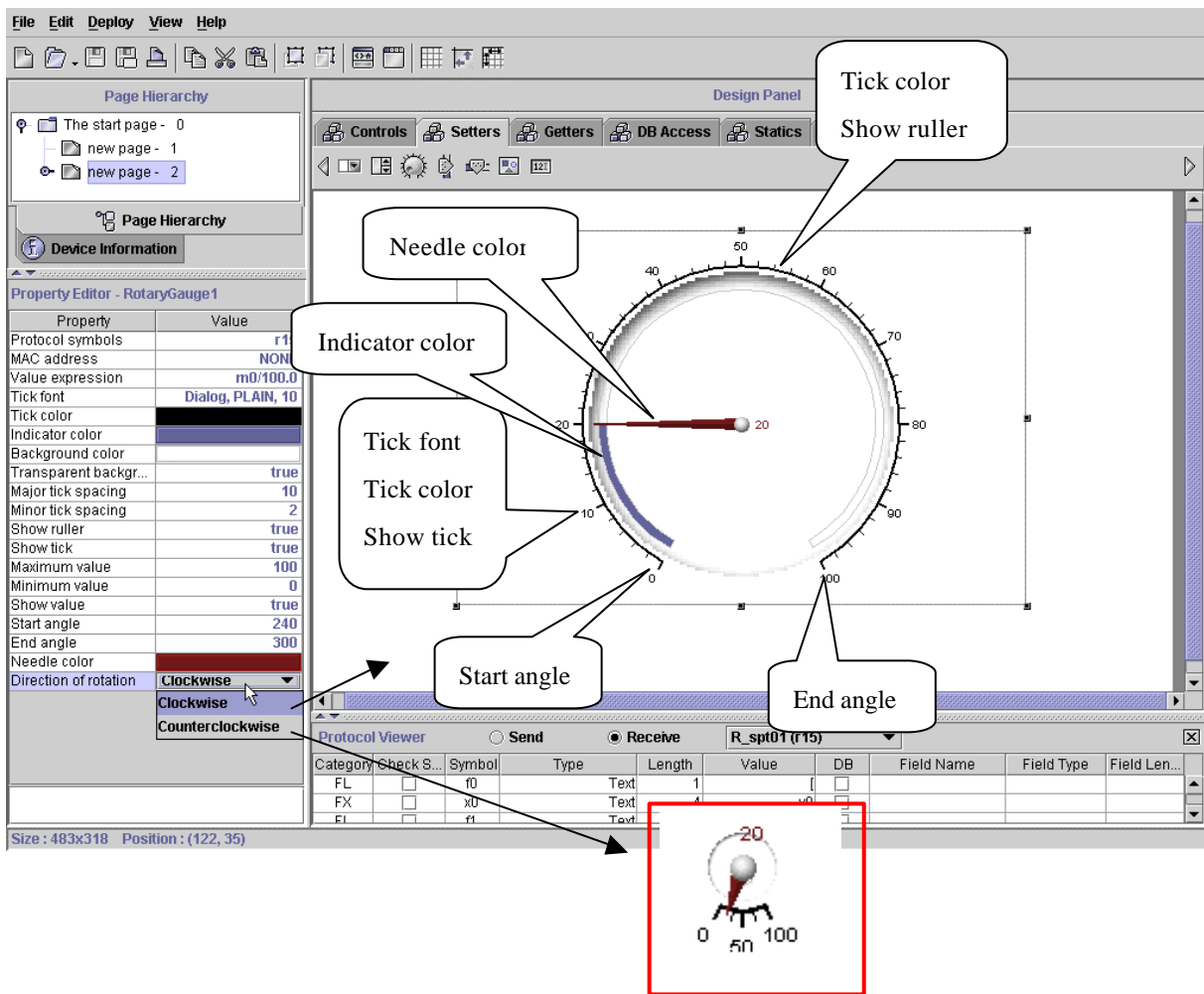
( r0, r1, r3..)

( m0, m1, m2..)



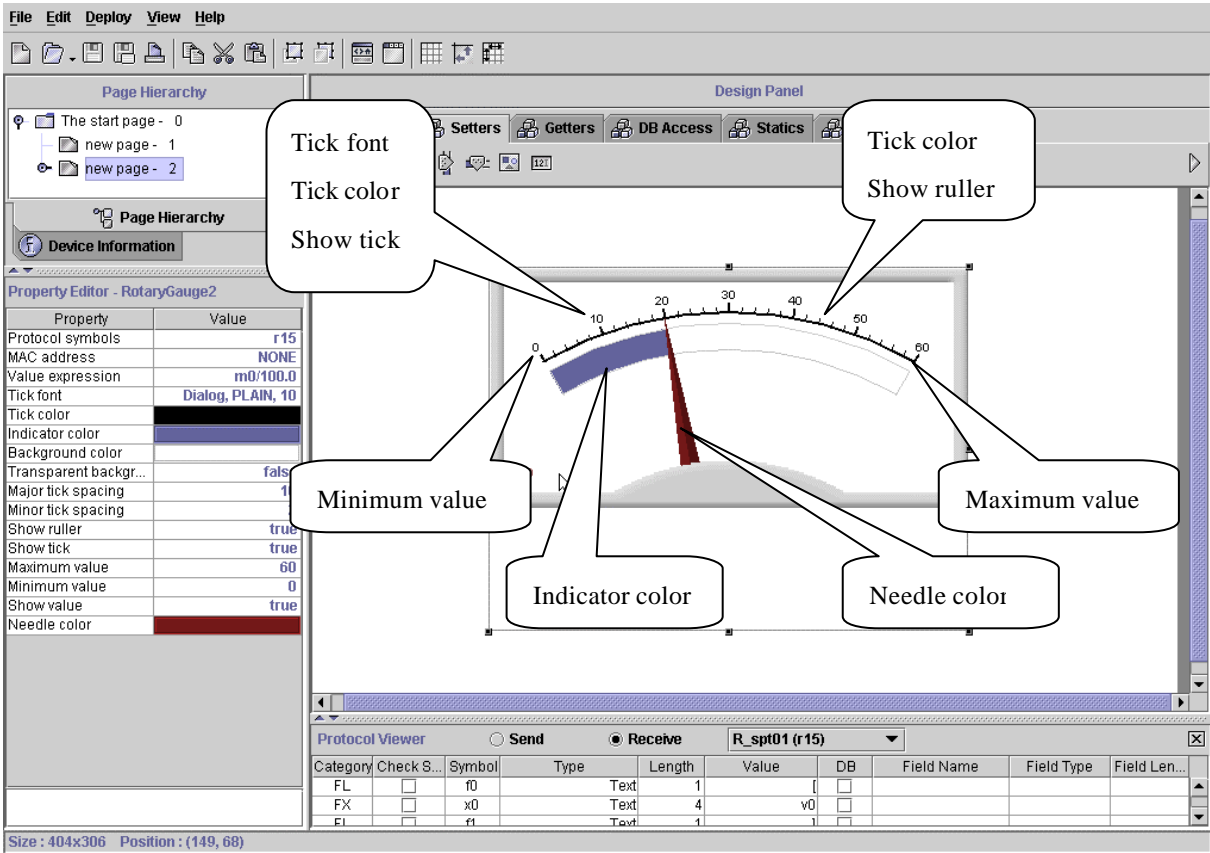
[ 3.25.1 RotaryGauge1,2 ]

## (2) Property



## [ 3.25.2 RotaryGaug1 Property ]

- Value expression : ( r0, r1 ..) (m0,m1 ..)  
가 .( m0/100 + 10)
- Major tick spacing :
- Minor tick spacing :
- Show ruller : True
- Show tick :True ,
- Maximum value :
- Minimum value :
- Show value : True ,
- Needle color : Color
- Drection of destination :



[ 3.25.3 RotaryGauge2 Property ]

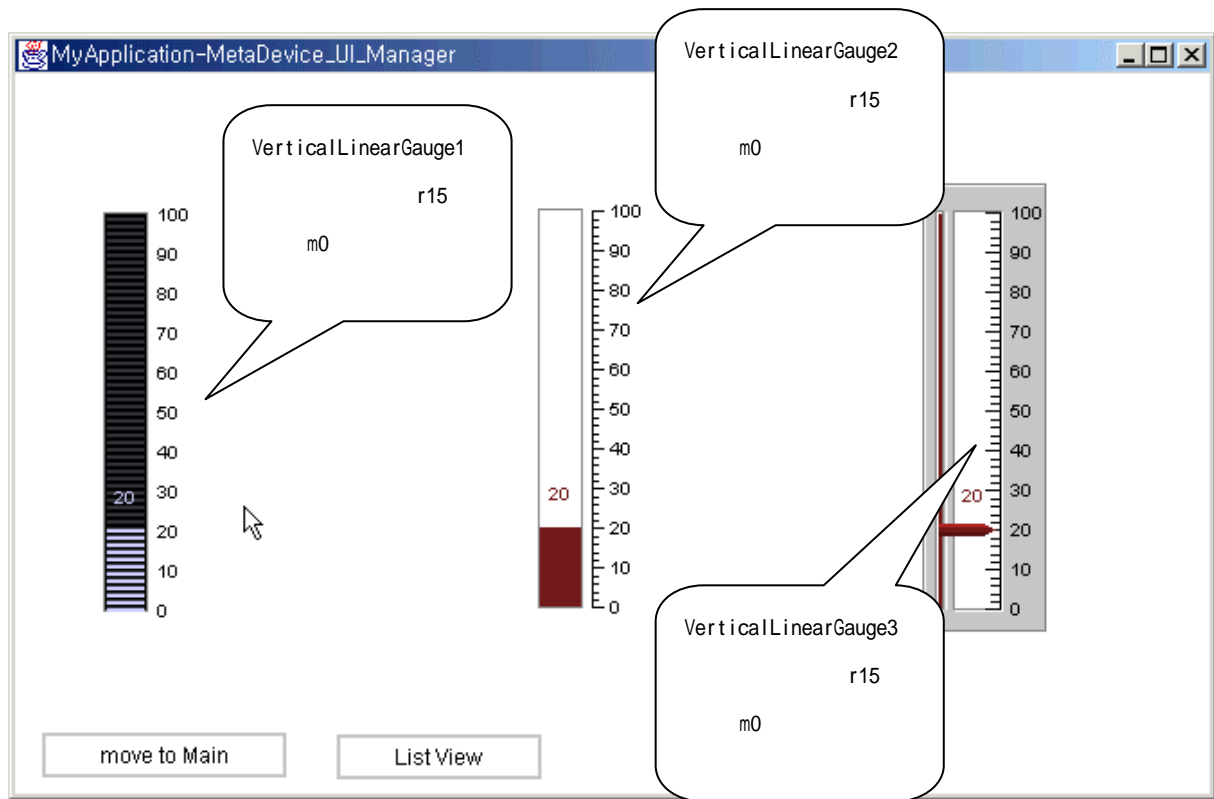
## 6.2 VerticalLinearGauge1, VerticalLinearGauge2, VerticalLinearGauge3

(1)

Receive

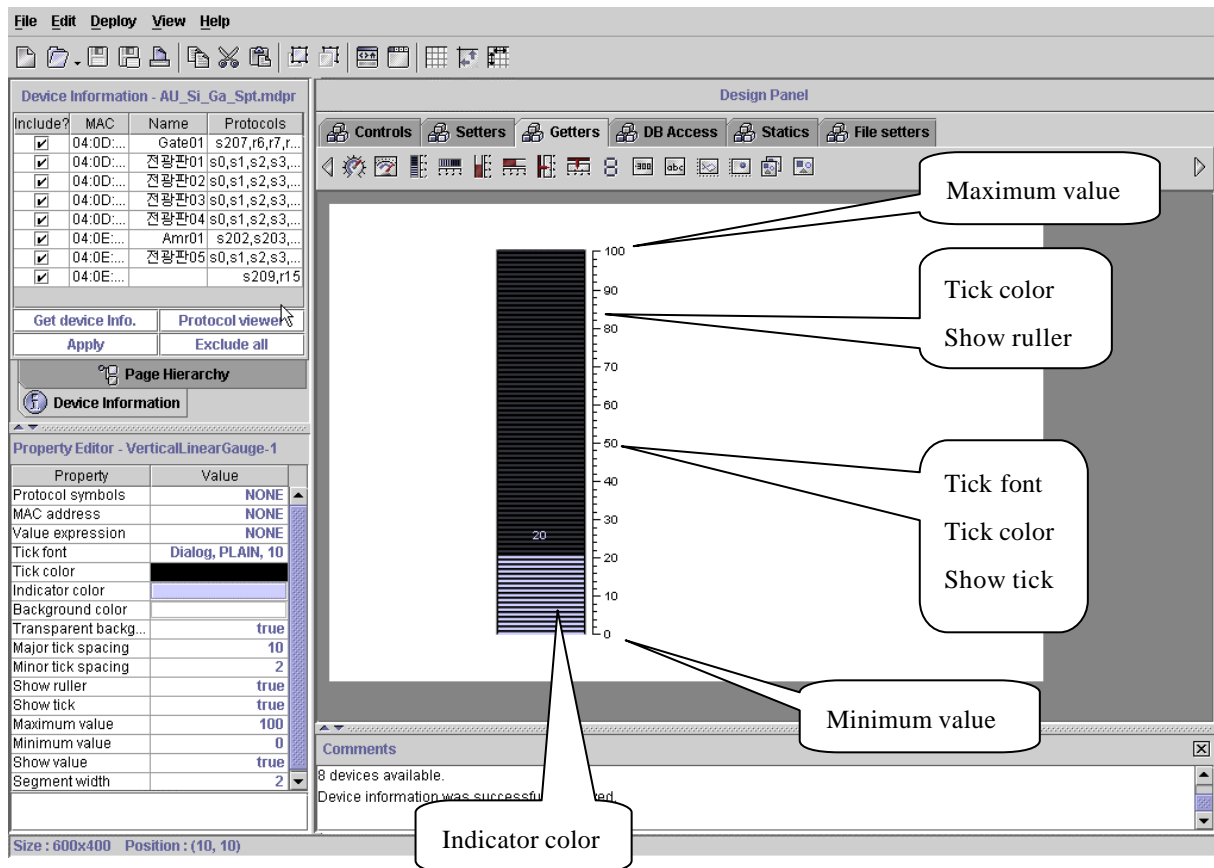
( r0, r1, r3..)

( m0, m1, m2..)



[ 3.26.1 VerticalLinearGauge 1, VerticalLinearGauge2, VerticalLinearGauge3 ]

## (3) Property



## [ 3.26.2 VerticalLinearGauge1 Property ]

- Value expression :

가 .

- Transparent background : True

- Major tick spacing :

- Minor tick spacing :

- Show ruler : True

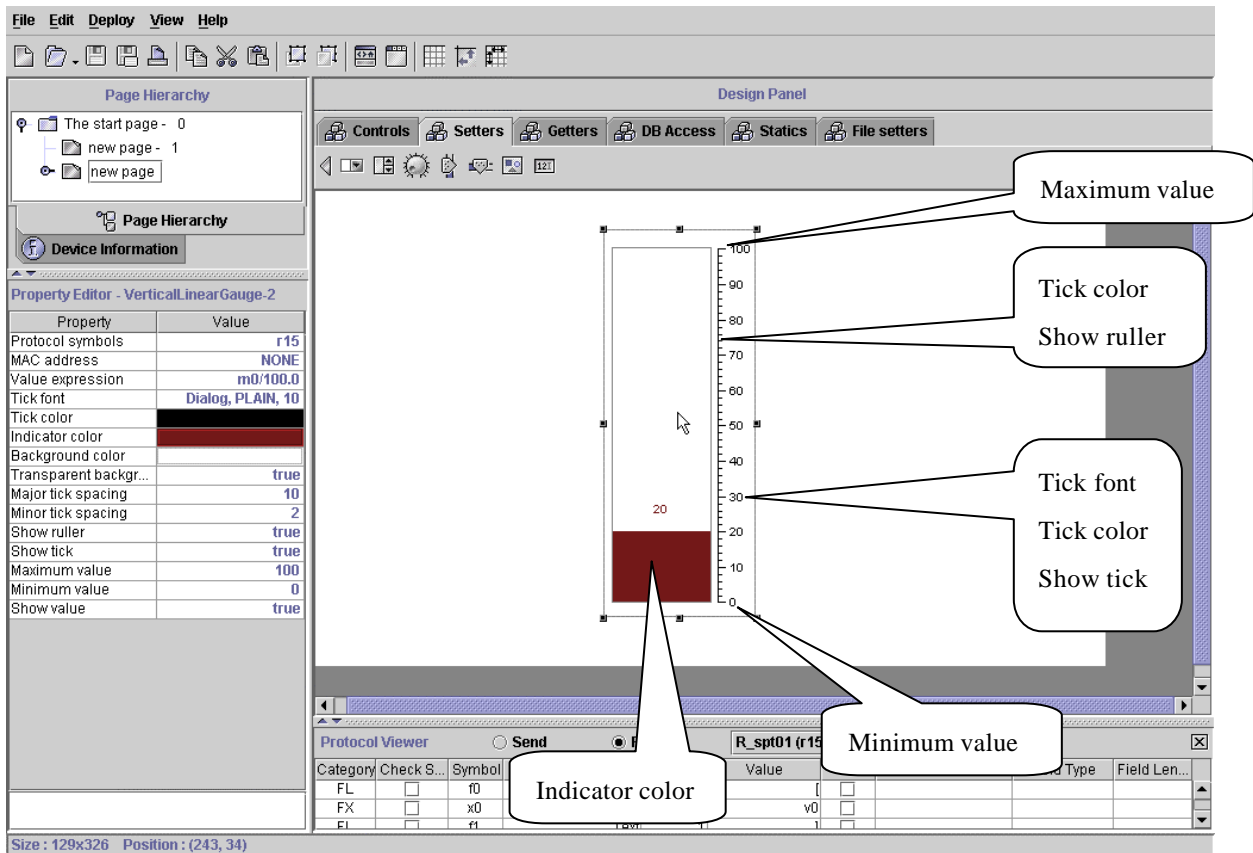
- Show tick : True

- Maximum value :

- Minimum value :

- Show value : True

- Segment width:



### [ 3.26.3 VerticalLinearGauge2 Property ]

- Value expression :

가 .

- Tick font :

- Tick color : ,

- Indicator color :

- Background color :

- Transparent background : True ,

- Major tick spacing :

- Minor tick spacing :

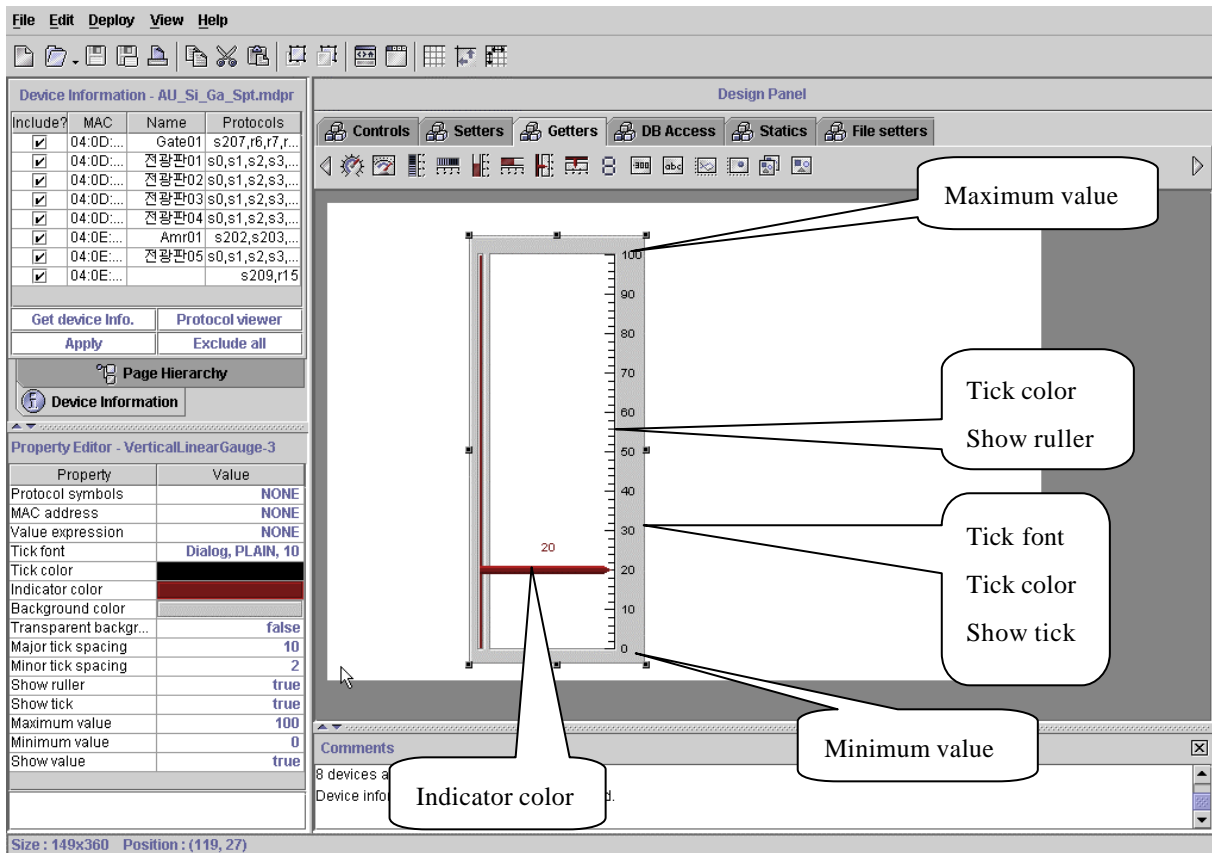
- Show ruller : True

- Show tick : True ,

- Maximum value :

- Minimum value :

- Show value : True , .



### [ 3.26.4 VerticalLinearGauge3 Property ]

- Value expression :

가 .

- Tick font :

- Tick color : ,

- Indicator color :

- Background color :

- Transparent background : True ,

- Major tick spacing :

- Minor tick spacing :

- Show ruller : True

- Show tick : True ,

- Maximum value :

- Minimum value :

- Show value : True , .

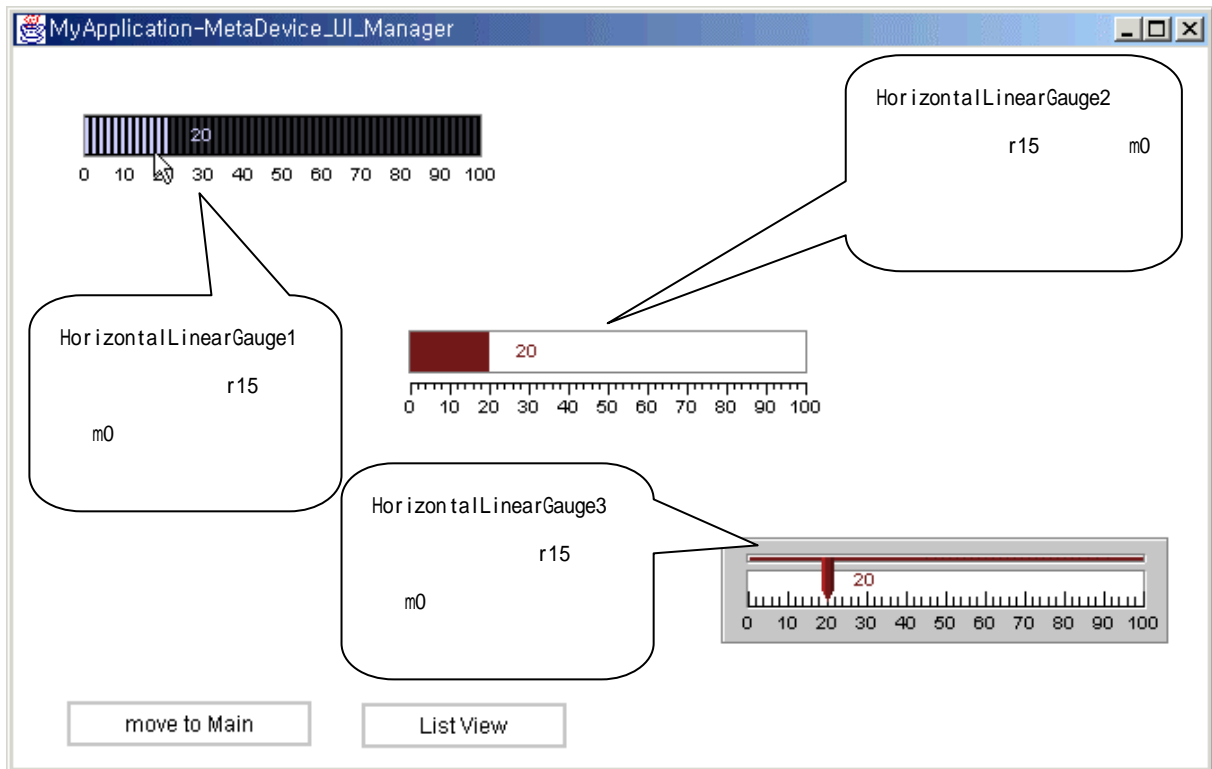
### 6.3 HorizontalLinearGauge1, HorizontalLinearGauge2, HorizontalLinearGauge3

(1)

Receive

( r0, r1, r3..)

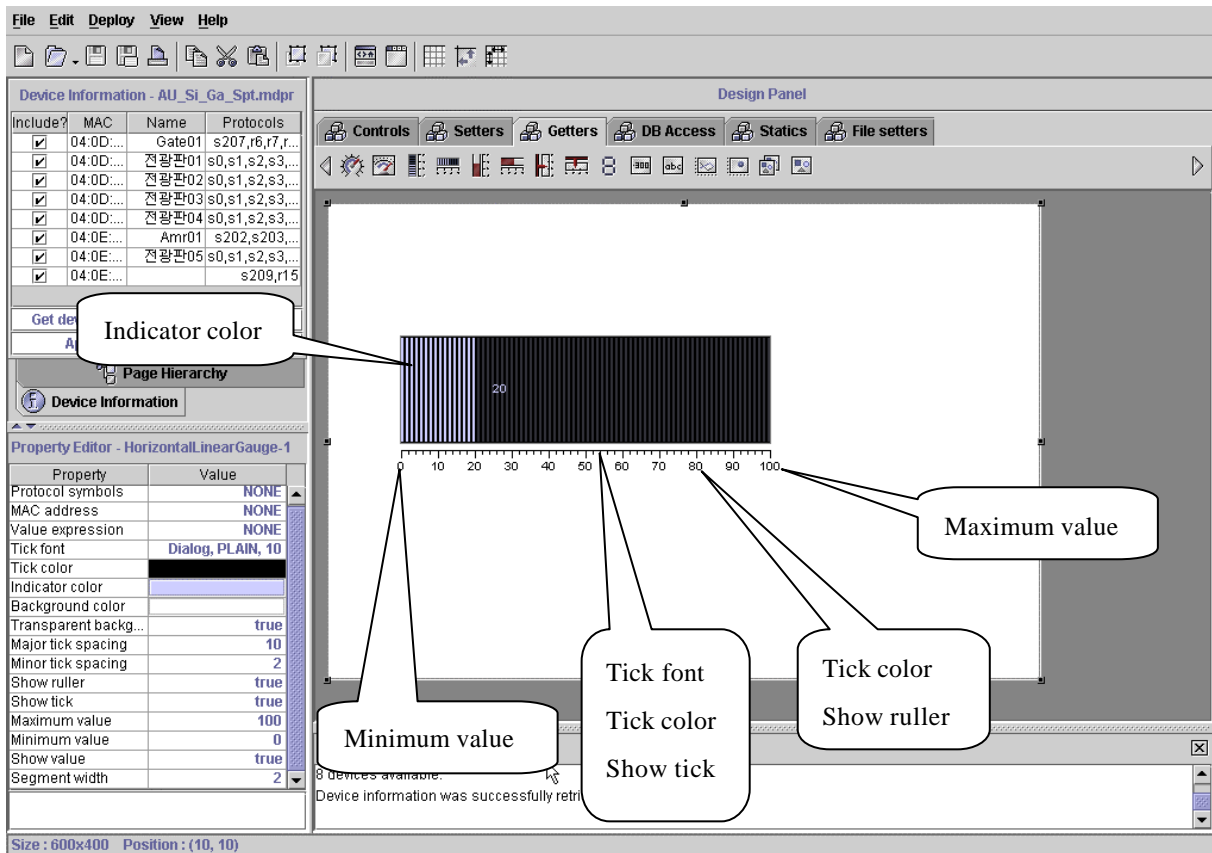
( m0, m1, m2..)



[ 3.27.1 HorizontalLinearGauge1, HorizontalLinearGauge2, HorizontalLinearGauge3 ]



## (2) Property



[ 3.27.2 HorizontalLinearGauge1 Property ]

- Value expression :

가 .

- Tick font :

- Tick color : ,

- Indicator color :

- Background color :

- Transparent background : True ,

- Major tick spacing :

- Minor tick spacing :

- Show ruller : True

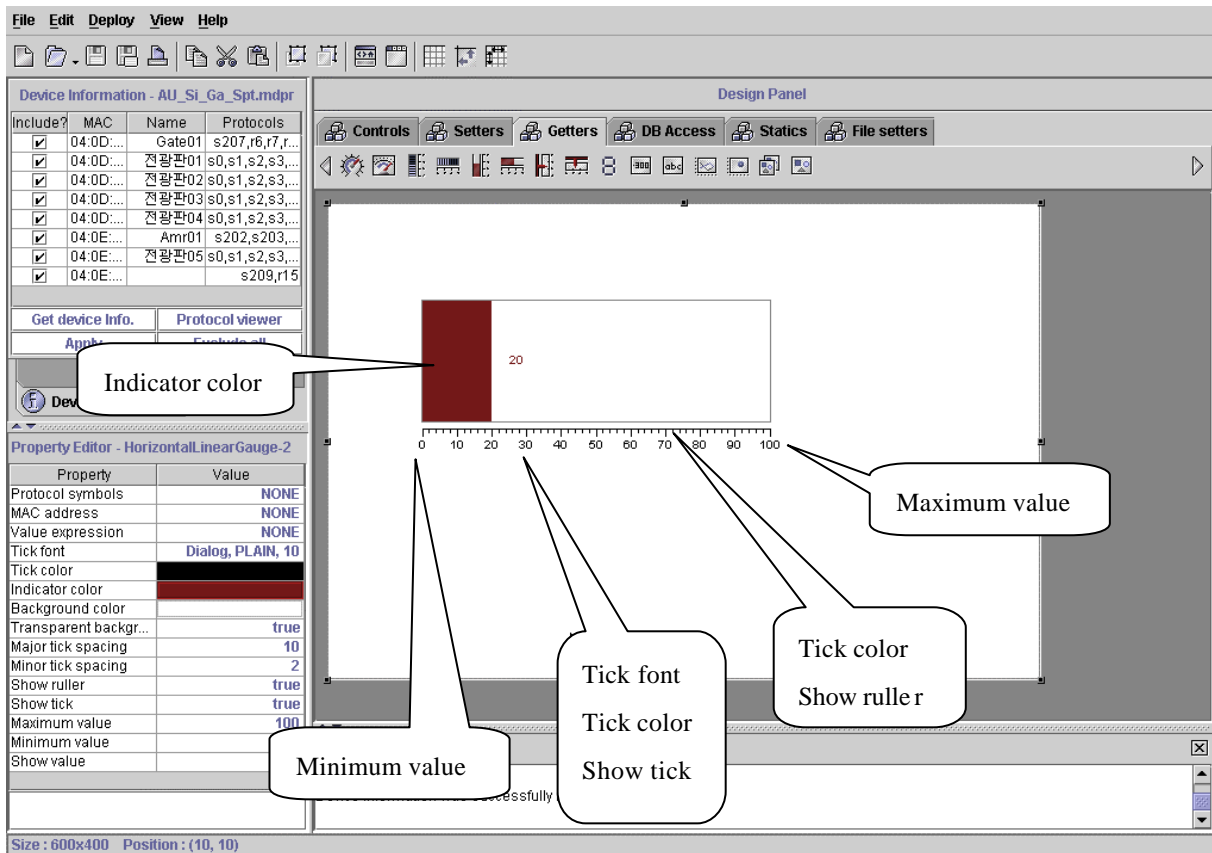
- Show tick : True ,

- Maximum value :

- Minimum value :

- Show value : True , .

- Segment width:



### [ 3.27.3 HorizontalLinearGauge2 Property ]

- Value expression :

가 .

- Tick font :

- Tick color : ,

- Indicator color :

- Background color :

- Transparent background : True ,

- Major tick spacing :

- Minor tick spacing :

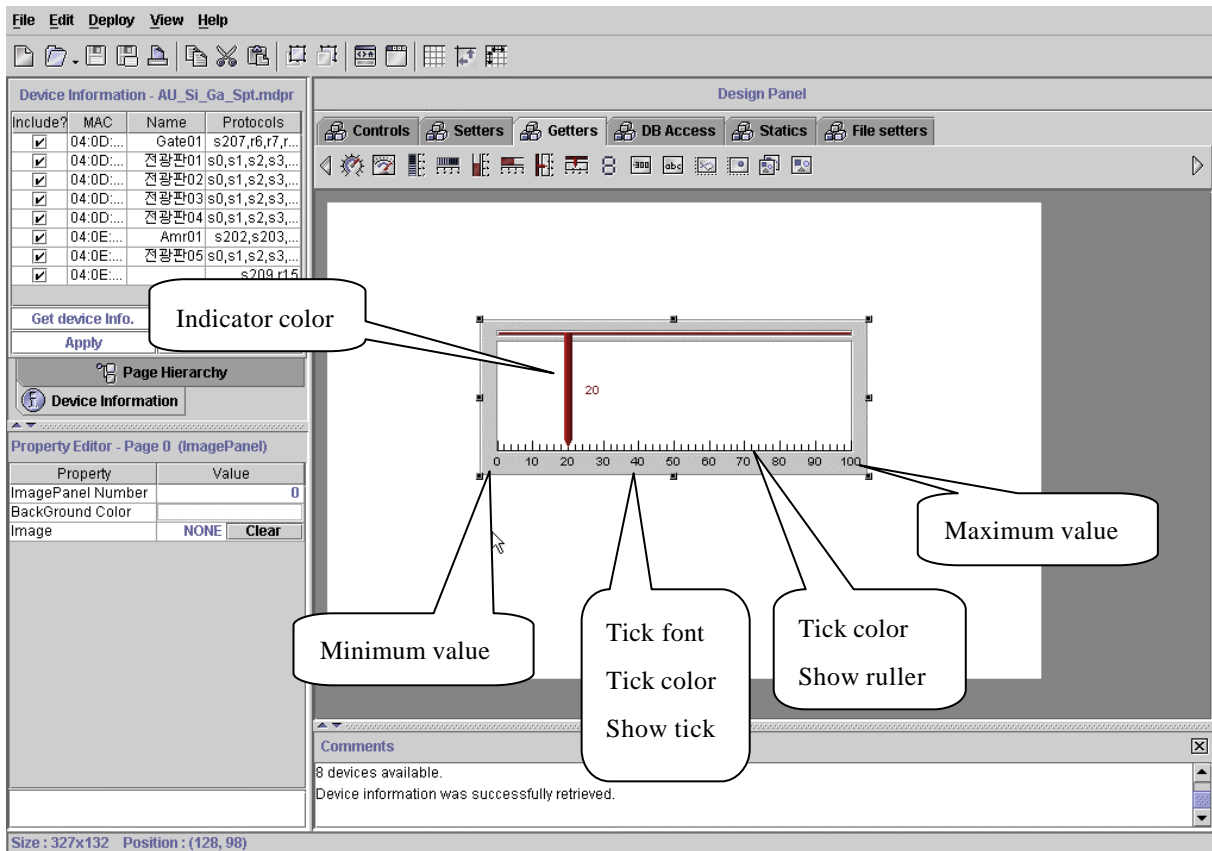
- Show ruler : True

- Show tick :True ,

- Maximum value :

- Minimum value :

- Show value : True , .



### [ 3.27.4 HorizontalLinearGauge2 Property ]

- Value expression :

가 .

- Tick font :

- Tick color : ,

- Indicator color :

- Background color :

- Transparent background : True ,

- Major tick spacing :

- Minor tick spacing :

- Show ruller : True

- Show tick : True ,

- Maximum value :

- Minimum value :

- Show value : True , .

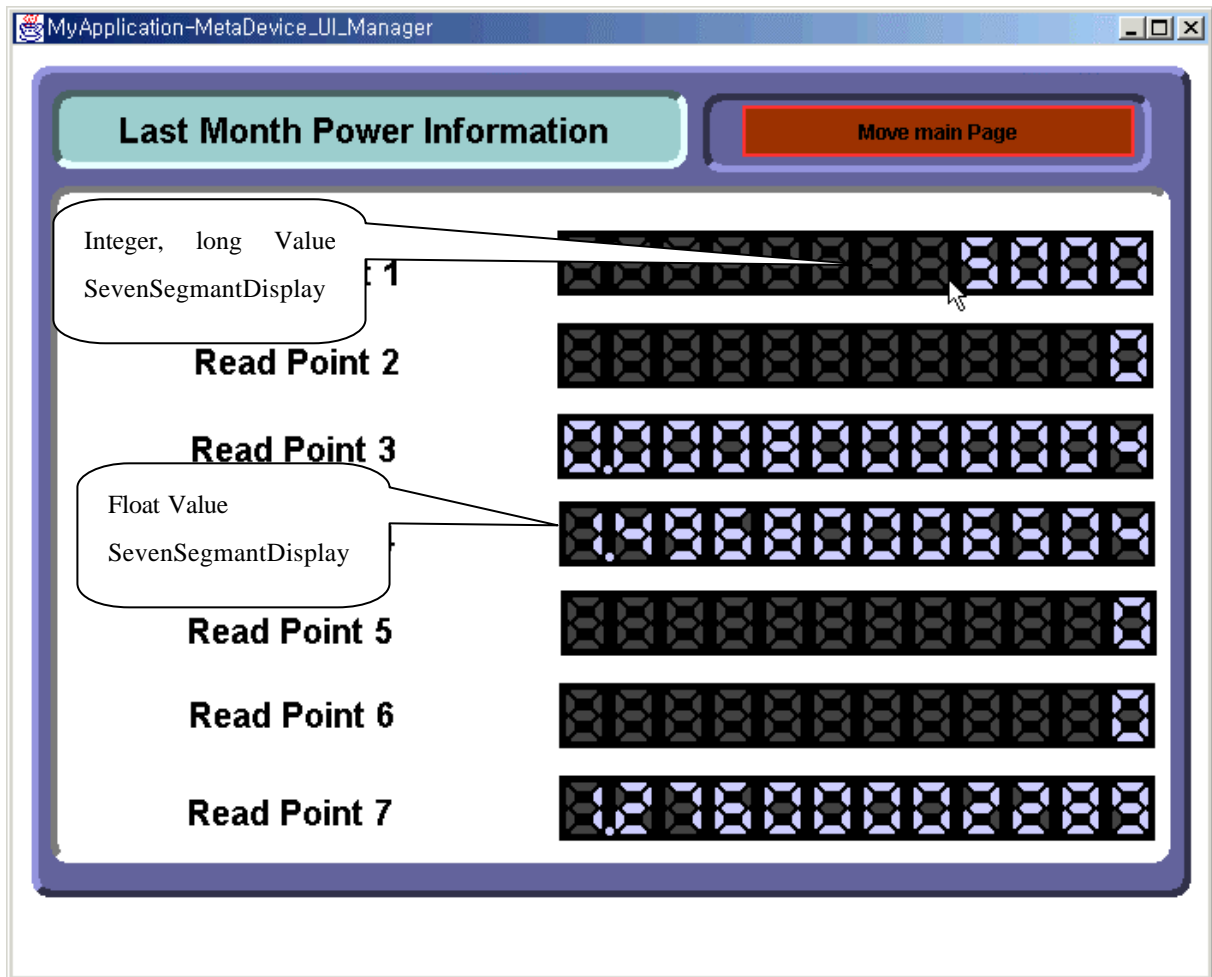
## 6.4 SevenSegmentDisplay

(1)

Receive

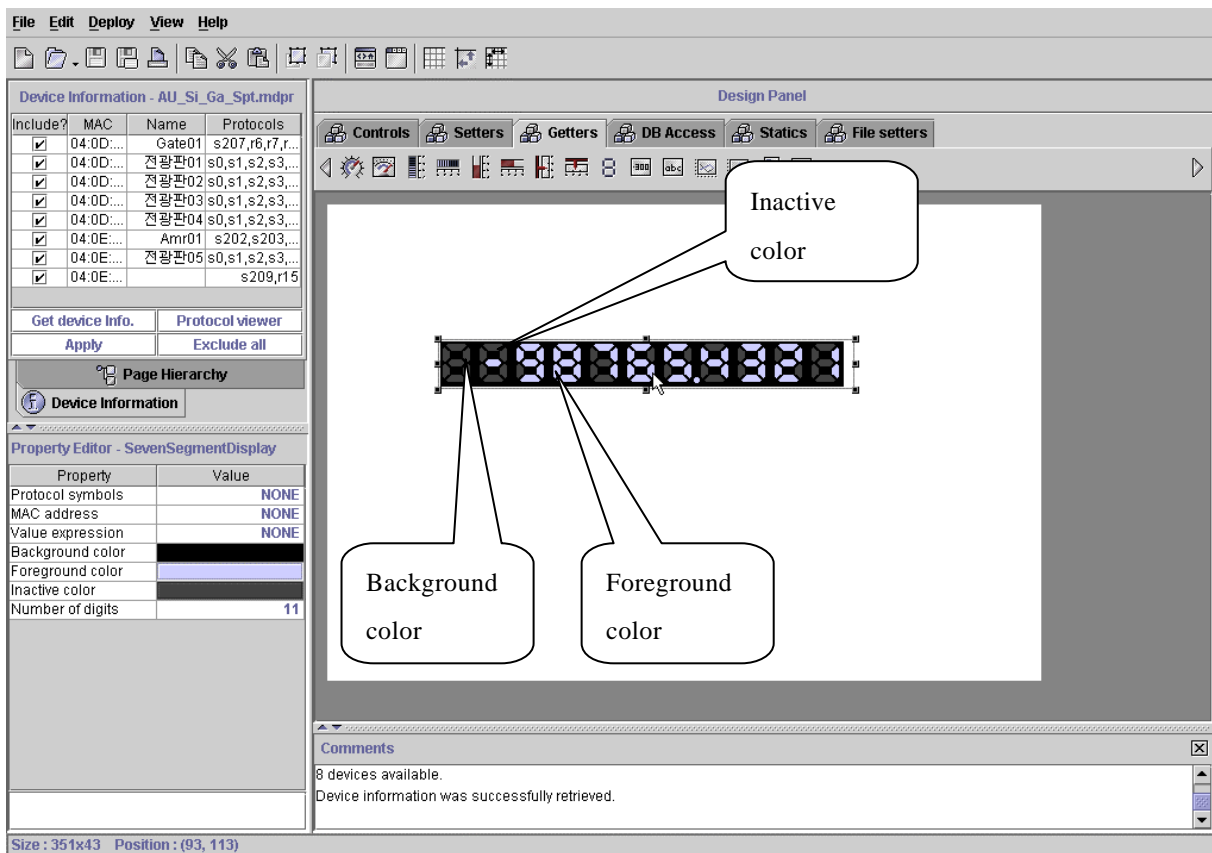
( r0, r1, r3..)

( m0, m1, m2..)



[ 3.28.1 SevenSegmentDisplay ]

## (2) Property



## [ 3.28.2 SevenSegmentDisplay Property ]

- Value expression : .
- Background color : color
- Foreground color :
- Inactive color :
- Number of digits : ,

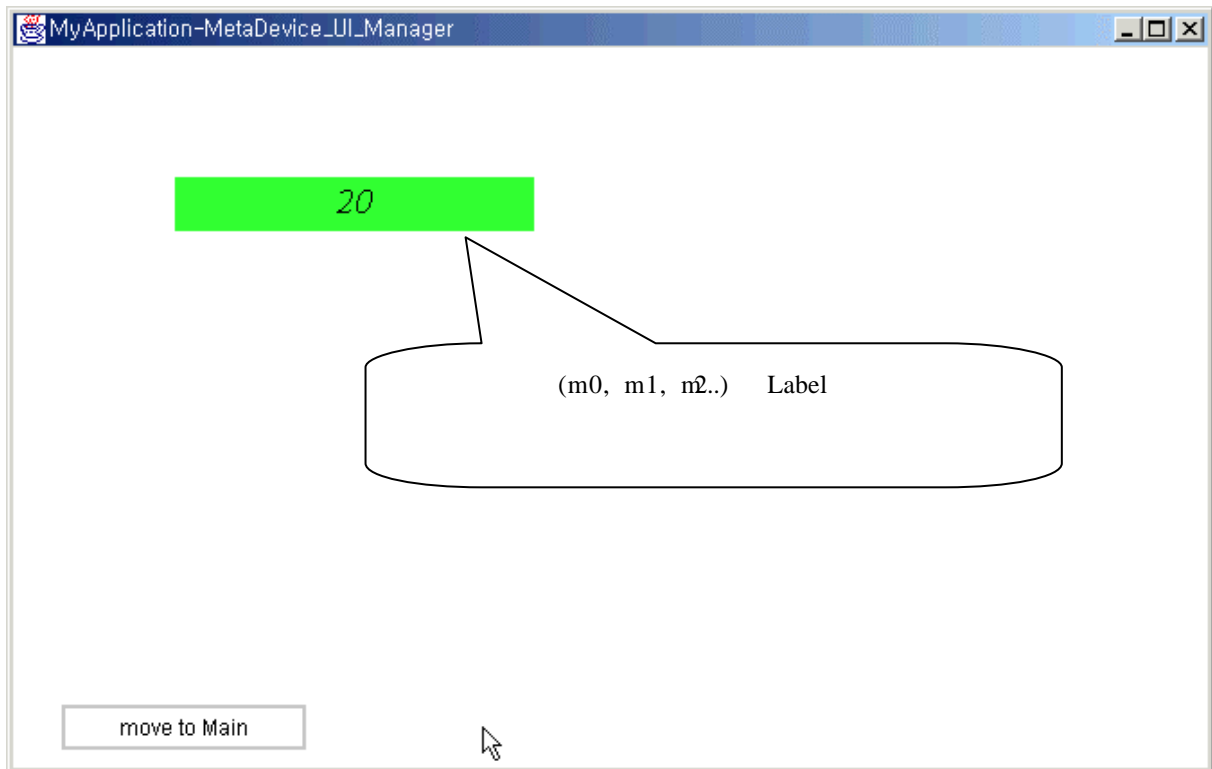
## 6.5 LabelValueGetter

(1) LabelValueGetter

Receive ( r0, r1, r3..)

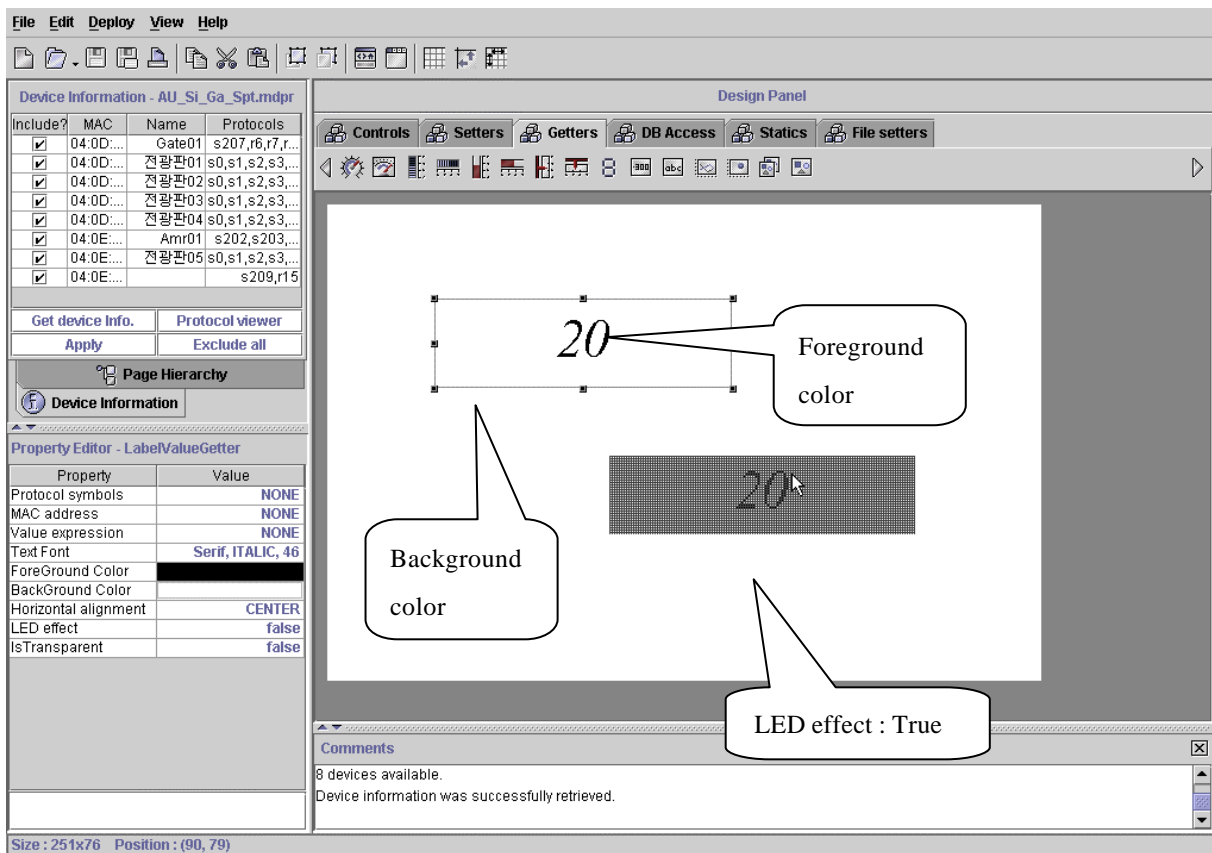
( m0, m1, m2..)

Label .



[ 3.29.1 LabelValueGetter ]

## (2) Property



## [ 3.29.2 LabelValueGetter Property ]

- Value expression : .
- ForeGround Color :
- BackGround Color :
- Horizontal alignment : (Left, Center, Right)
- LED effect : True
- IsTransparent : True .

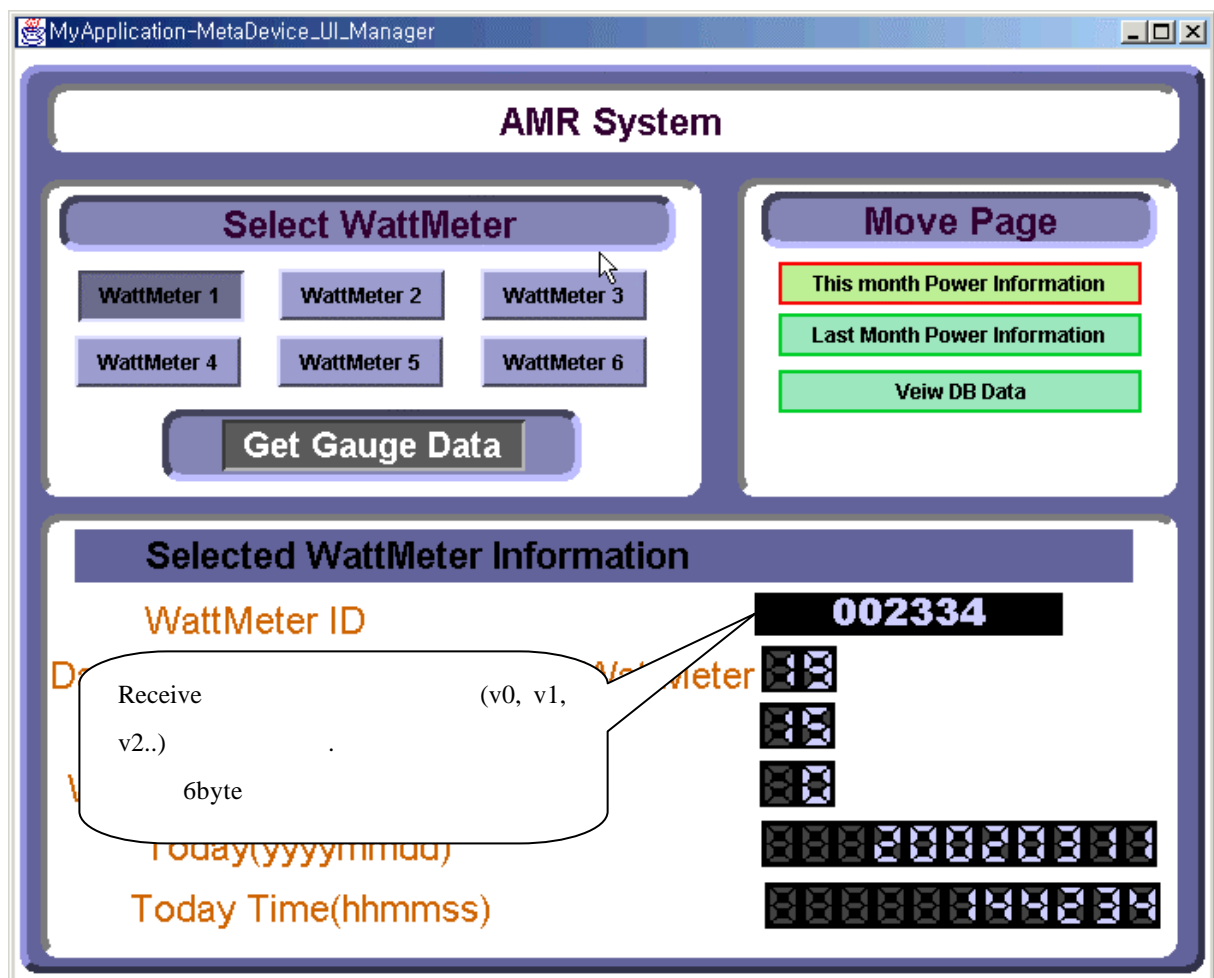
## 6.6 TextLabelValueGetter

(1) TextLabelValueGetter

Receive ( r0, r1, r3..)

( v0, v1, v2..)

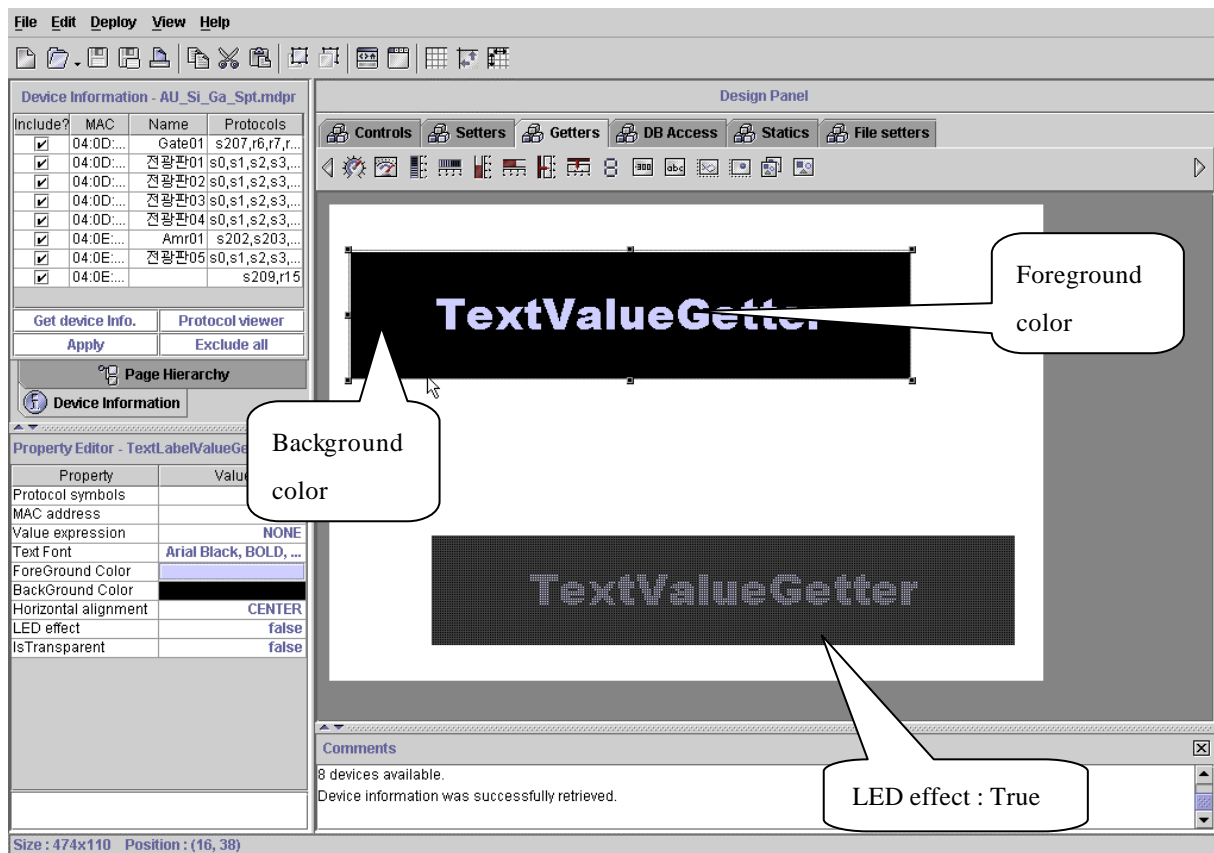
Label .



[ 3.30.1 TextLabelValueGetter ]



## (2) Property



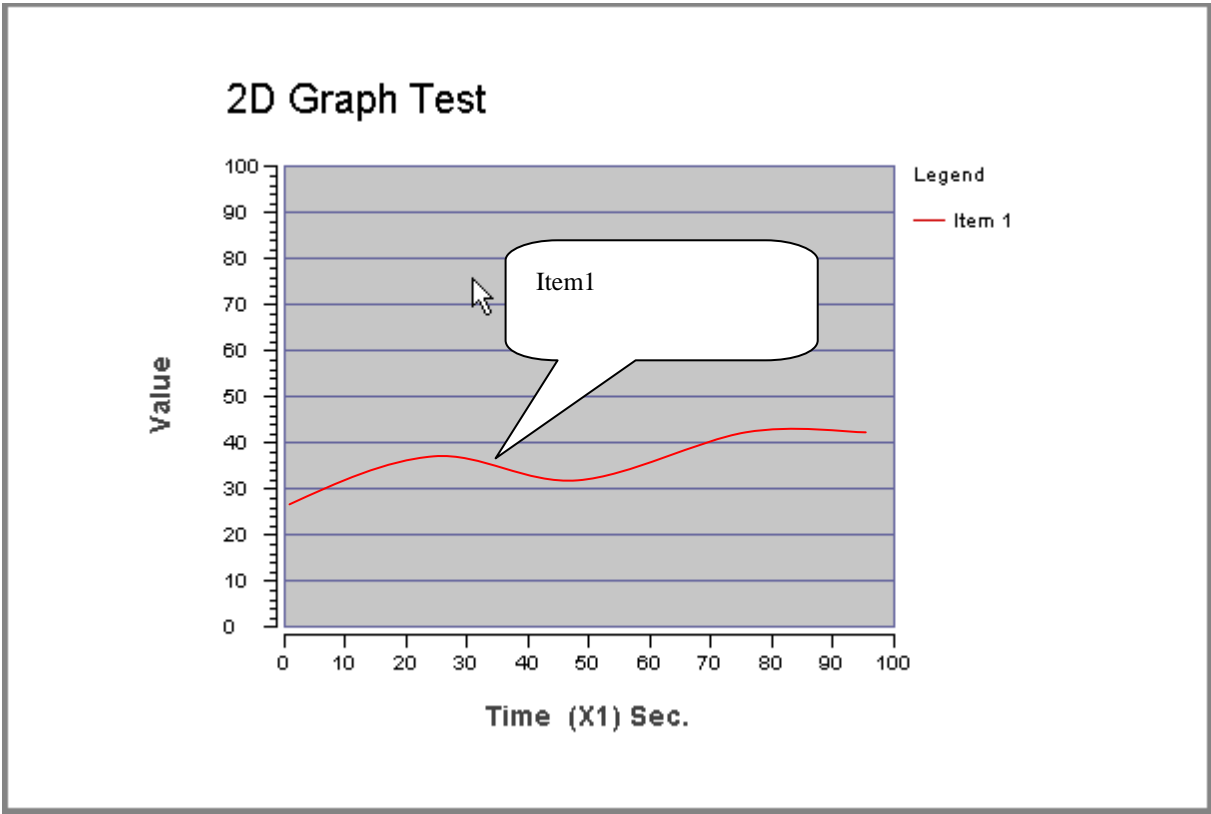
## [ 3.30.2 TextLabelValueGetter Property ]

- Value expression : `.(v0, v1,v2..)`
- Text Font :
- ForeGround Color :
- BackGround Color :
- Horizontal alignment : `( Left, Center, Right )`
- LED effect : True

6.7 Graph2D

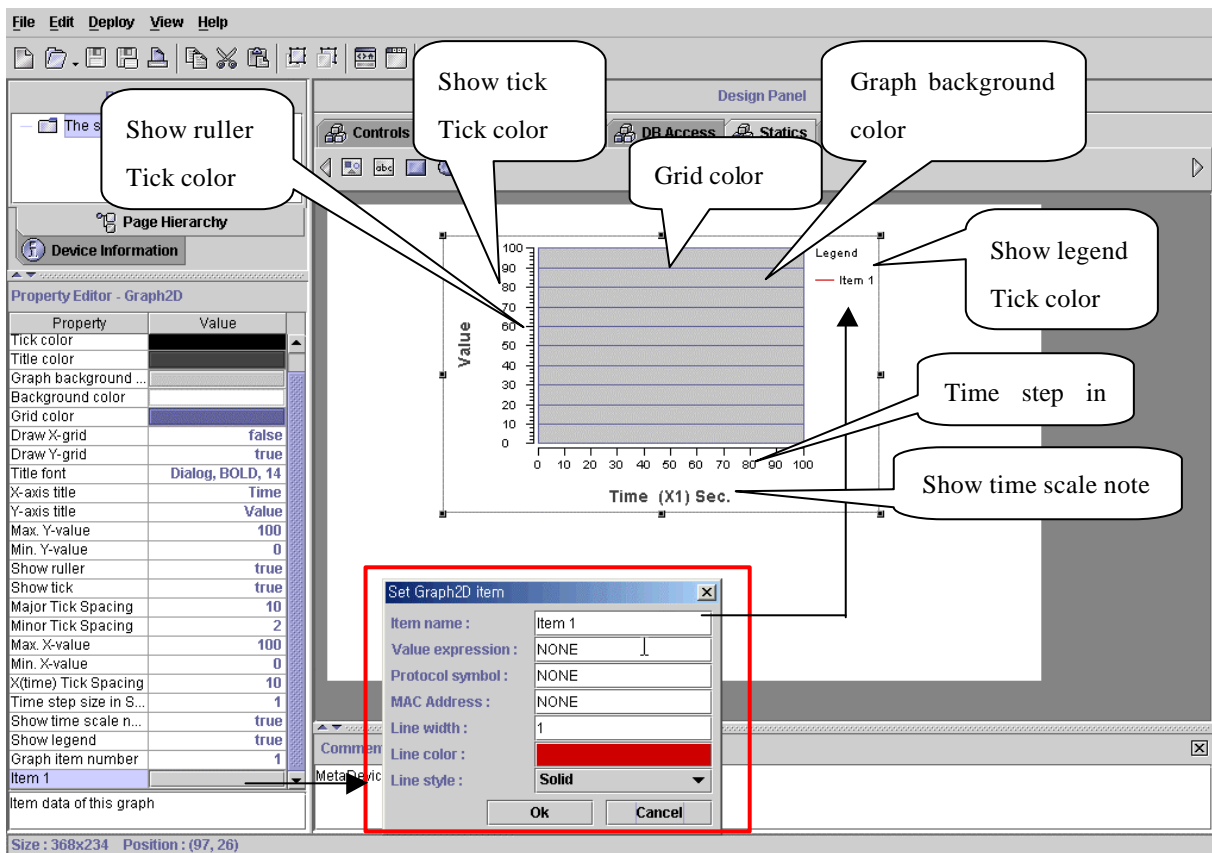
(1) Graph2D

(Receive Protocol )



[ 3.31.1 Graph2D ]

## (2) Property



## [ 3.31.2 Graph2D Property ]

- Background color :
- Draw X grid : True      X Major tick spacing
- Draw Y grid : True      Y Major tick spacing
- X-axis title : X      (      )
- Y-axis title : Y      (      )
- Max Y value : Y
- Min Y value : Y
- Major tick spacing :
- Miner tick spacing :
- Max X value : X
- Min X value : X
- Time step size in sec :
- Graph item number :

## MetaDevice

- item1 : Graph item number item

item

< item property >

- item name : item

- Value expression :

- Protocol symbols :

- MAC address :

MAC

( NONE ), Applet      Application

| DeviceSelector | MAC |
|----------------|-----|
|----------------|-----|

- Line width :

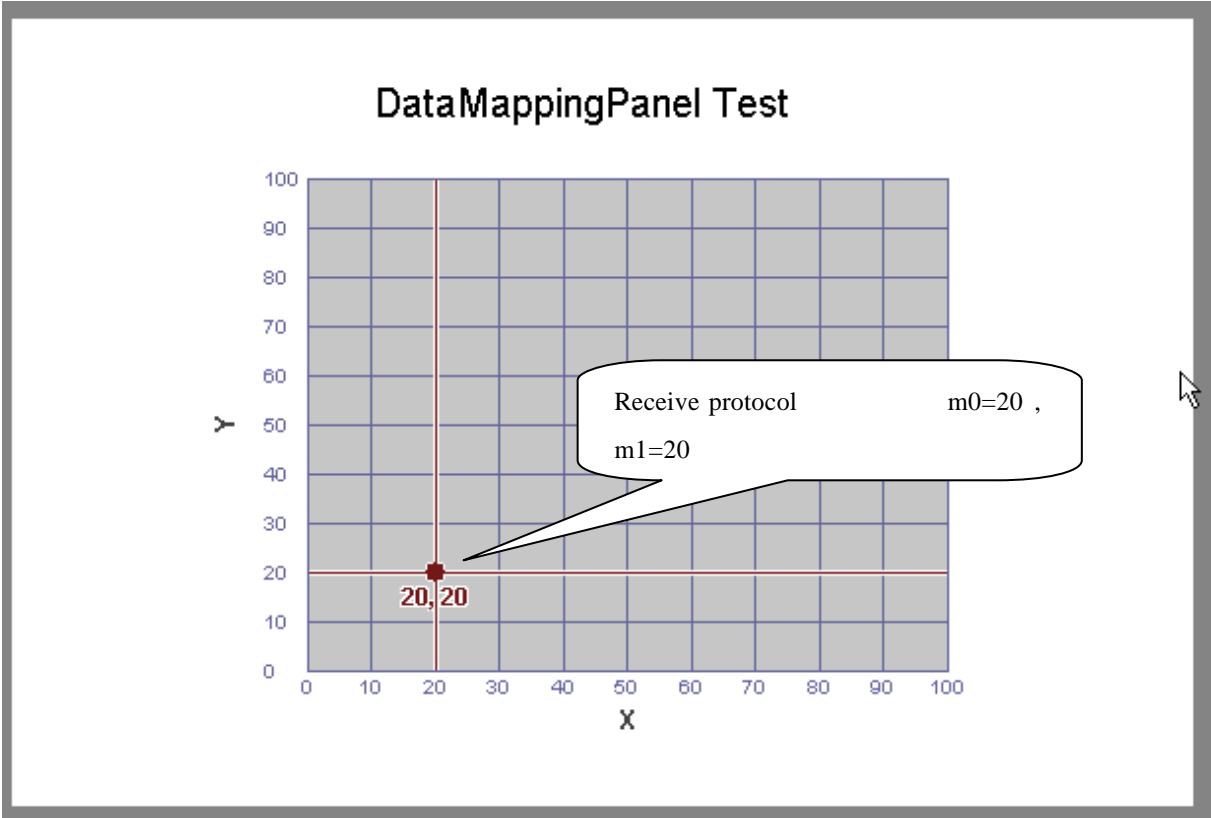
- Line color :

- Line Style : Dashed – Solid –

6.8 DataMappingPanel

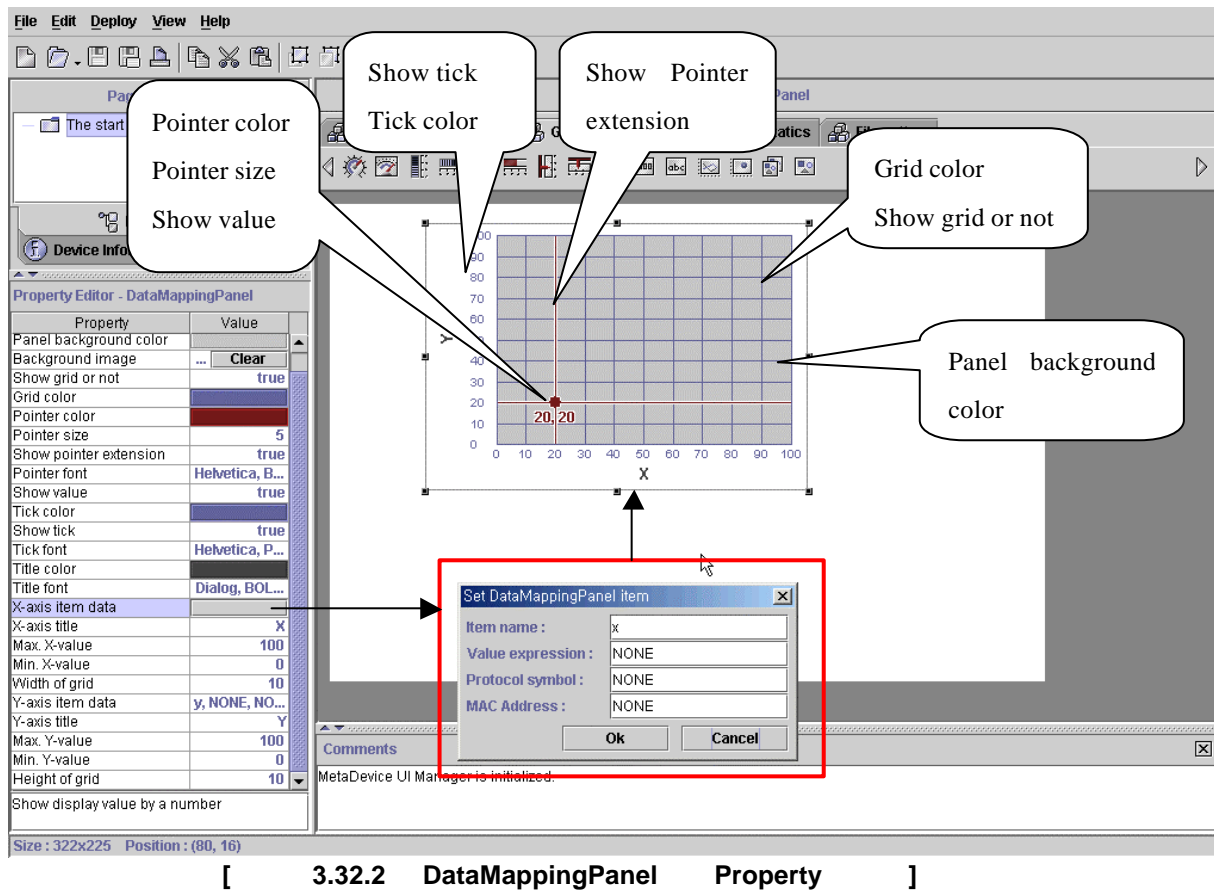
(1) DataMappingPanel

X , Y DataMappingPanel .



[ 3.32.1 DataMappingPanel ]

## (2) Property



- Background Image :

- Show grid or not : True grid line

- Pointer size :

- Show pointer extension : false

- Show value : True

- X-axis item data : X

- X-axis Title : X

- Max.X value : X

- Min.X value : X

- Width of grid :

- Y-axis item data :

- Y-axis Title : Y

- Max.Y value : Y

- Min.Y value : Y

## MetaDevice

- Height of grid :

< set DataMappingPanel item >

- Item name :

- value expression : X(Y)

.

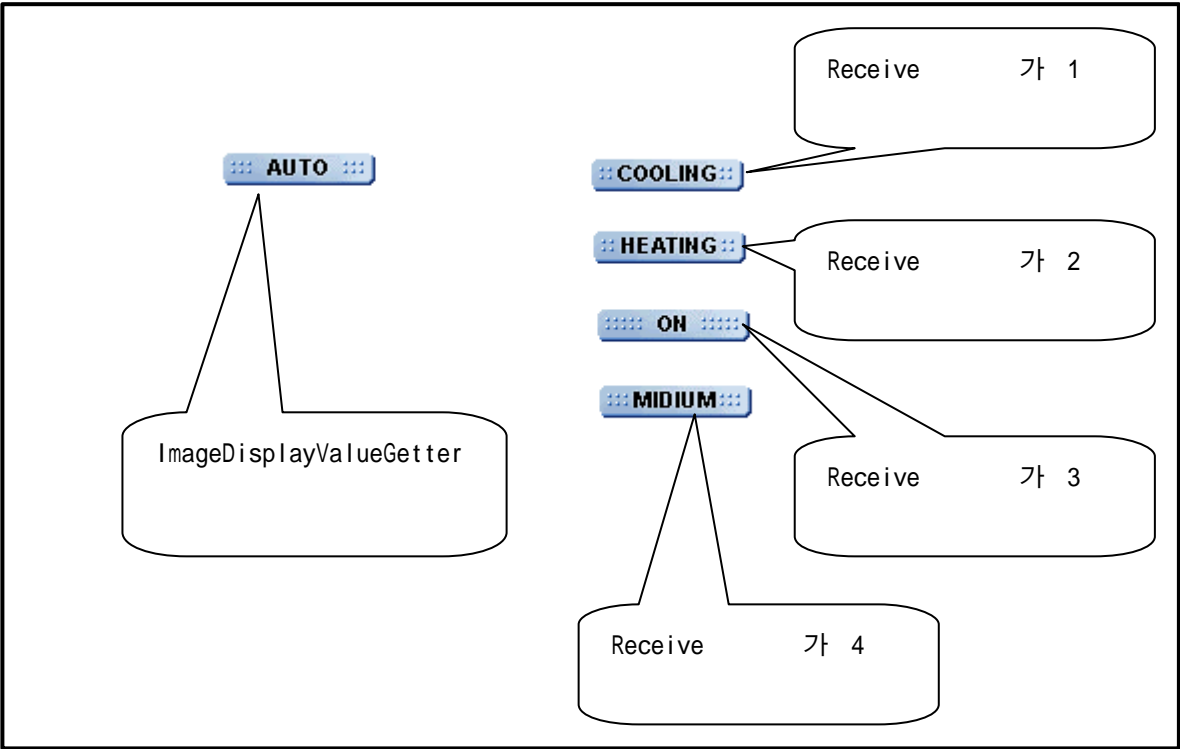
- Protocol symbol : 가

.

6.9 ImageDisplayValueGetter

(1) ImageDisplayValueGetter

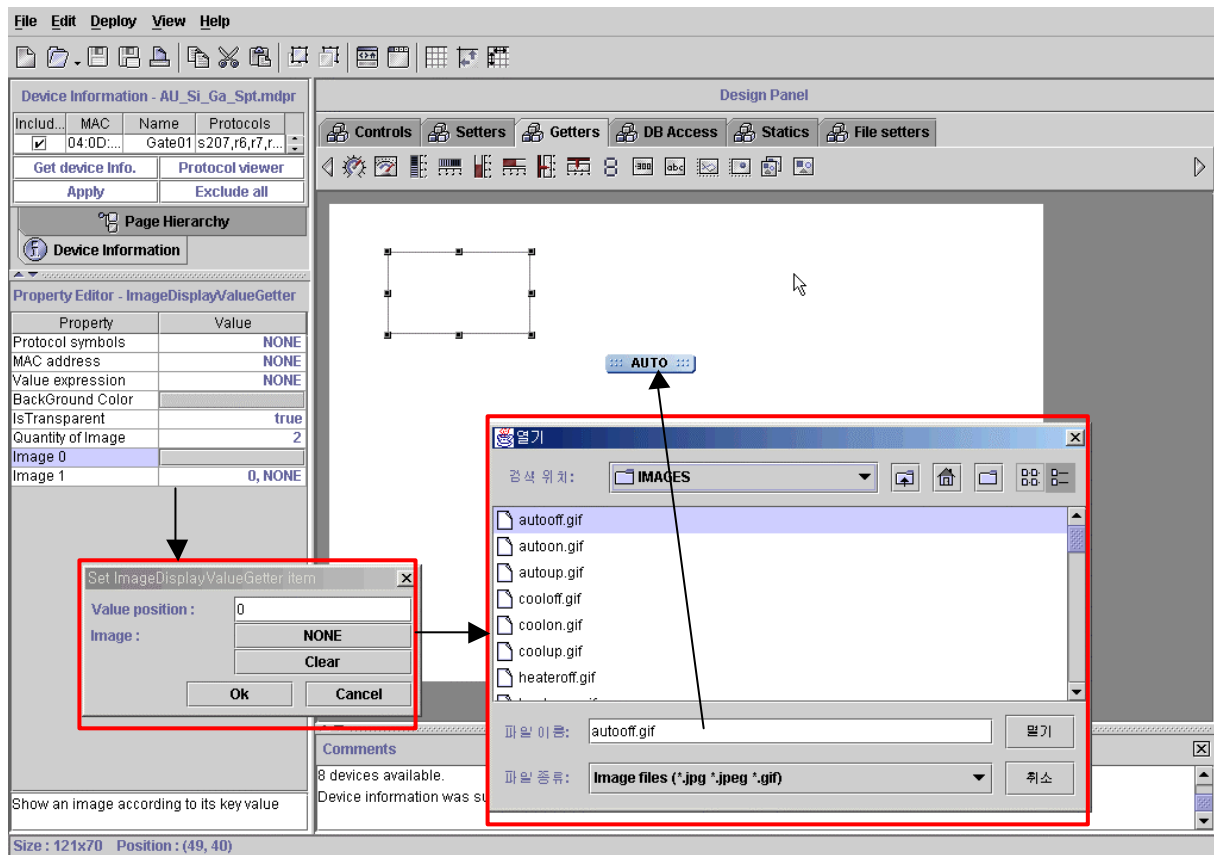
Receive (m0, m1, m2..)



[ 3.33.1 ImageDisplayValueGetter ]



## (2) Property



## [ 3.33.2 ImageDisplayValueGetter Property ]

- Value expression :
- Background color :
- IsTransparent : True
- Quantity of image :

< > 2

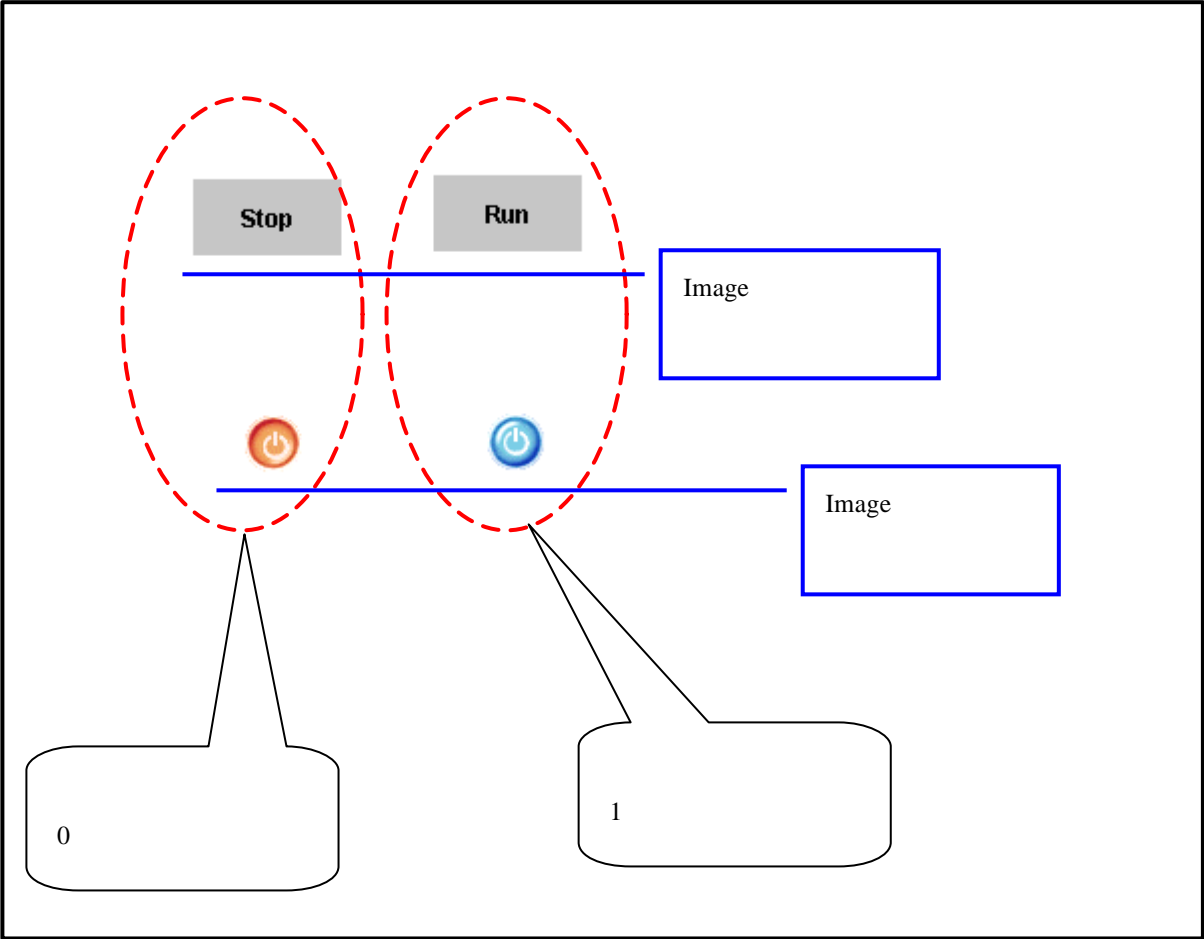
- Image 0 : Set ImageDisplayValueGetter Item
- Value Position
- Image

Value expression Value Position , 가

6.10 ImageOnOffGauge

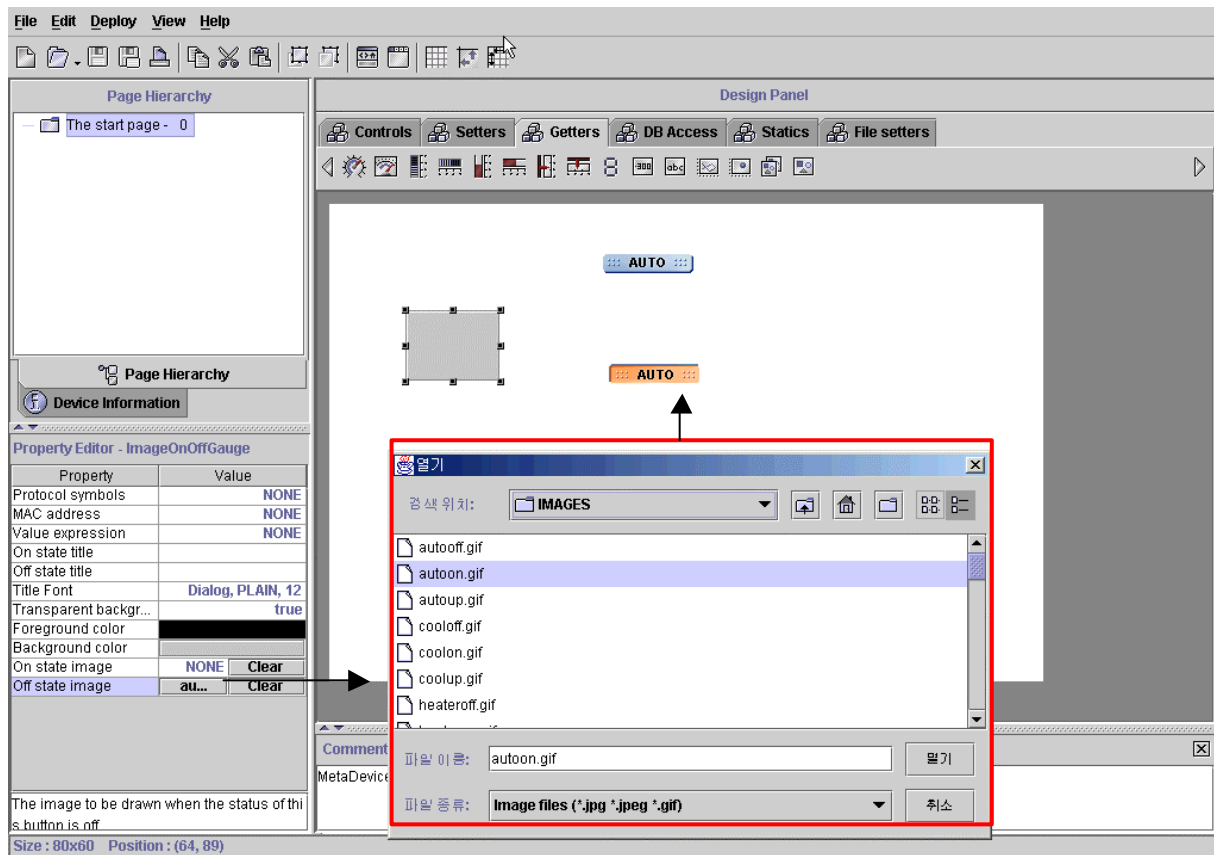
(1) ImageOnOffGauge

Receive 가 0 1



[ 3.34.1 ImageOnOffGauge ]

## (2) Property



## [ 3.34.2 ImageOnOffGauge Property ]

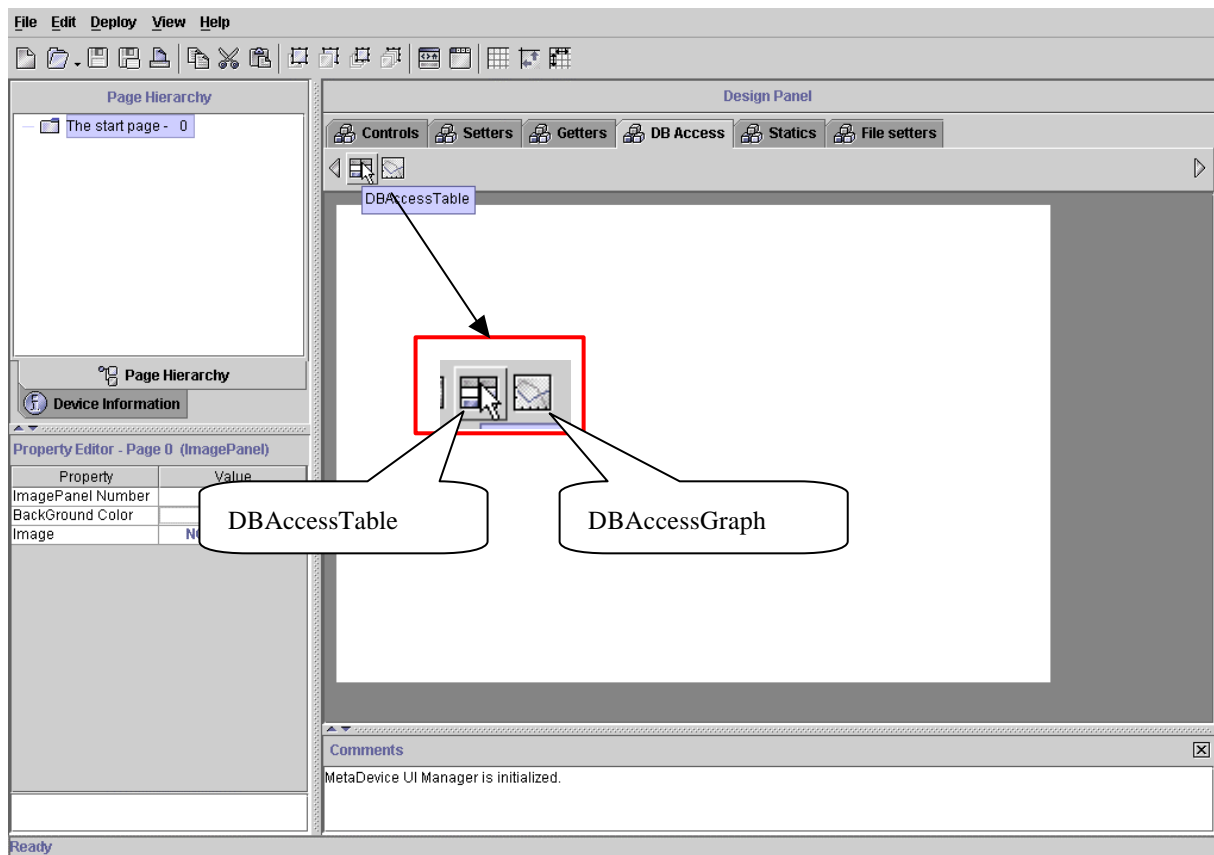
- Value expression : .
- On state title : 가 1
- Off state title : 가 0
- Foreground color :
- Background color :
- On state image : 가 1
- Off state image : 가 0

## 7. DB Access Component Group

### (1) DB Access Component ?

### (2) DB Access Component

- DBAccessTable :
- DBAccess Graph :



### [ 3.35.1 DB Access Component ]

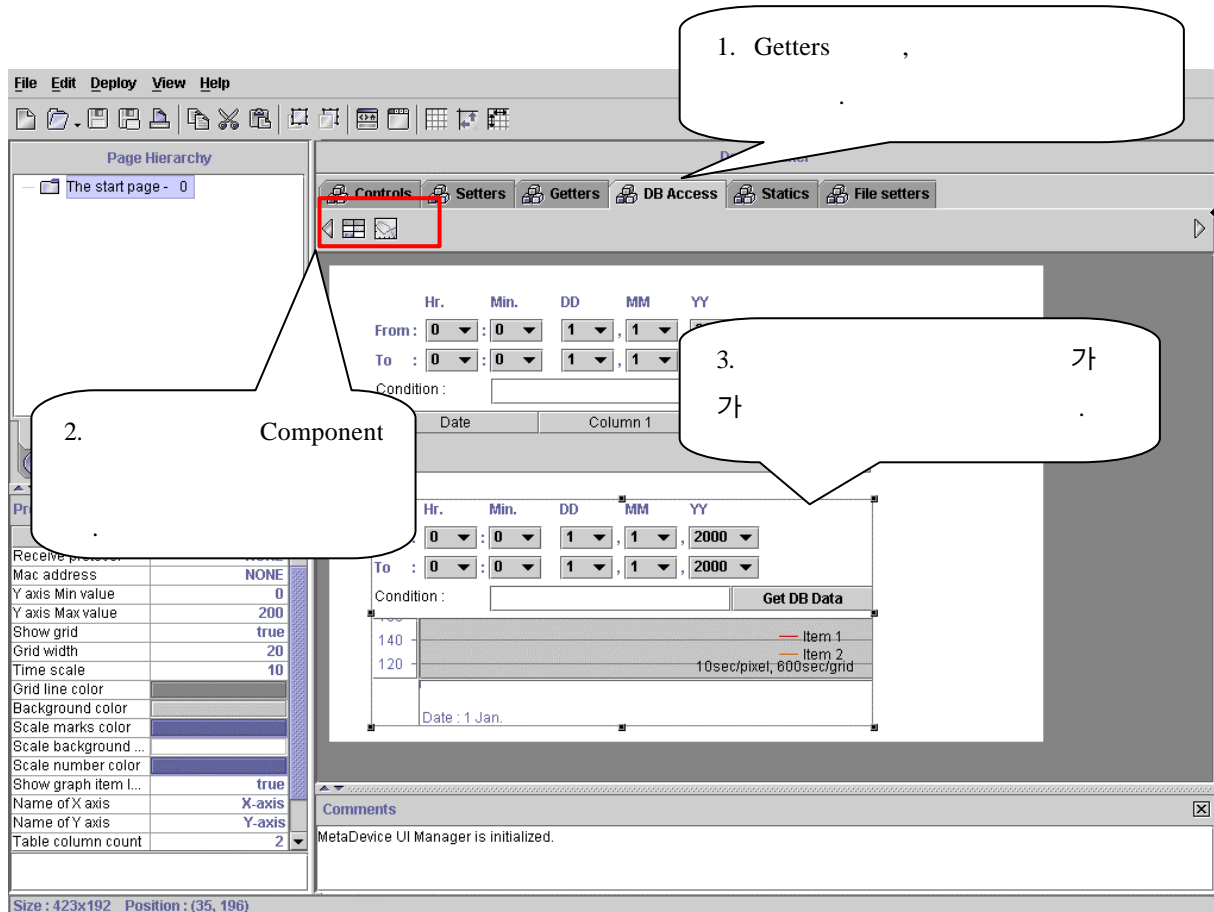
### (3) DB Access Component UI 가

- Design Panel DB Access

- DB Access Table

가

- Property



### [ 3.35.2 DB Access Component 가 ]

## 7.1 DB Access Table

(1)

DataBase

MyApplication-MetaDevice

Hr. Min. DD MM YY

From : 14 : 19 19 , 3 , 2002

To : 14 : 19 20 , 3 , 2002

Condition : data > 15 and data < 40

Get DB Data

| Date | Temperature |
|------|-------------|
|      |             |

Field

) field name : data

|      |    |    |
|------|----|----|
| data | 15 | 40 |
|------|----|----|

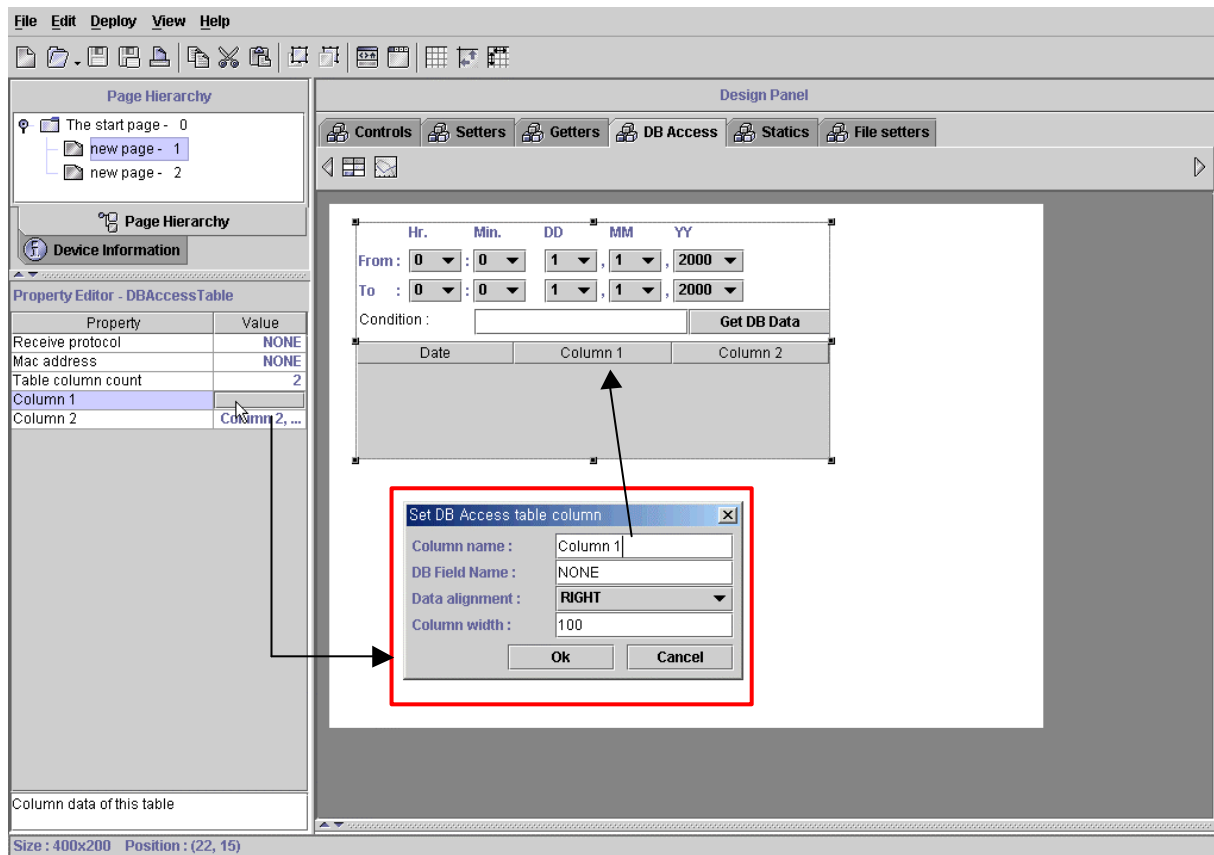
( Field name : data)

Date Field 가

. Date

[ 3.36.1 DB Access Table ]

## (2) Property



[ 3.36.2 DB Access Table Property ]

- Receive protocol : .
- Mac address : . MAC .
- ( NONE ), Applet Application
- DeviceSelector MAC
- Table column count : .
- Column .
- Column N : Set DB Access table column .
- Column .

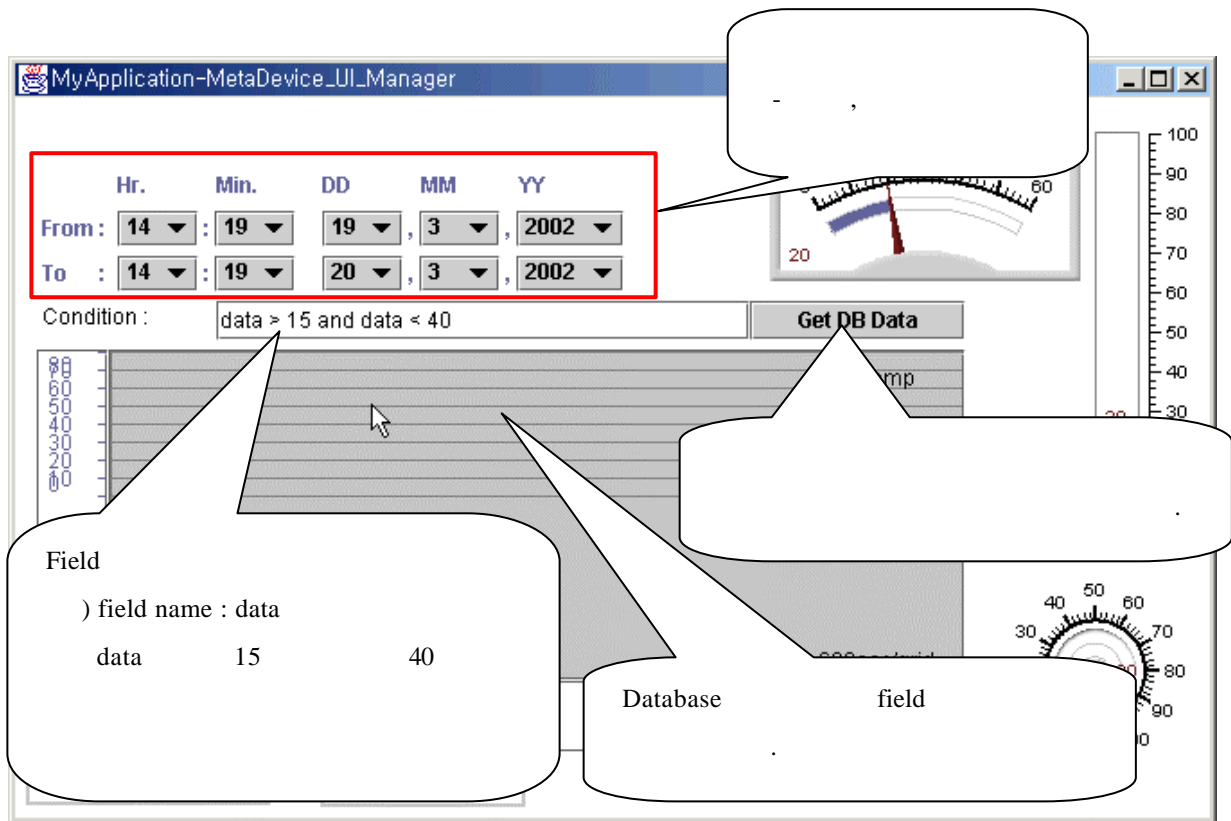
## &lt; Set DB Access table column &gt;

- Column name : .
- DB field name : .
- Data Alignment : ( Right, Center, Left)
- Column width : .

## 7.2. DB Access Graph

(1)

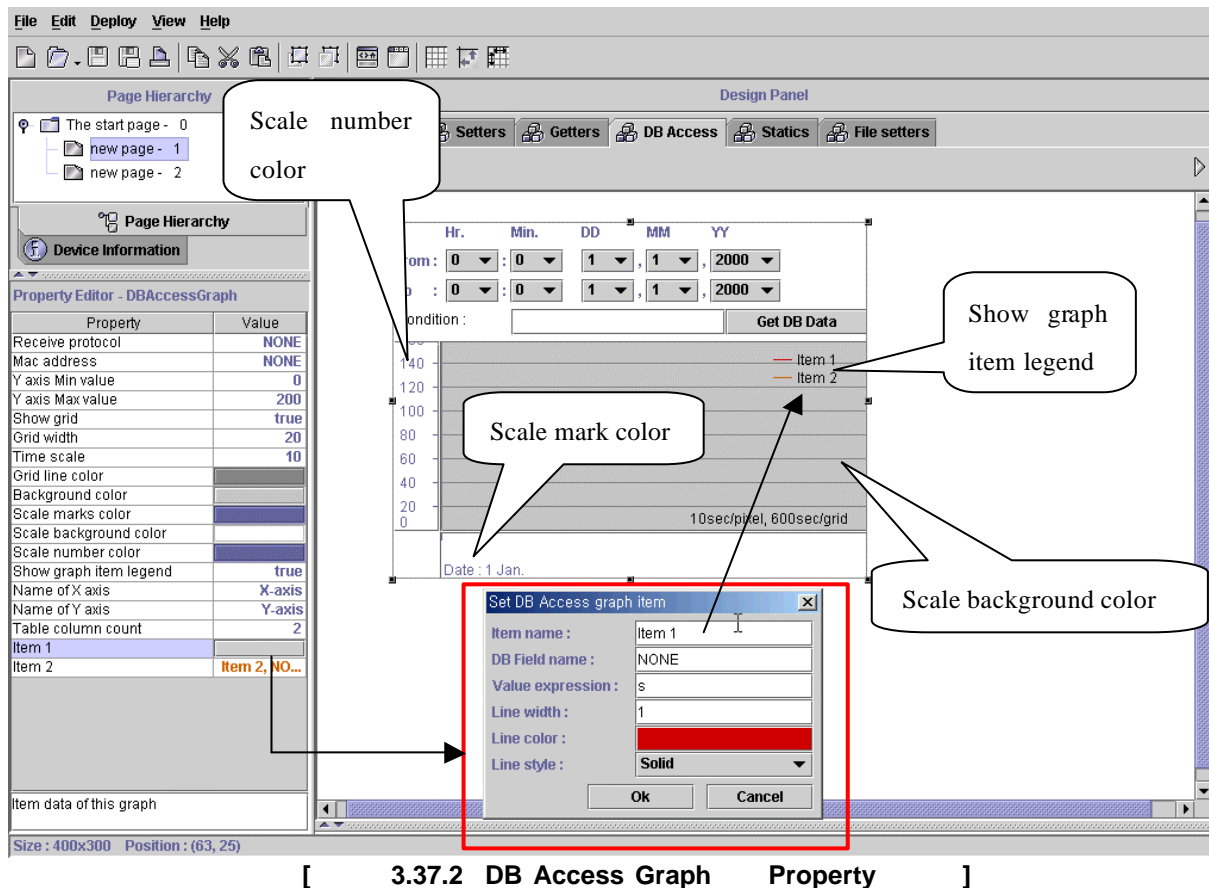
( m0, m1, m2..)



[ 3.37.1 DB Access Graph ]



## (2) Property



[ 3.37.2 DB Access Graph Property ]

- Receive protocol : .
- Mac address : MAC .
- ( NONE ), Applet Application
- DeviceSelector MAC
- Y Axis Min value : Y
- Y Axis Max value : Y
- Show grid : True .
- Grid width :
- Time scale :
- Grid line color :
- Background color :
- Scale mark color :
- Scale background color :
- Scale number color :

## MetaDevice

- Show graph item legend : True , item .
  - Name of X axis : X
  - Name of Y axis : Y
  - Table column count : Field  
Column
  - item N : Set DB Access graph item  
Column .
- < Set DB Access graph item >
- item name :
  - DB field name : .
  - value expression : DataBase S .  
S 가
  - Line width :
  - Line color : color
  - Line style : Dashed – , solid –

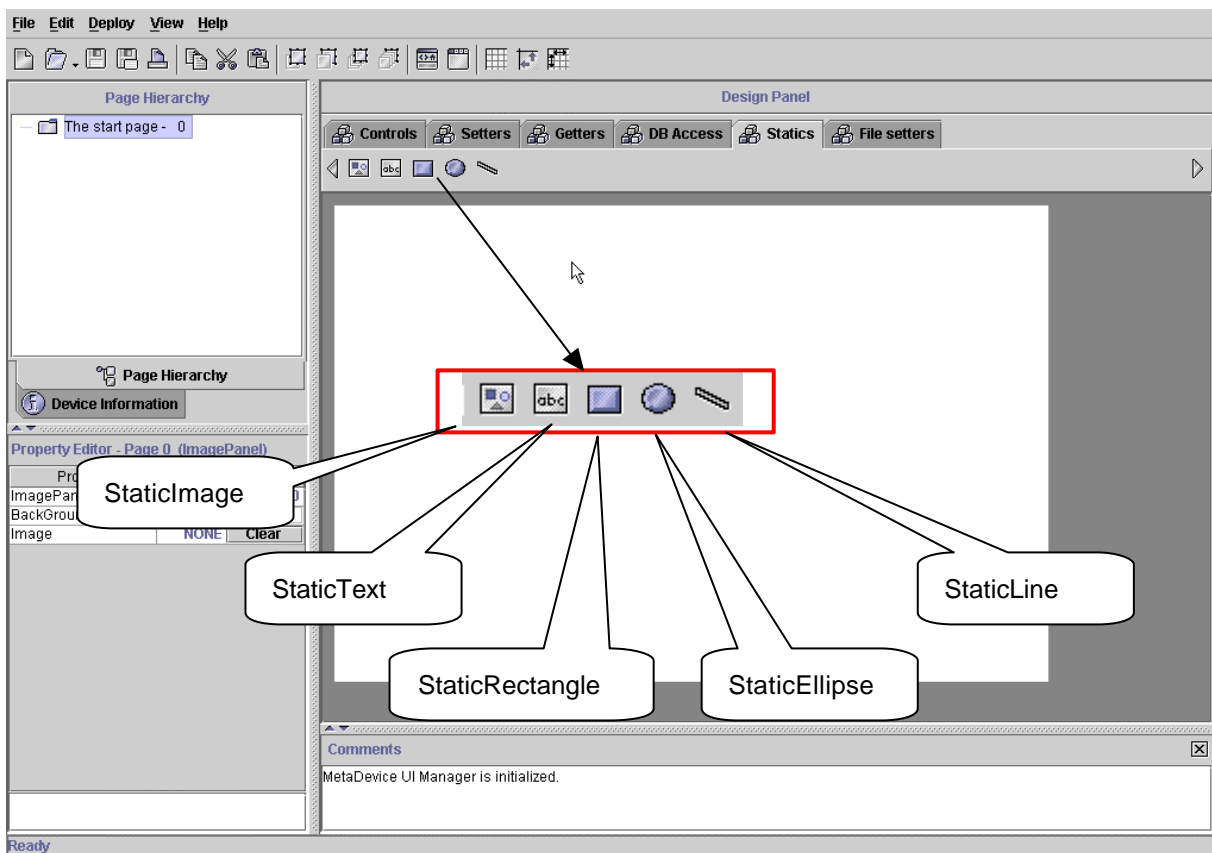
## 8 Static Component Group

### (1) Static Component ?

Static Component 가 . UI Applet  
Application , Label .

### (2) Static Component

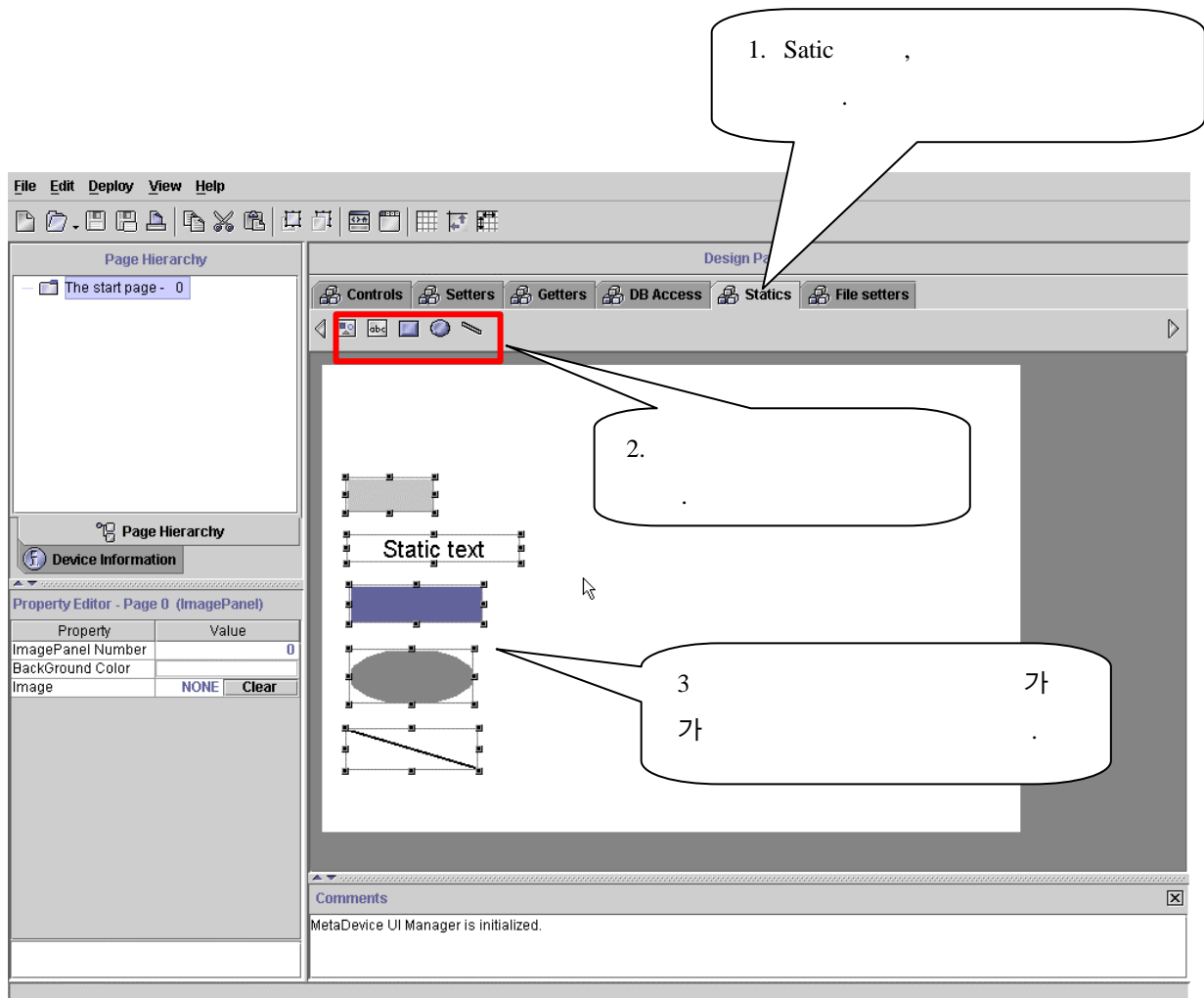
- StaticImage : Component
- StaticText :
- StaticRectangle :
- StaticEllipse :
- StaticLine :



[ 3.38.1 Static Component ]

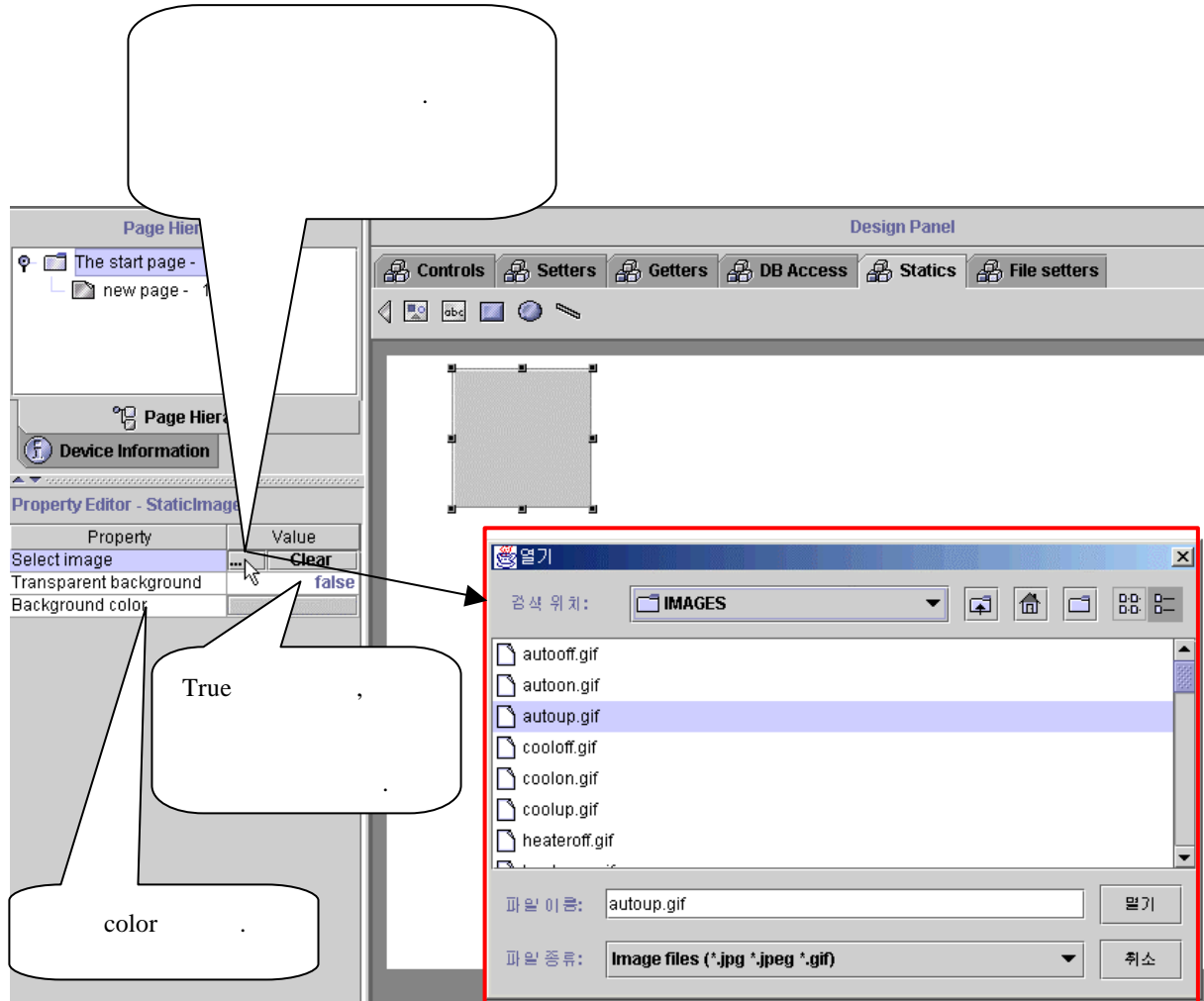
### (3) Static component UI 가

- Design Panel Static .
- Component 가 .
- Property .



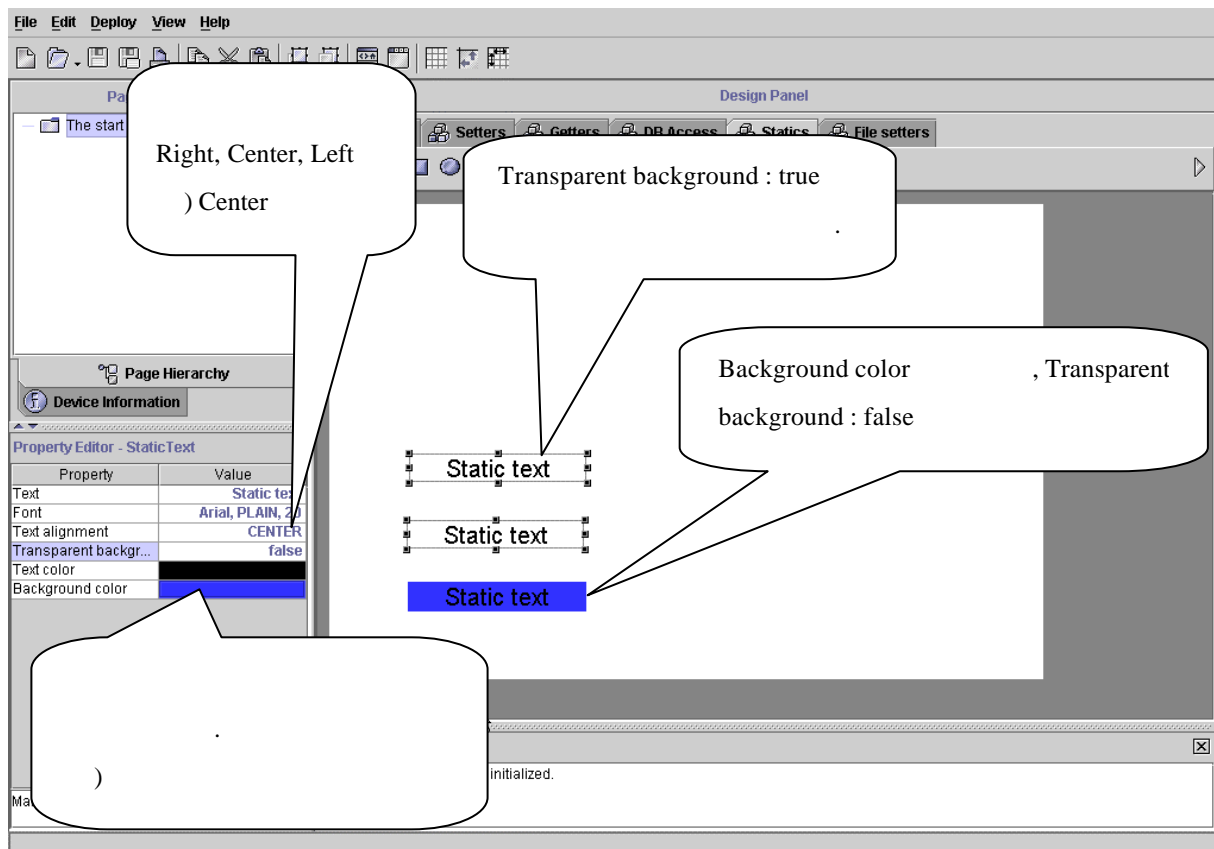
[ 3.38.2 Component 가 ]

## 8.1 Static Image Property



[ 3.39.1 Static Image Property ]

## 8.2 Static Text Property



[ 3.39.2 Static Text Property ]

### 8.3 StaticRectangle Property

**Device Information**

**Property Editor - StaticRectangle**

| Property             | Value  |
|----------------------|--------|
| Solid or Hollow type | Solid  |
| 3D effect            | Solid  |
| Raised or Lowered    | Hollow |
| Round edge           | Square |
| Line width           | 2      |
| Arc radius           | 20     |
| 3D height            | 4      |
| Component color      |        |

Component color

**Property Editor - StaticRectangle**

| Property             | Value         |
|----------------------|---------------|
| Solid or Hollow type | Solid         |
| 3D effect            | 2 Dimensional |
| Raised or Lowered    | 3 Dimensional |
| Round edge           | 2 Dimensional |
| Line width           | 2             |
| Arc radius           | 20            |
| 3D height            | 4             |
| Component color      |               |

3D height

**Property Editor - StaticRectangle**

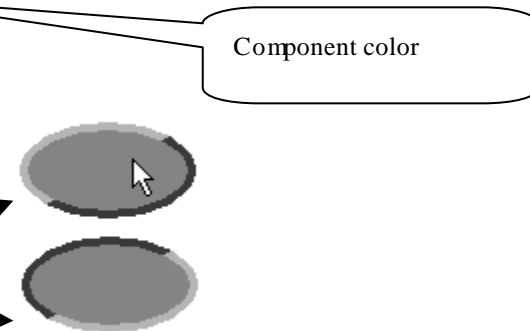
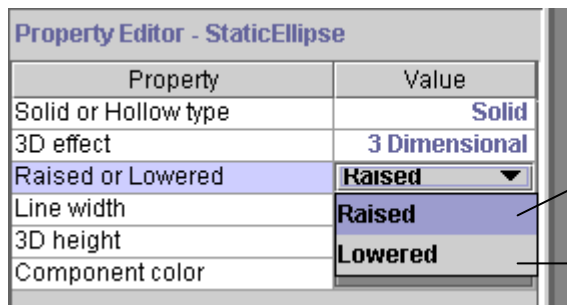
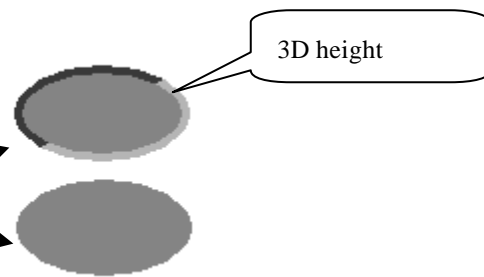
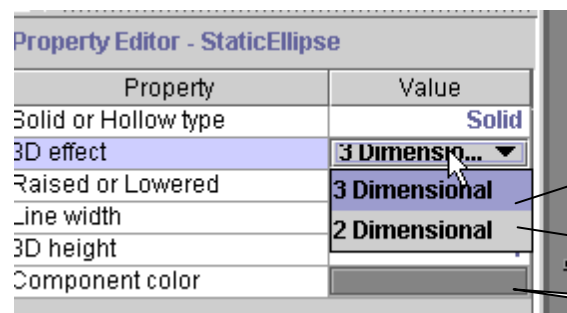
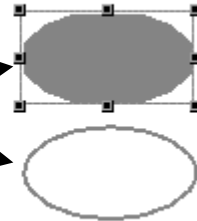
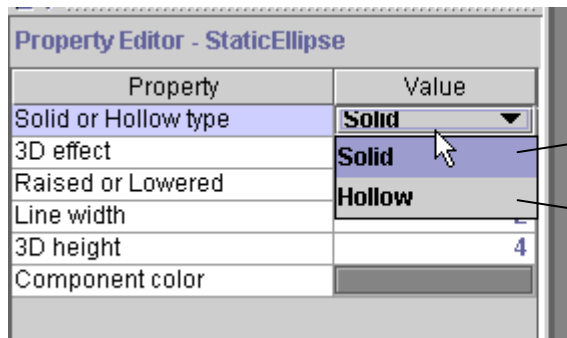
| Property             | Value         |
|----------------------|---------------|
| Solid or Hollow type | Solid         |
| 3D effect            | 3 Dimensional |
| Raised or Lowered    | Lowered       |
| Round edge           | Raised        |
| Line width           | Lowered       |
| Arc radius           | 20            |
| 3D height            | 4             |
| Component color      |               |

Arc radius

**Property Editor - StaticRectangle**

|                   |               |
|-------------------|---------------|
| 3D effect         | 3 Dimensional |
| Raised or Lowered | Raised        |
| Round edge        | Round         |
| Line width        | Round         |
| Arc radius        | Square        |
| 3D height         |               |
| Component color   |               |

## 8.4 Static Ellipse Property



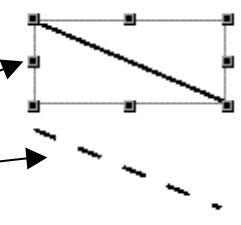
[ .3.39.4 StaticEllipse Property ]



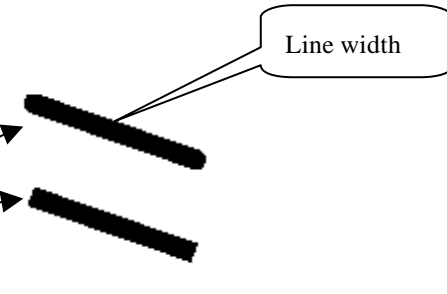
## 8.5 StaticLine Property

**Property Editor - StaticLine**

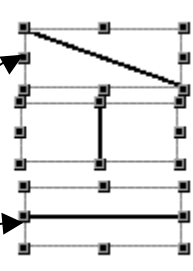
| Property             | Value        |
|----------------------|--------------|
| Solid or dashed type | Solid        |
| Set dash type        | Solid        |
| Line width           | Dashed       |
| End style            | Square       |
| Line alignment       | LTop-RBottom |

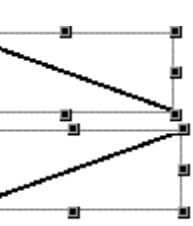
| Property             | Value  |
|----------------------|--------|
| Solid or dashed type | Solid  |
| Set dash type        | 12:12  |
| Line width           | 10     |
| End style            | Round  |
| Line alignment       | Round  |
| Line orientation     | Square |
| Component color      |        |

| Property         | Value        |
|------------------|--------------|
| Set dash type    | 12:12        |
| Line width       | 2            |
| End style        | Square       |
| Line alignment   | LTop-RBottom |
| Line orientation | HORIZONTAL   |
| Component color  | INCLINED     |
|                  | VERTICAL     |
|                  | HORIZONTAL   |

| Property         | Value        |
|------------------|--------------|
| End style        | Square       |
| Line alignment   | LBottom-RTop |
| Line orientation | LTop-RBottom |
| Component color  | LBottom-RTop |



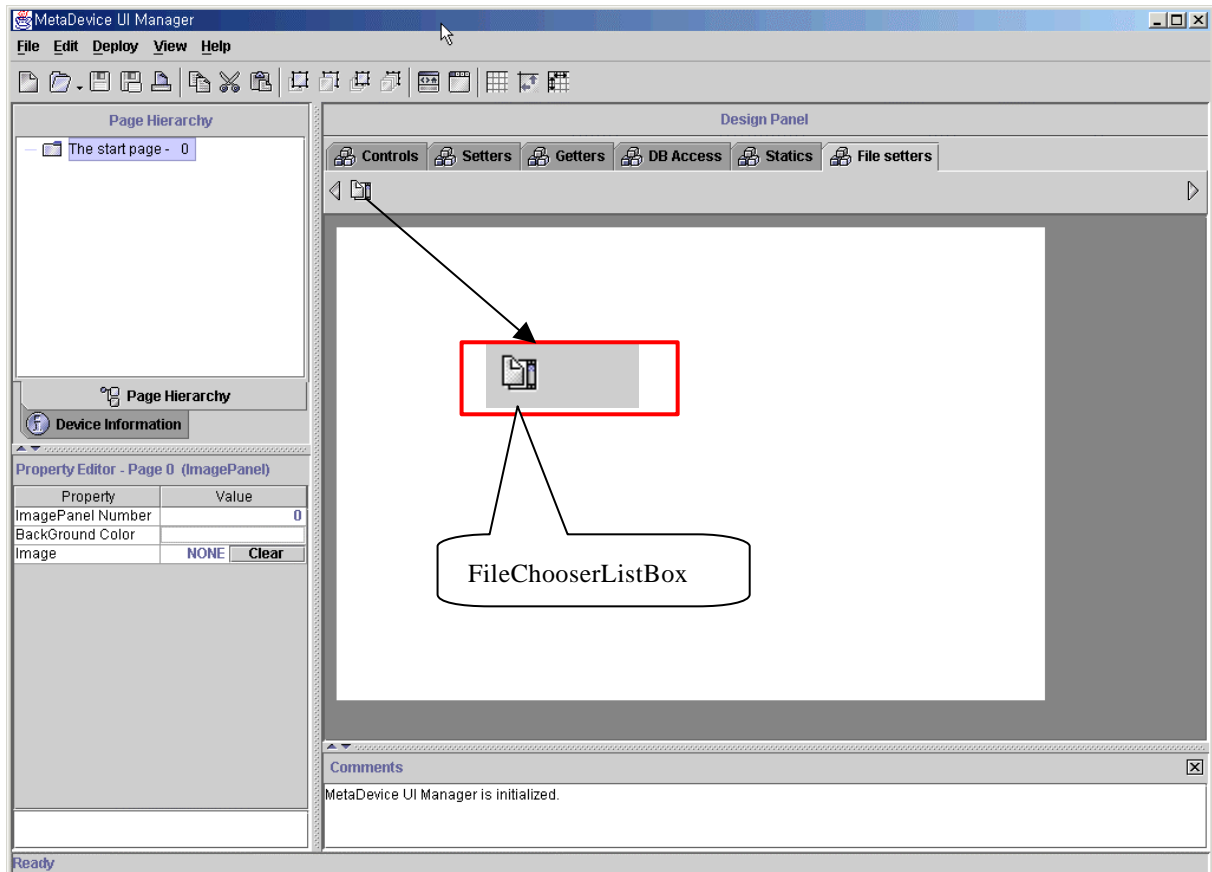
[ .3.39.5 StaticLine Property ]

## 9. File Setters Component group

(1) File setters Component ?

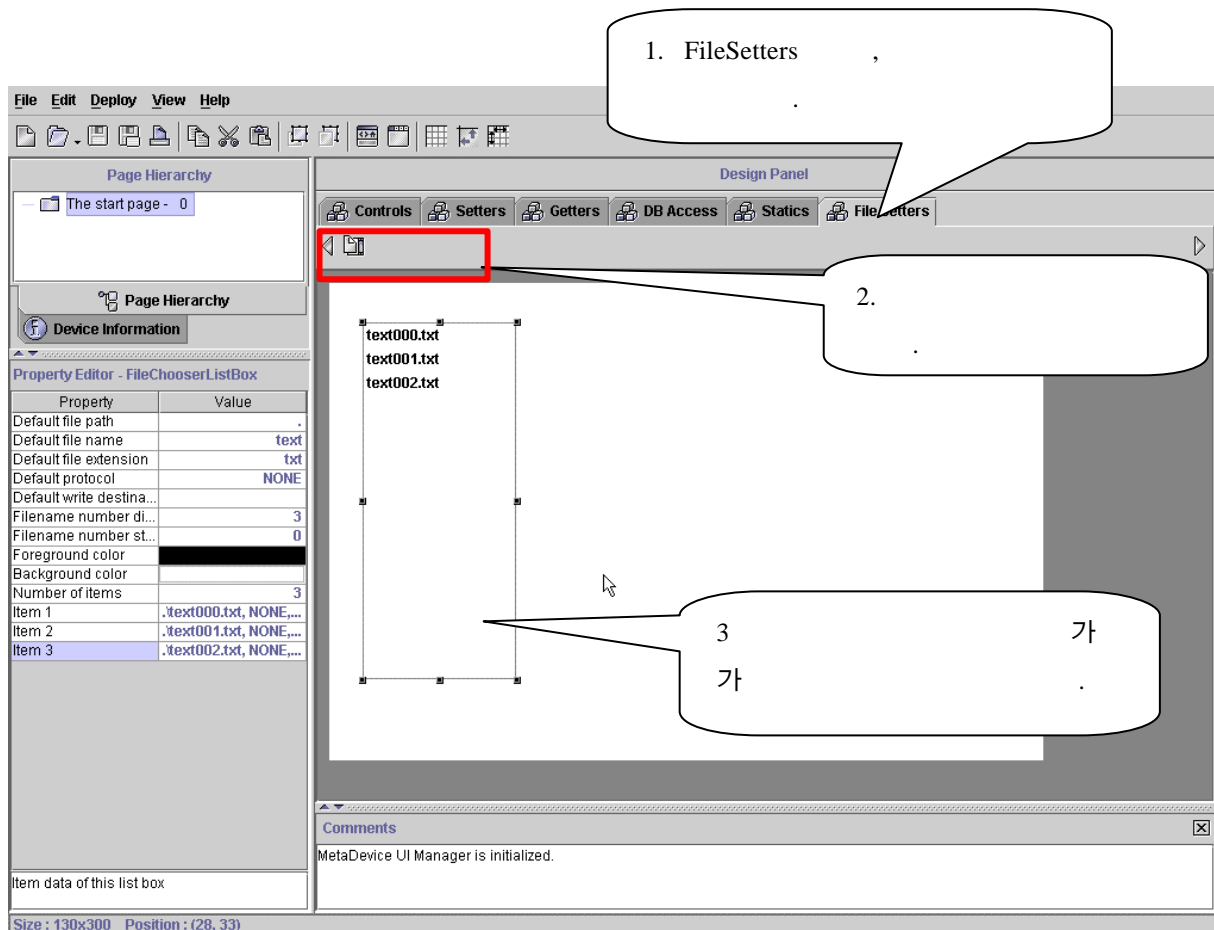
(2) File setters Component

- FileChooserListBox :



[ 3.40.1 File setters Component ]

- (3) **File Setters UI** 가
- Design Panel FileSetters Group .
  - Component 가 .
  - Property .

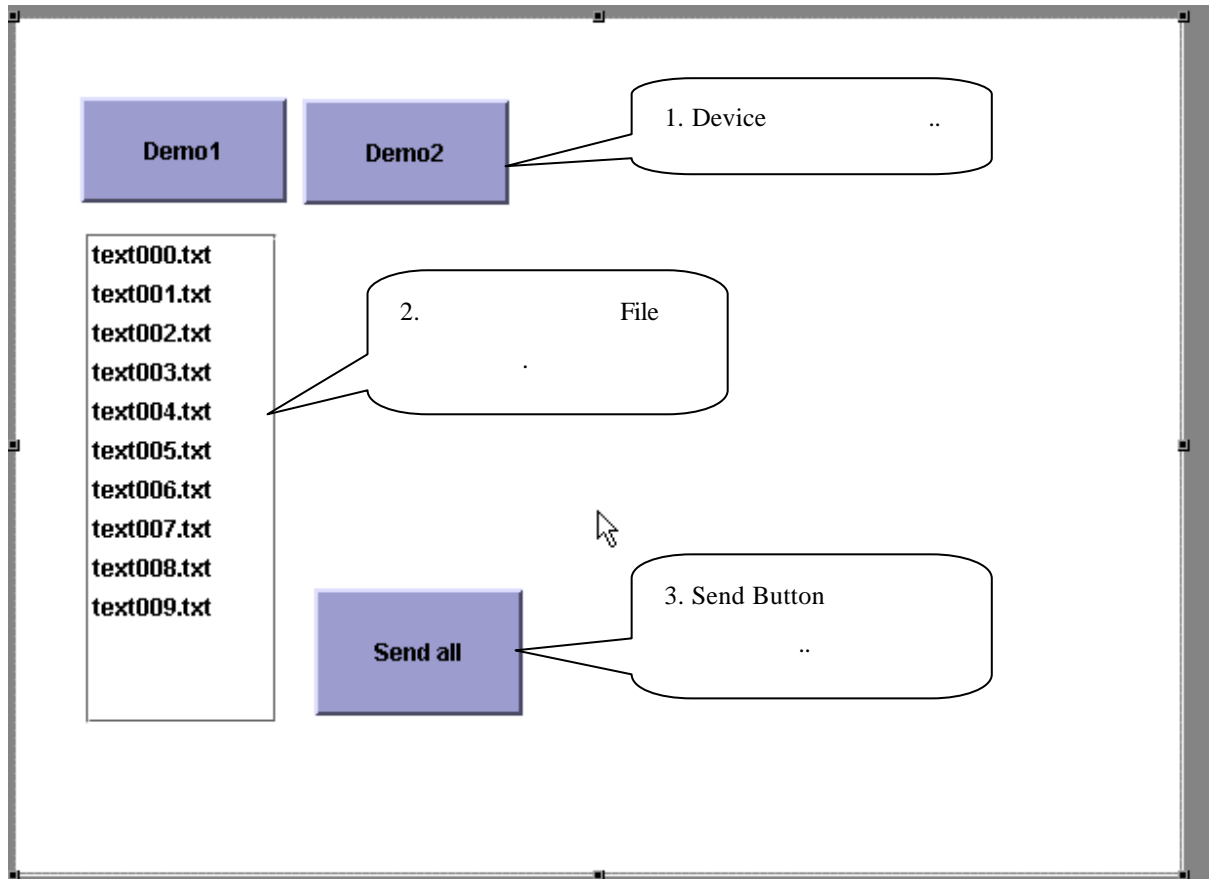


[ 3.40.2 File Setters Component UI 가 ]

## 9.1 FileChooserListbox

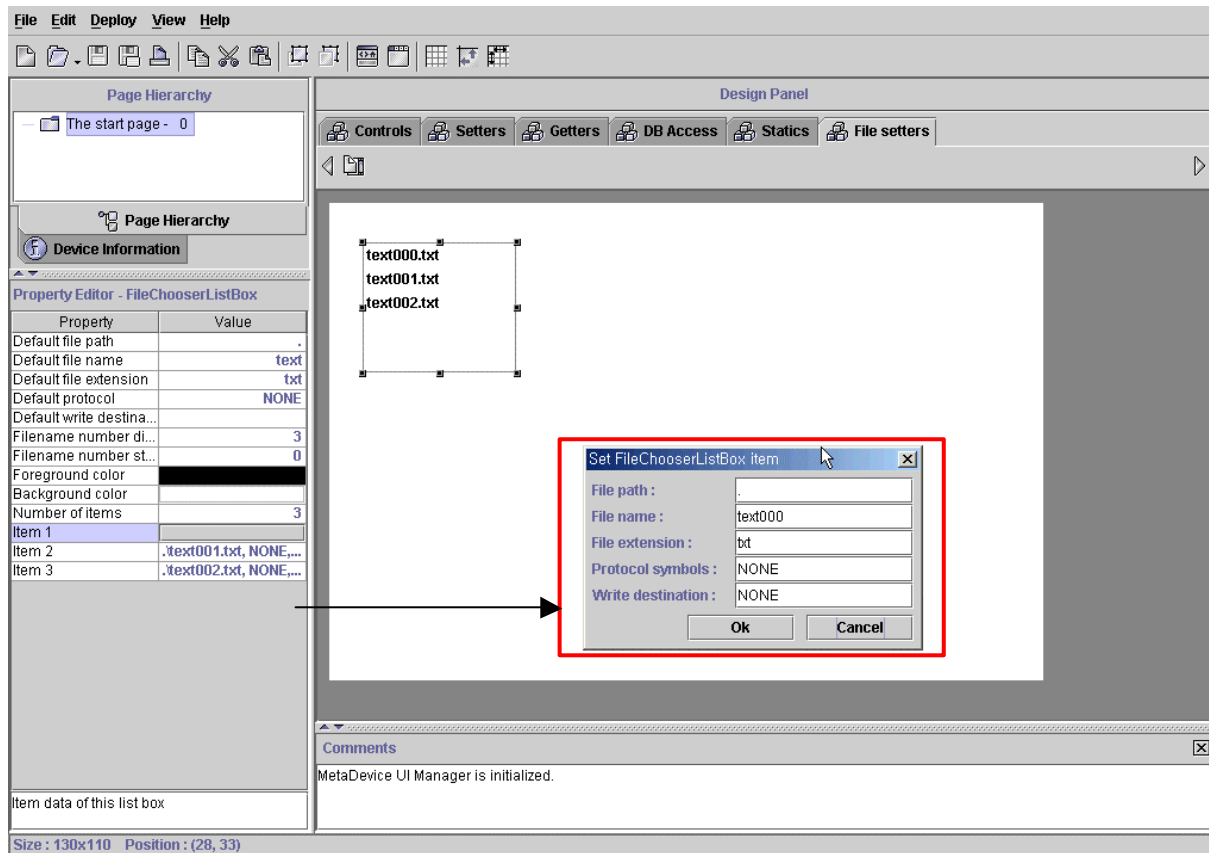
(1)

Application



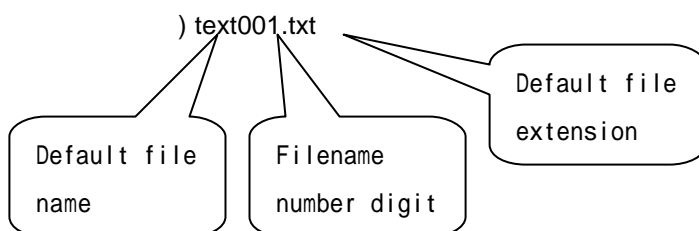
[ 3.41.1 FileChooserListbox ]

## (2) Property



## [ 3.41.2 FileChooserListBox Property ]

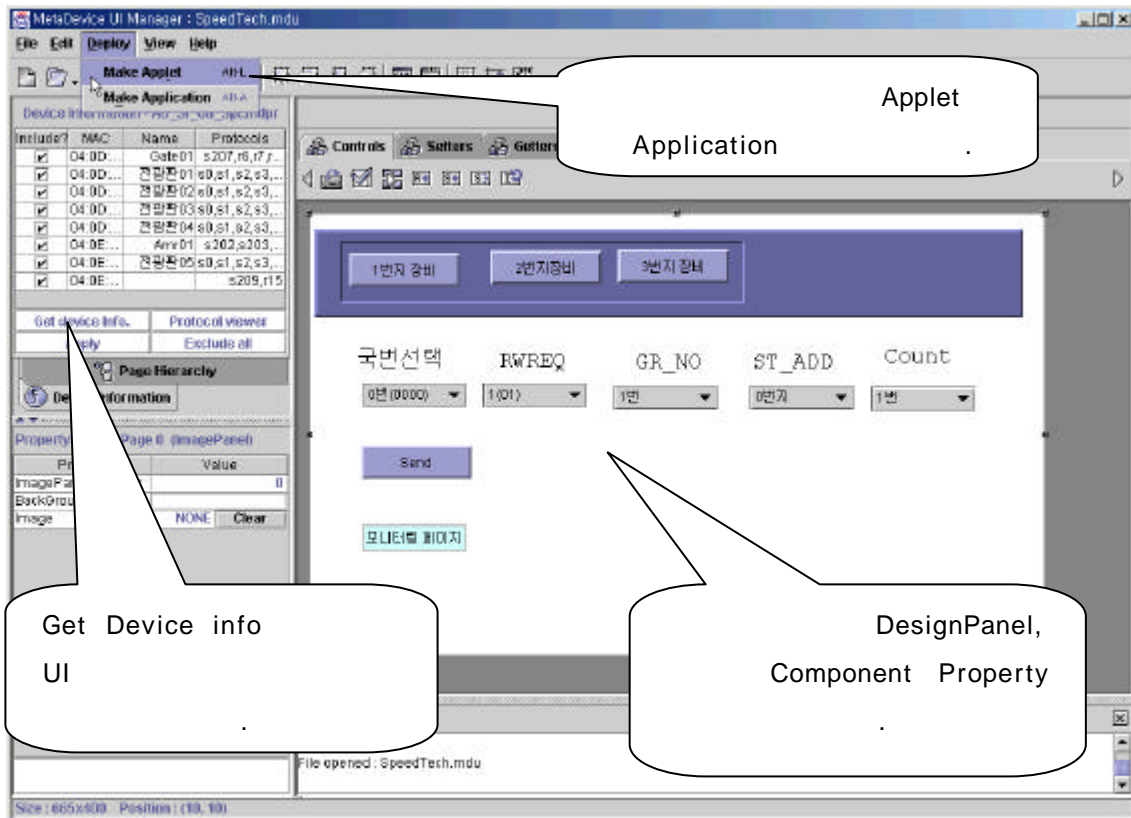
- Default file path : .
  - Default file name : .
  - Default file extension : . )txt
  - Default protocol : .
  - Default write destination : .
  - Filename number digit : Default file name
  - Filename number start of index : .
  - Number of items : .
  - item N : .
- Property Set FileChooserListBox item



## 9. Deploy

(1) Deploy ?

가 UI Manager Design Panel ,  
Component Property Applet Application  
Program . Applet  
가 . Applet



[ 3.42 Deploy Menu ]

## MetaDevice

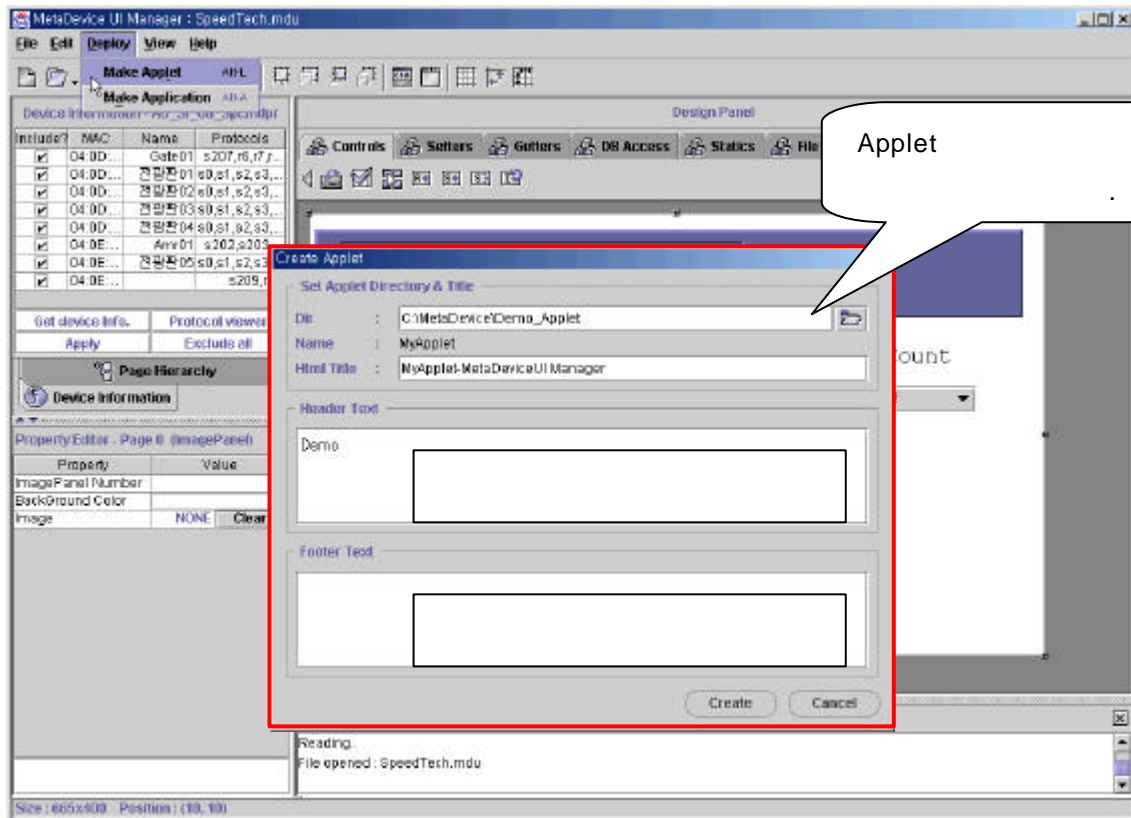
(2) Applet

- **Menu Bar**      Deploy      Applet      [      3.43 ]

. Applet

Create

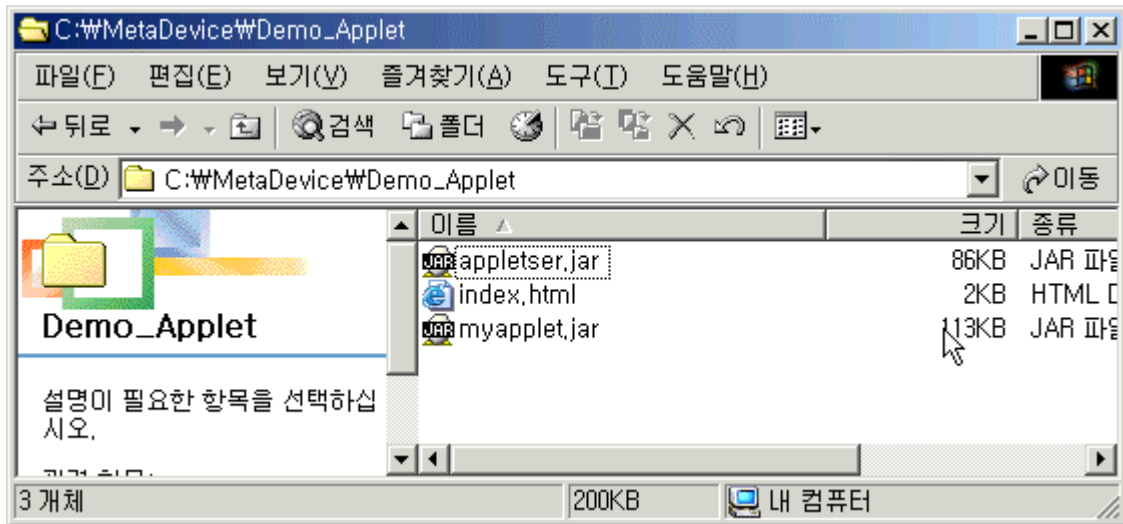
Applet



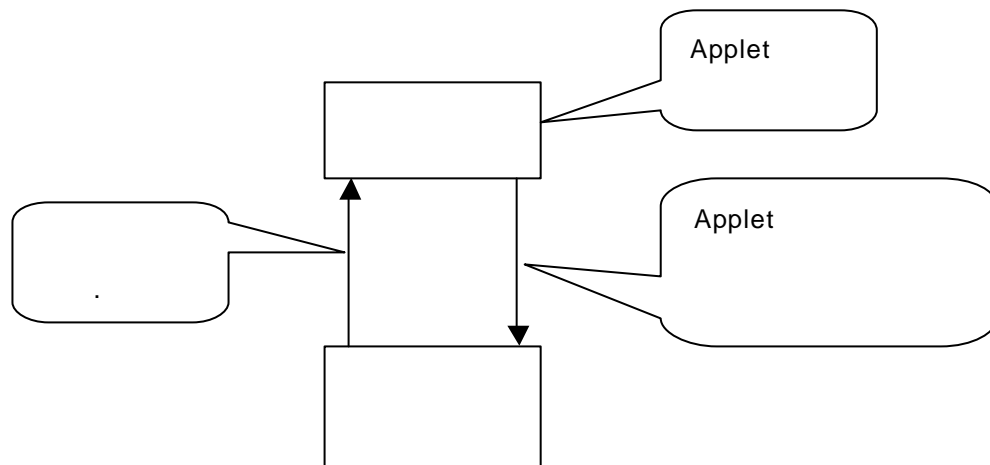
[      3.43      Create Applet      ]

-  
Applet  
- HTML      Index.html  
file      Link

## MetaDevice



[ 3.44 ]  
- Applet 가 MetaDevice





## MetaDevice

[ 3.45 Applet ]

(3) Application

- Menu Bar

Deploy

Application

[ ]

. Application

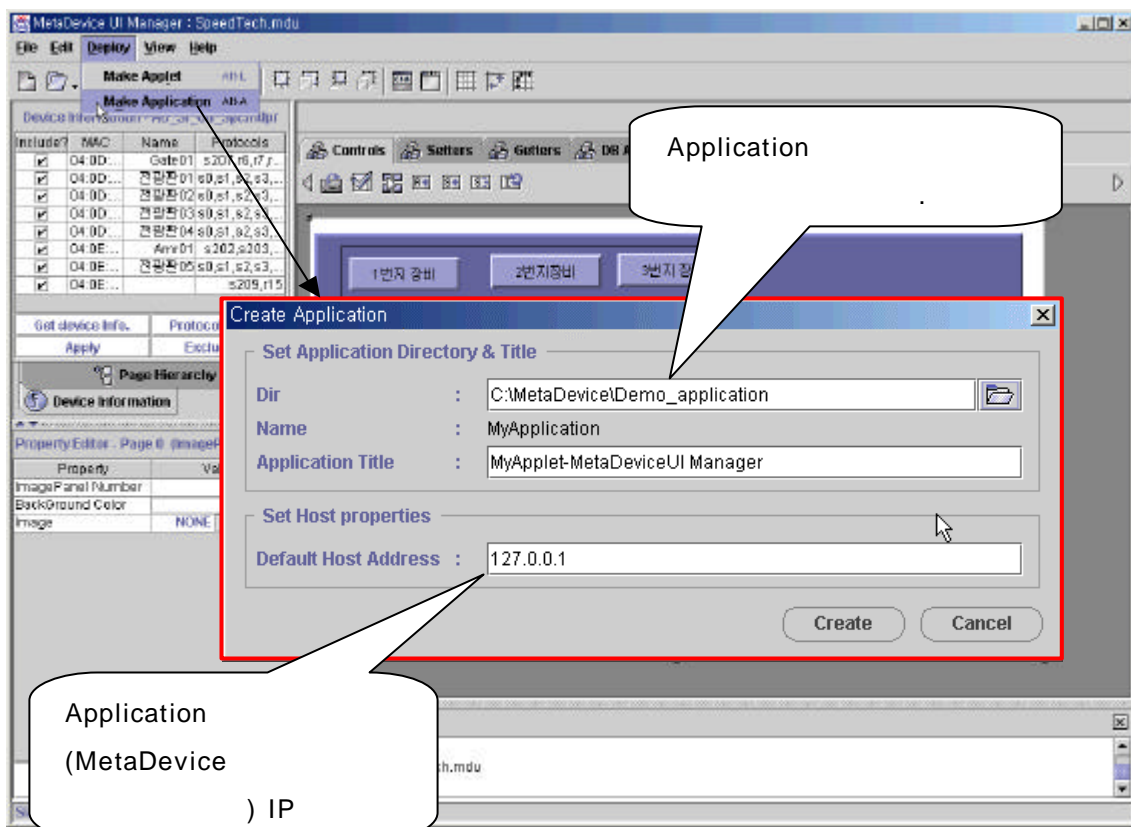
, (

)

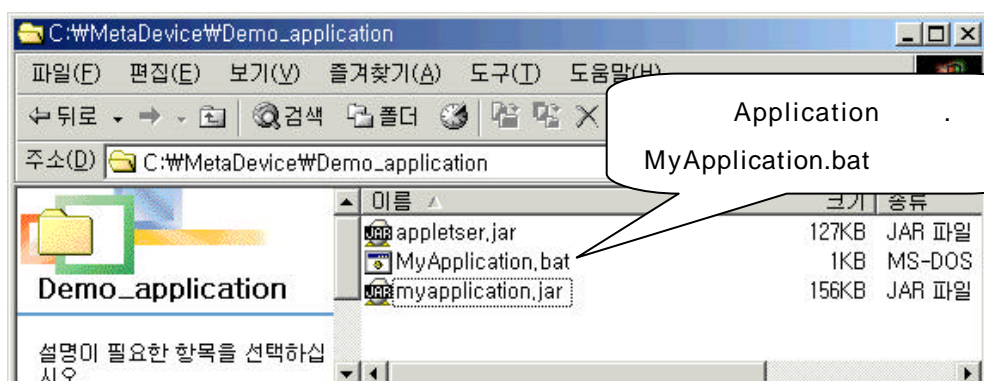
IP

Create

Applet



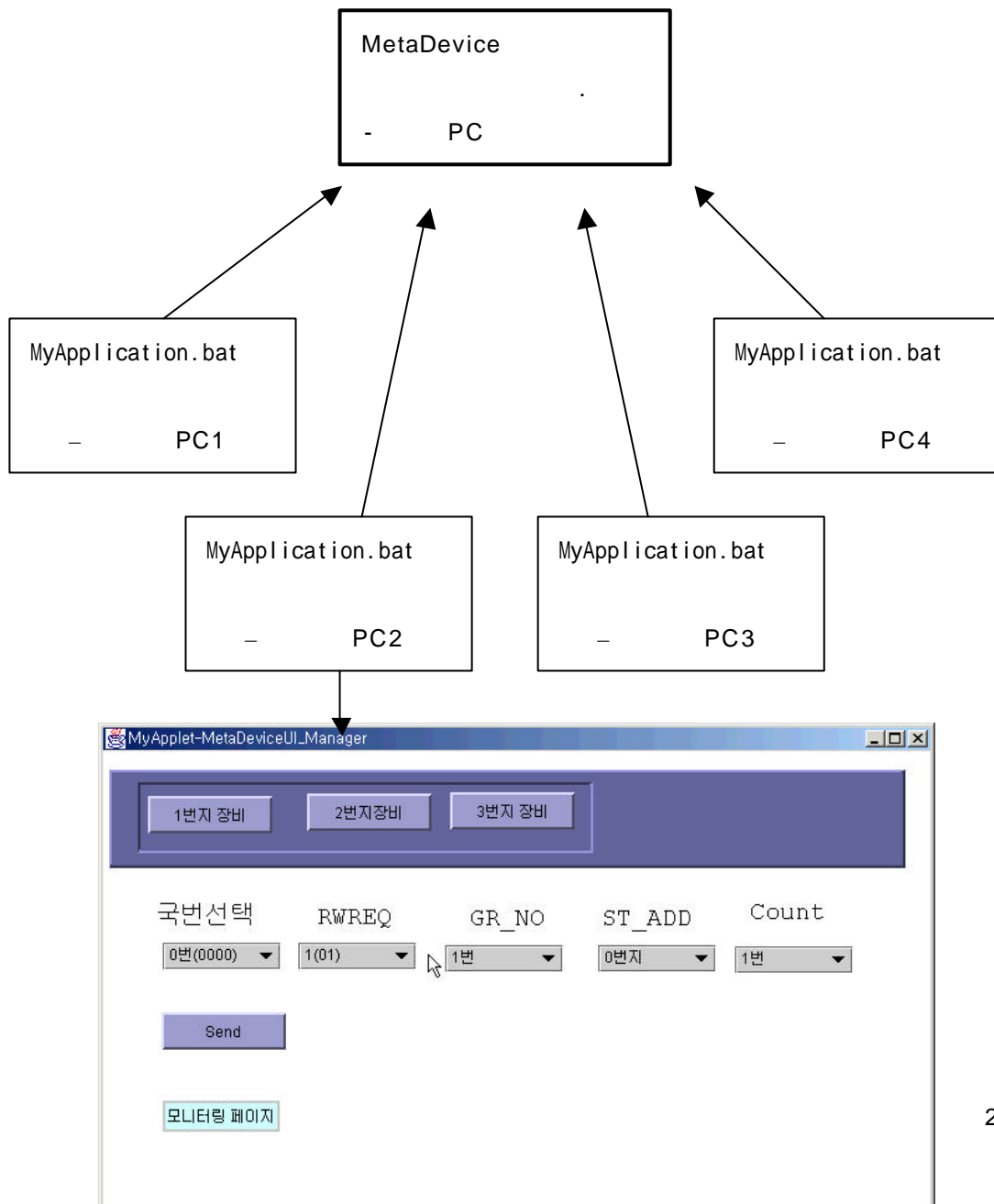
[ 3.46 Create Application ]



## MetaDevice

[ 3.47 ]

- Application      MetaDevice      PC  
MyApplication.bat



MetaDevice

[ 3.48 PC Application ]

# 4

## MetaDevice

1.

가

Semantics

UI

가

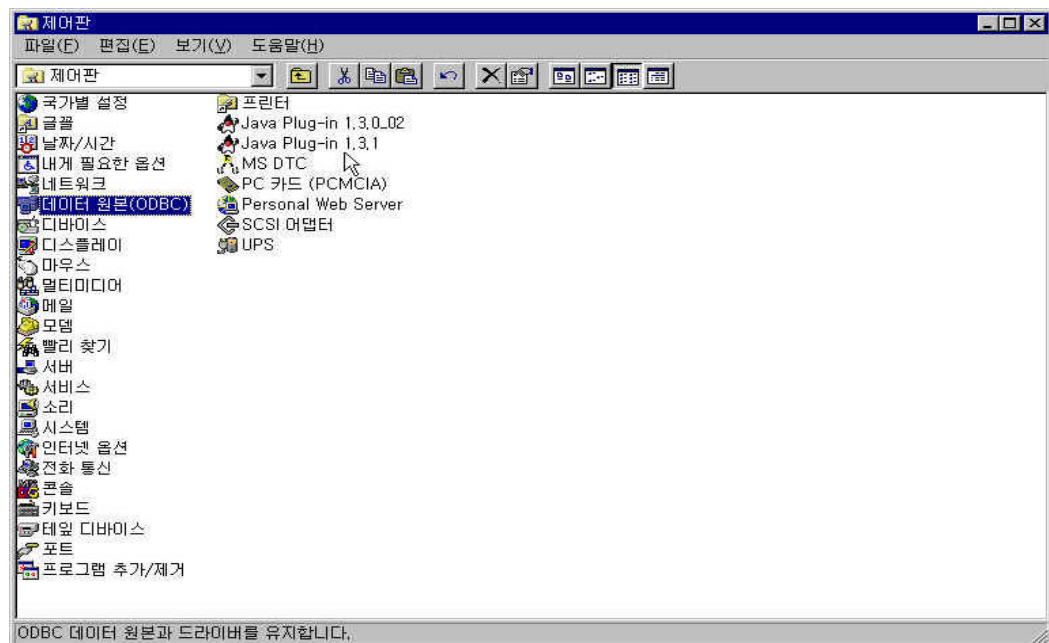
가

UI

-

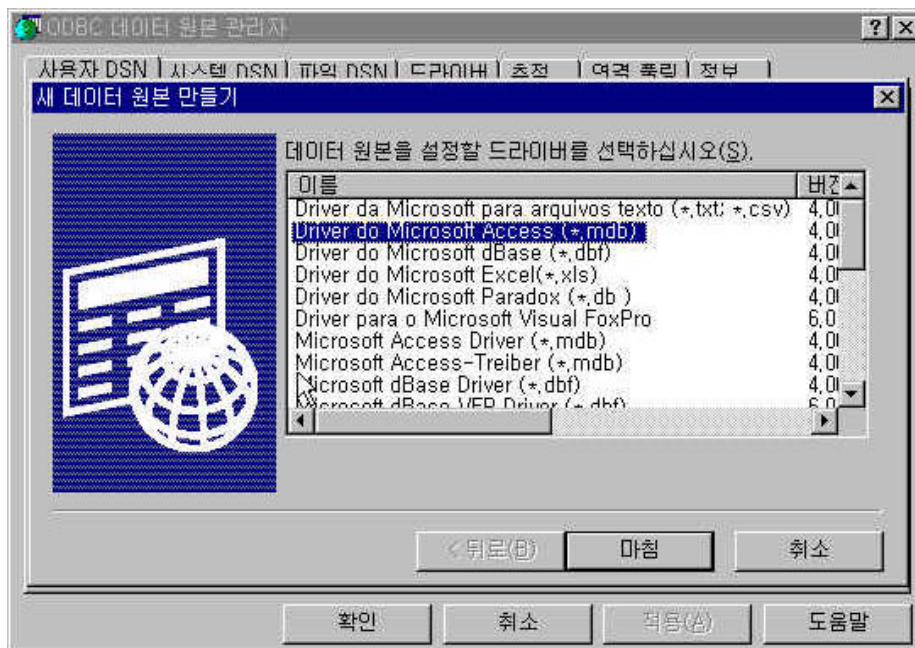
- (1) java.sun.com jdk1.3.1\_02
- (2) 가 jdk
- (3) 가 1 1.2.3 java
- (4) MetaDevice 1 2
- (5) MetaDevice MS Access DSN

- Menu -> -> ODBC

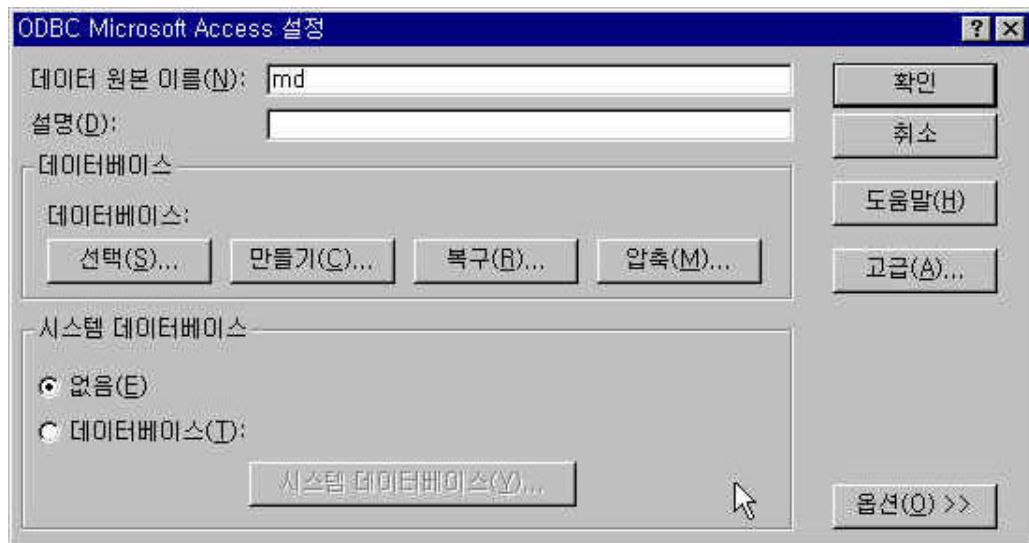




- ODBC DSN Tab “가”



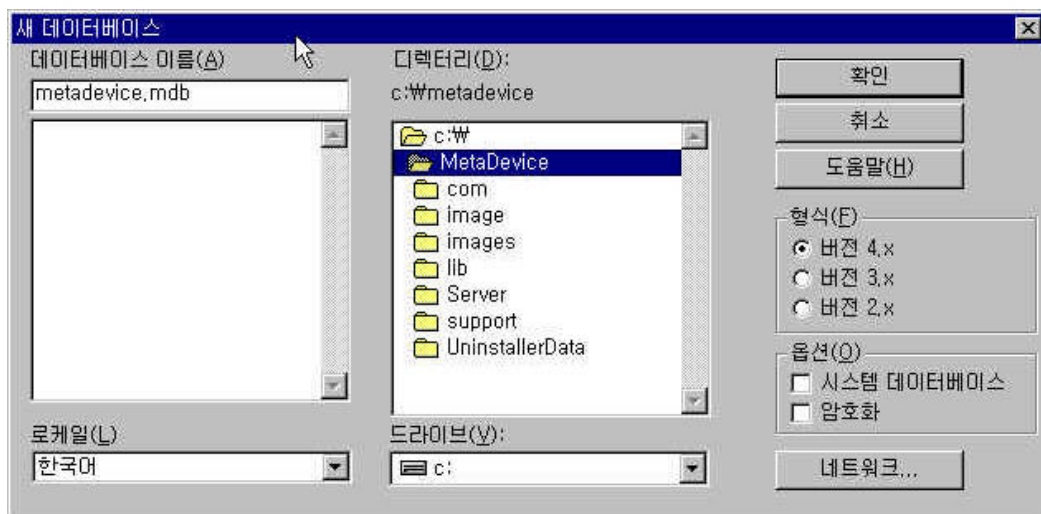
- MicroSoft Access



- Access DSN

"md"

" "



"metadevice.mdb"

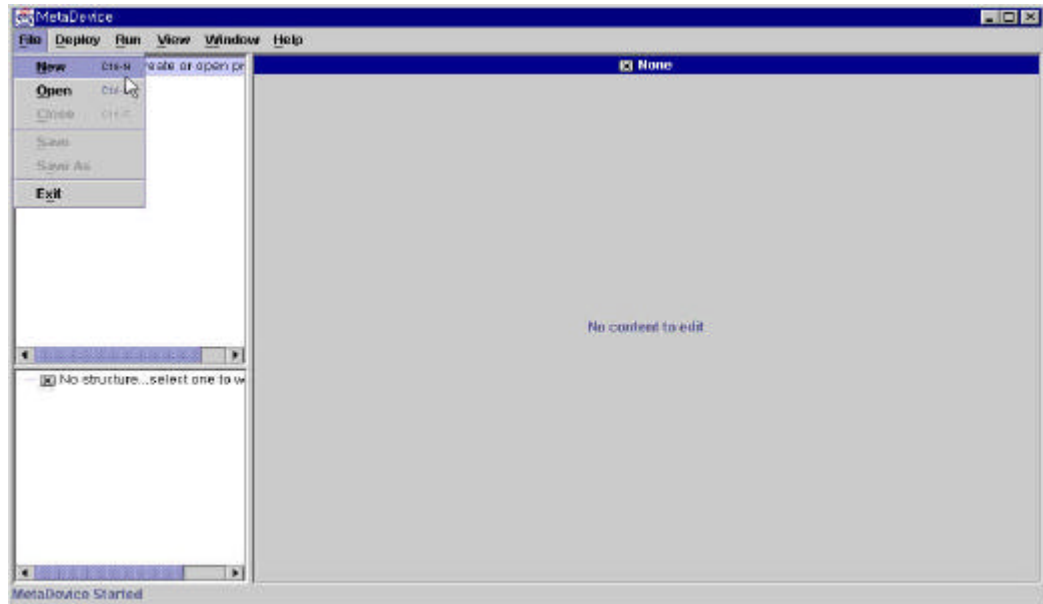
Directory      MetaDevice가      Directory

가      Message가

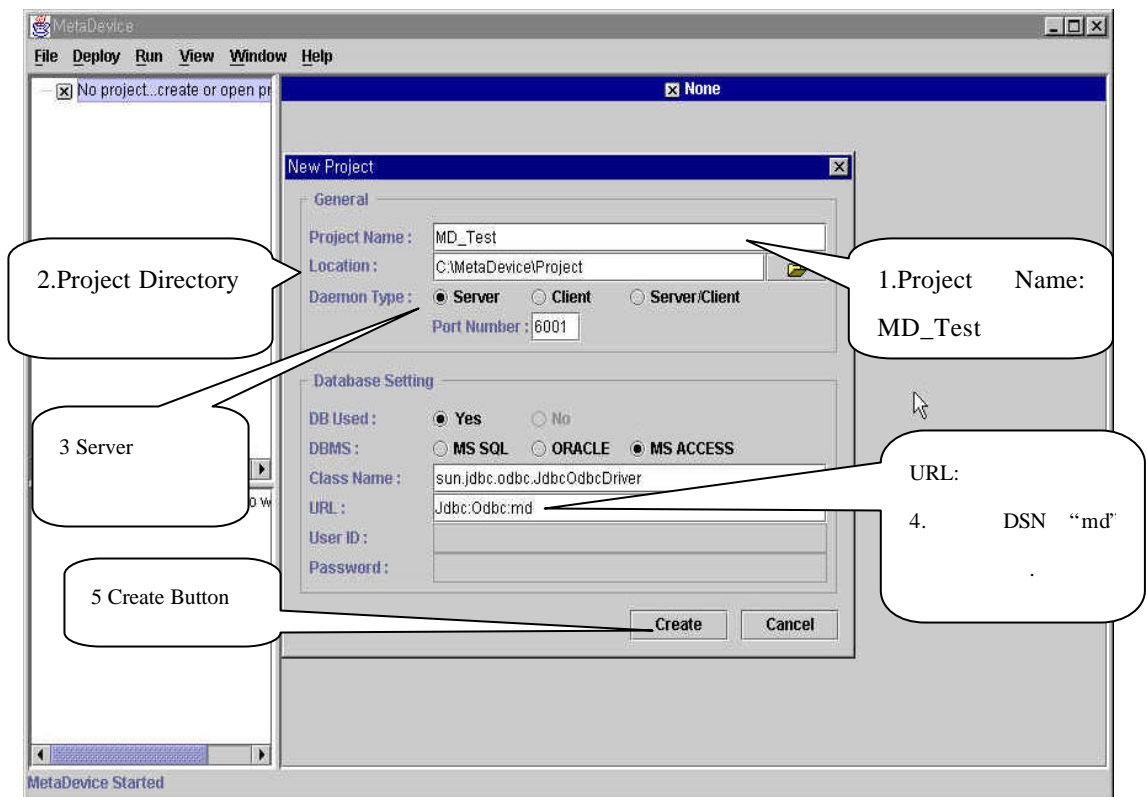
" "

- MetaDevice Server Manager

- (1) MetaDevice가 Directory Project Directory
- (2) MetaDevice ServerManager ICON



(3) File Menu Project File



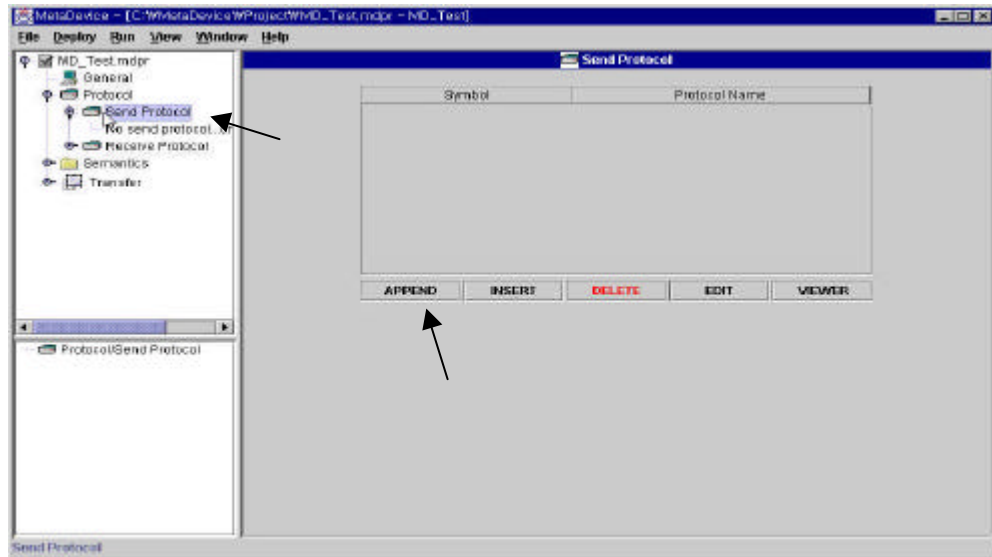


## MetaDevice

(4) Create

Protocol

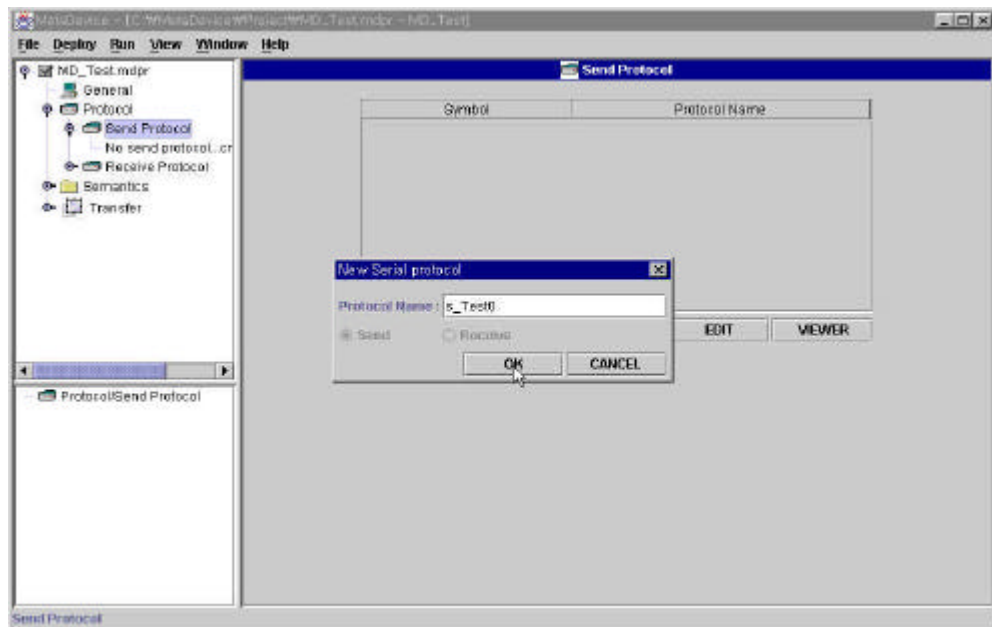
Send Protocol



(5) Protocol Name

"Append"

.



(6) Protocol Name "s\_Test0"

"OK"

.

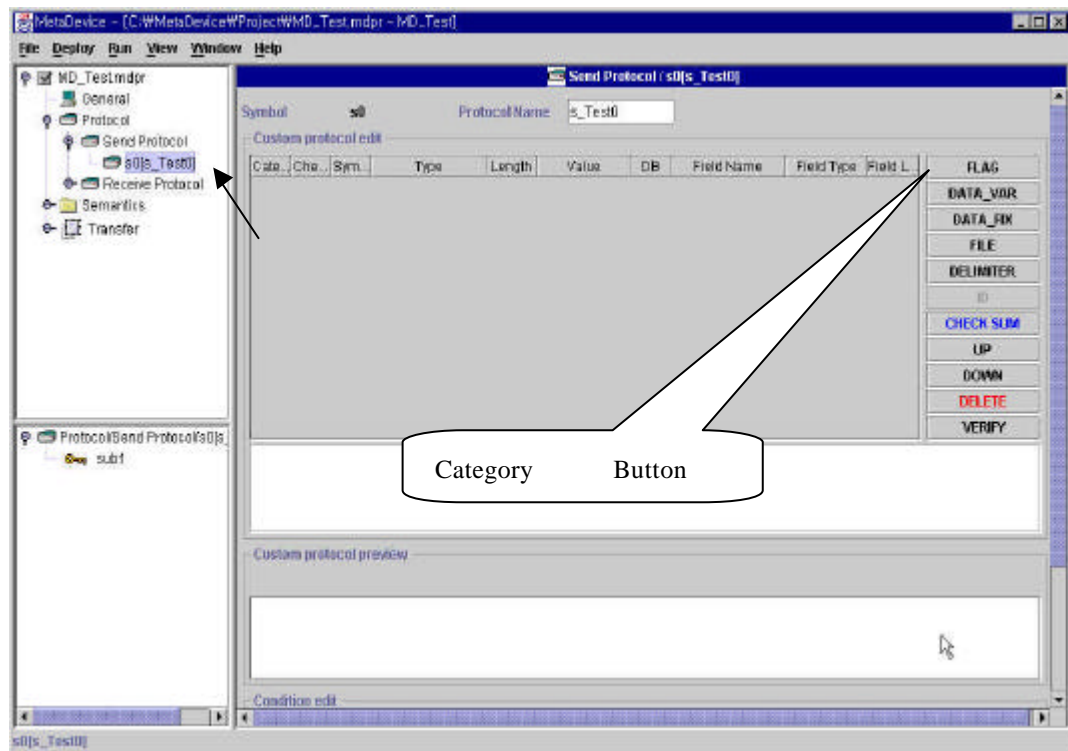
## MetaDevice

(7) s\_Test0 Protocol Name

Device

Protocol

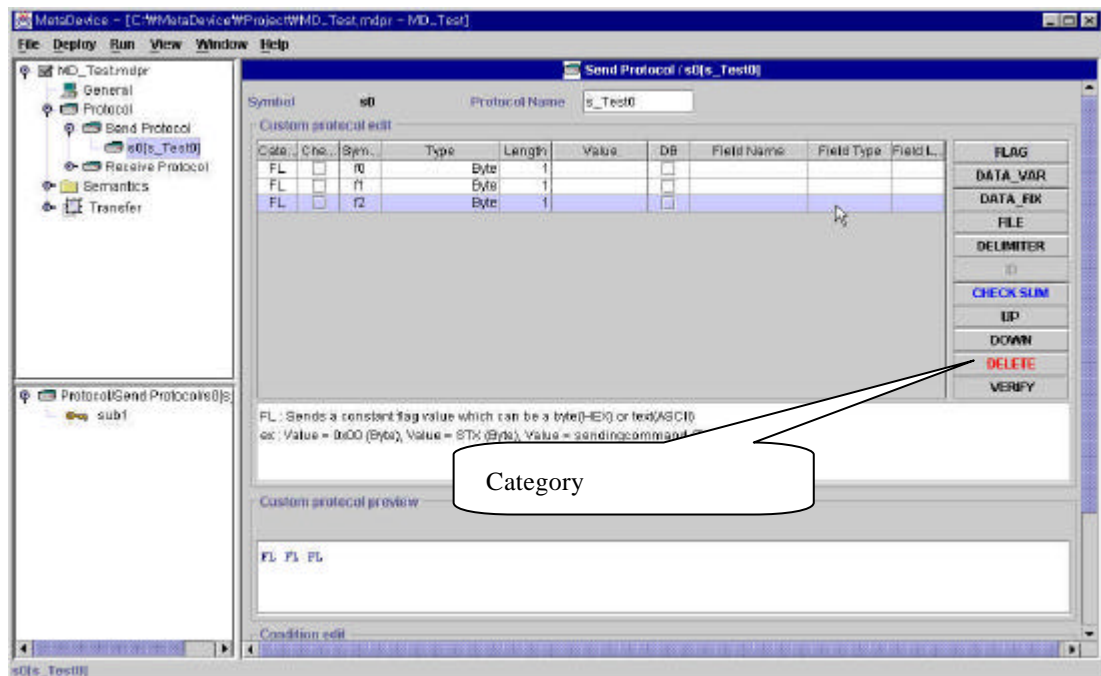
Protocol Name



(8) Protocol

Category

"Flag"



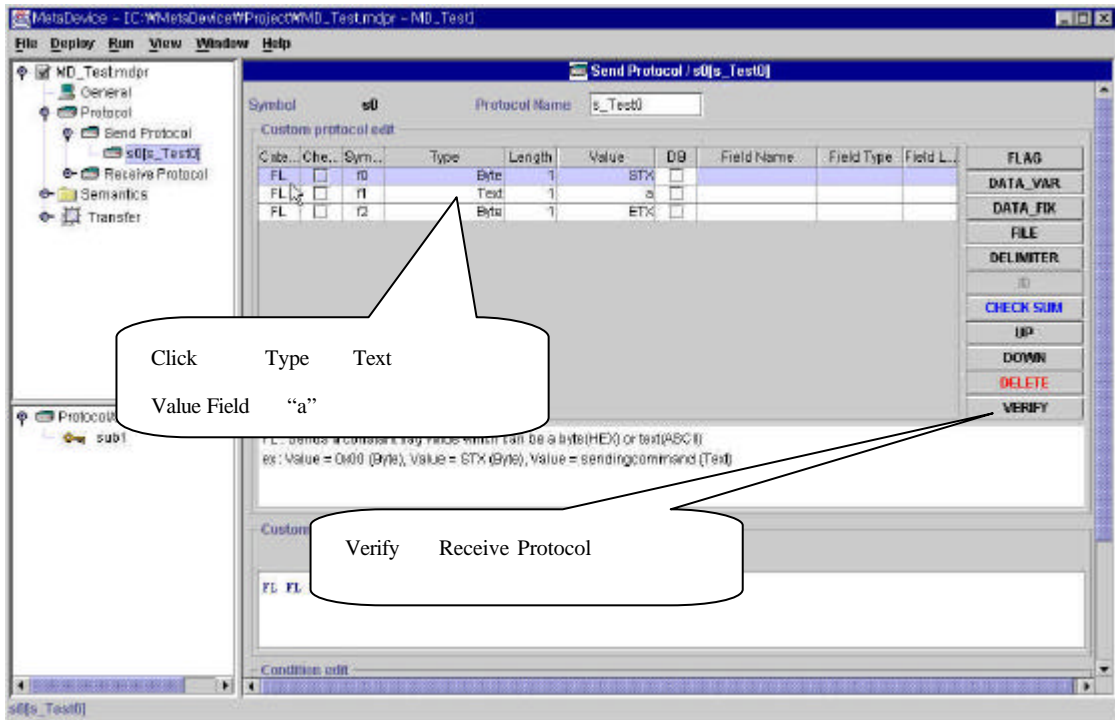
(9) Protocol

Value Field

Device

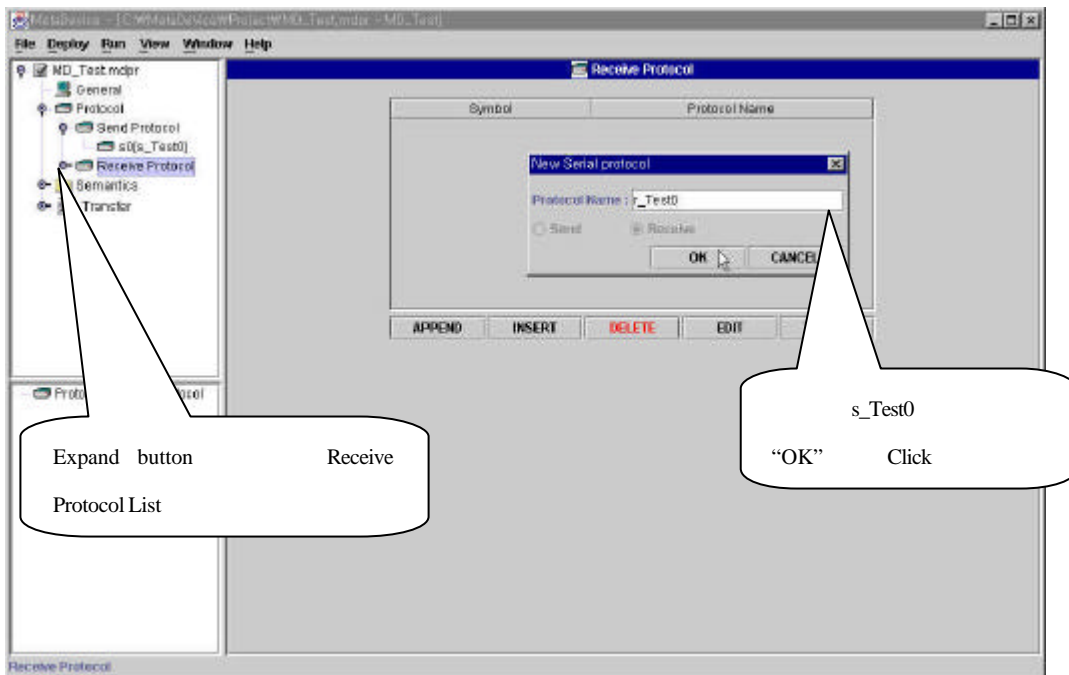
"STX+a+ETX"

Protocol



(10) Verify & Save

Receive Protocol



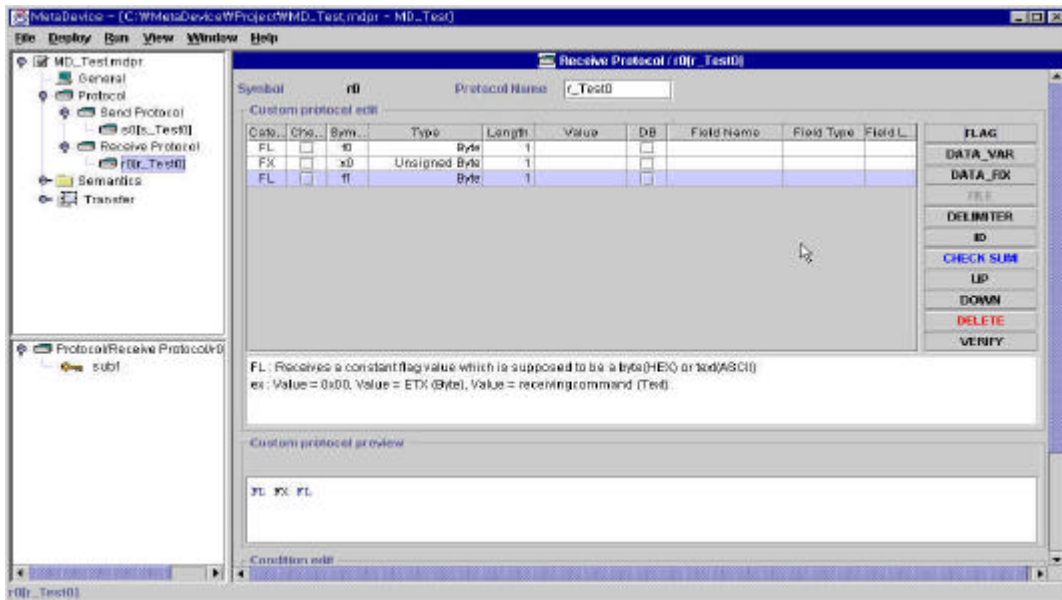
(11) Send Protocol

2

"DATA\_FIX" Category

. Category

"FLAG", "DATA\_FIX", "FLAG"



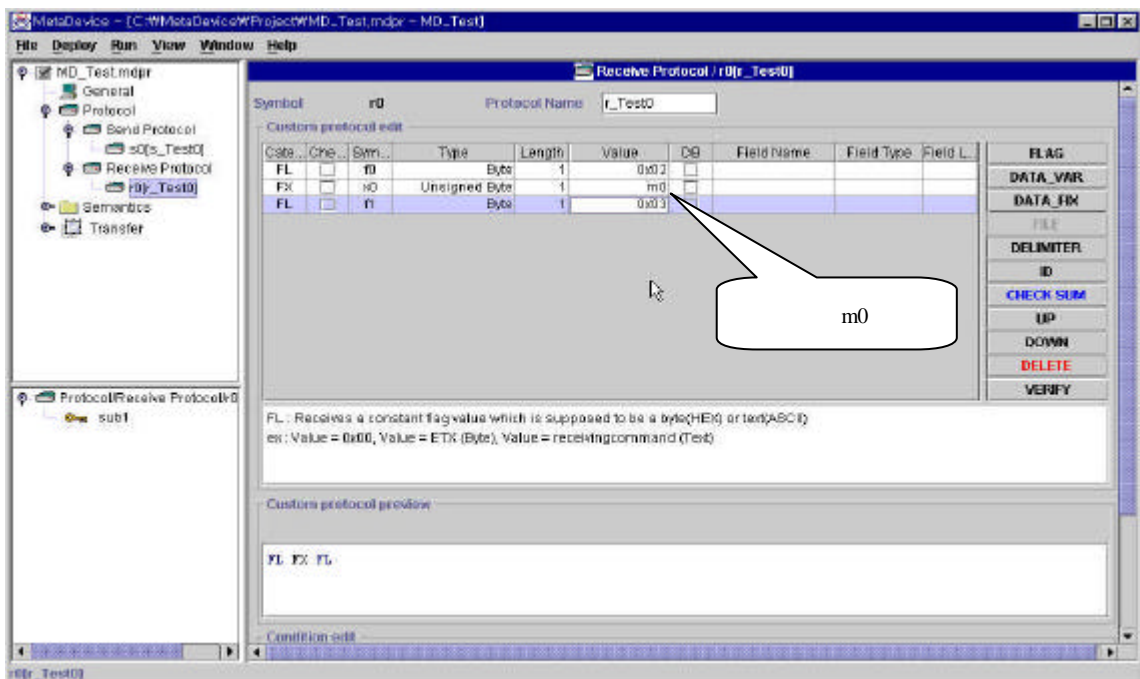
(12) Category

Protocol

m0

Device가

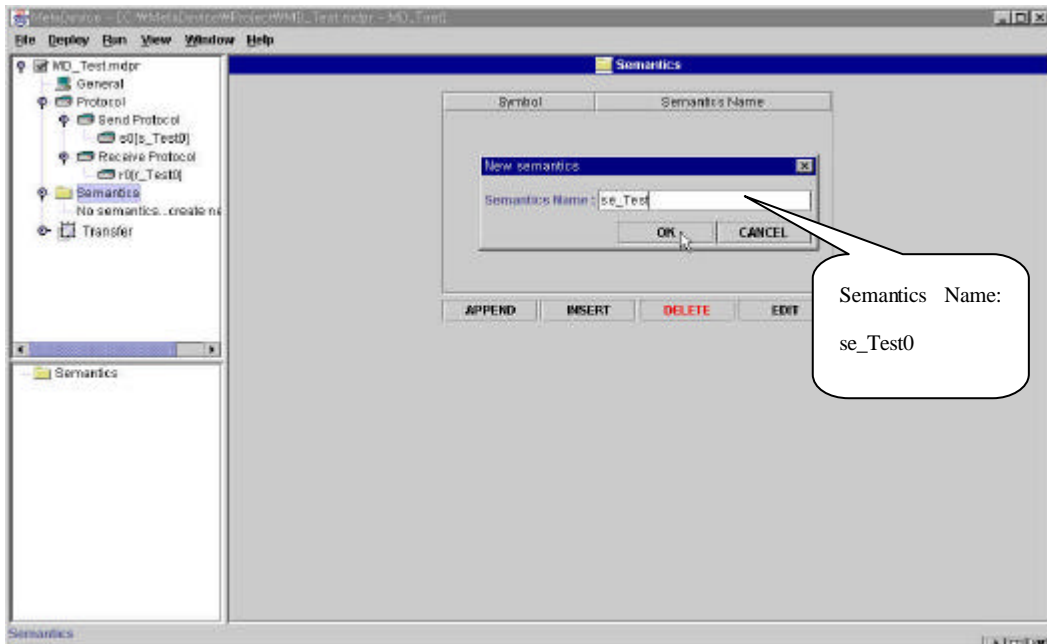
1Byte



(13) Receive Protocol

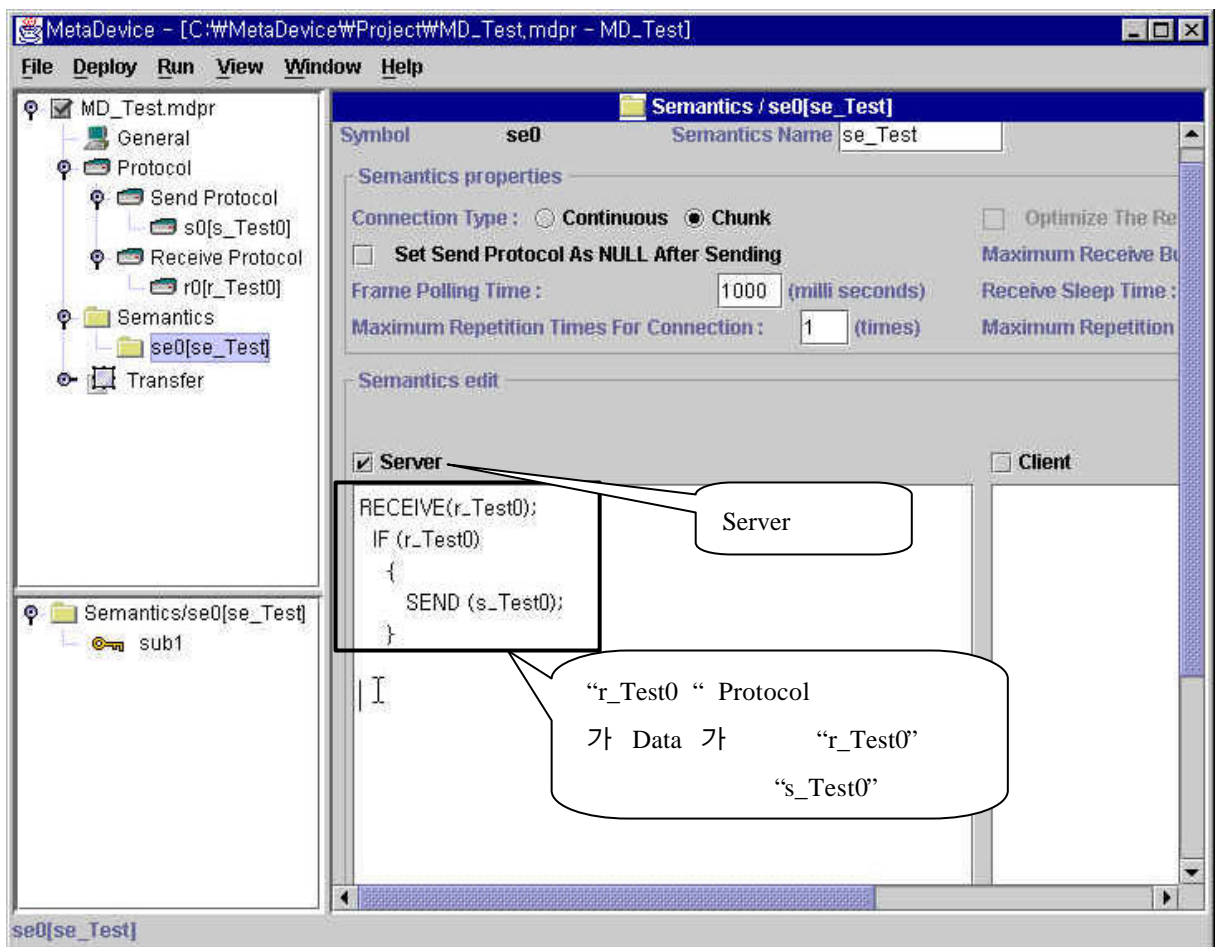
“Semantics”

Semantics Name



(14) Semantics Editor

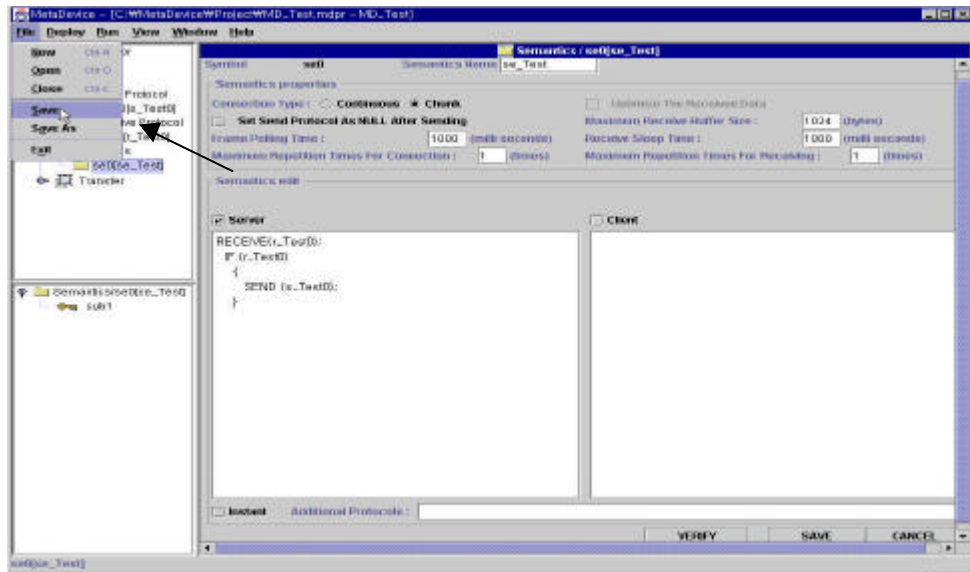
Protocol



(15)

File Menu “Save”

“Save”



(16) Protocol

Semantics

Admin Module

Admin

(17) Admin

MDPR file

“MD\_Test.mdpr” file

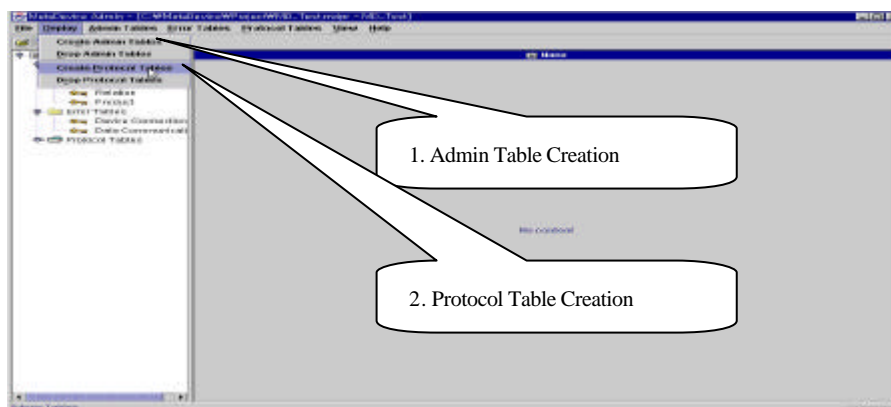
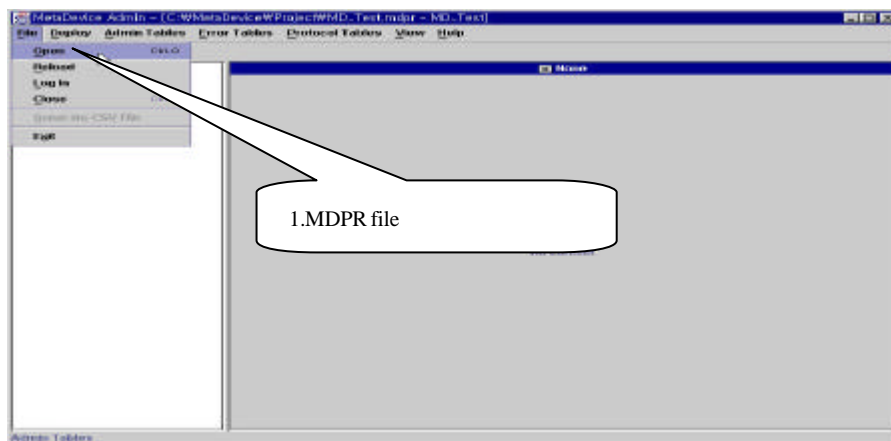
Open

Deploy Menu

“Create Admin Tables”

“Create Protocol Tables”

Admin Table





## MetaDevice

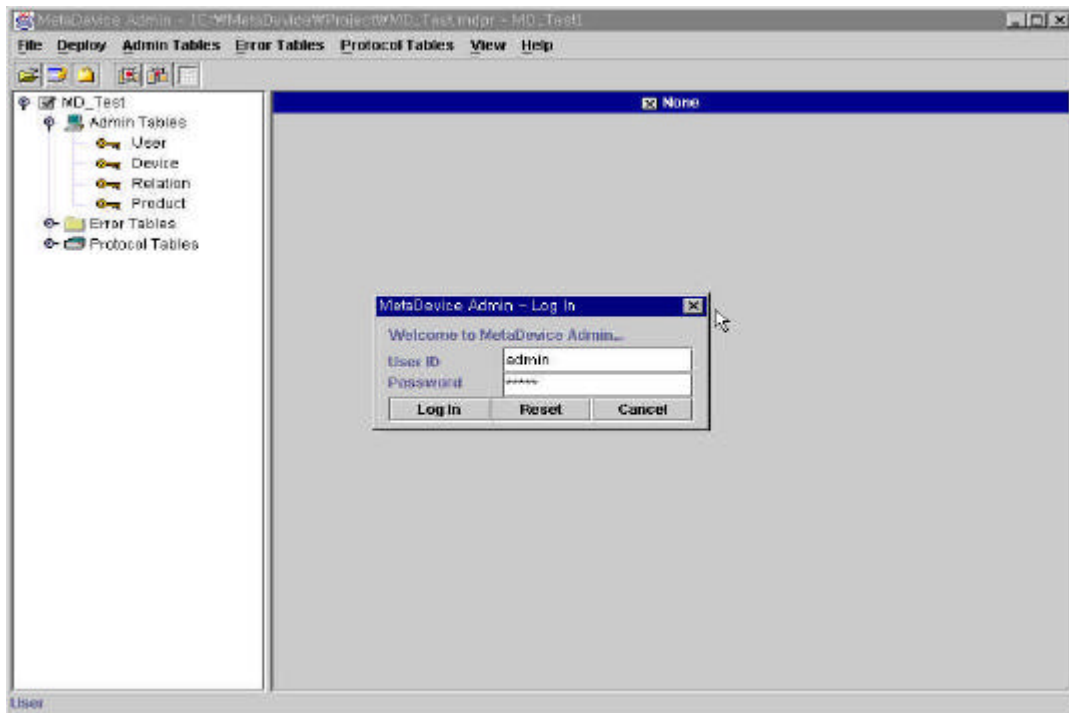
(18) “Create Admin Tables”

“User” Table

ID/Password

Default 가 admin/admin

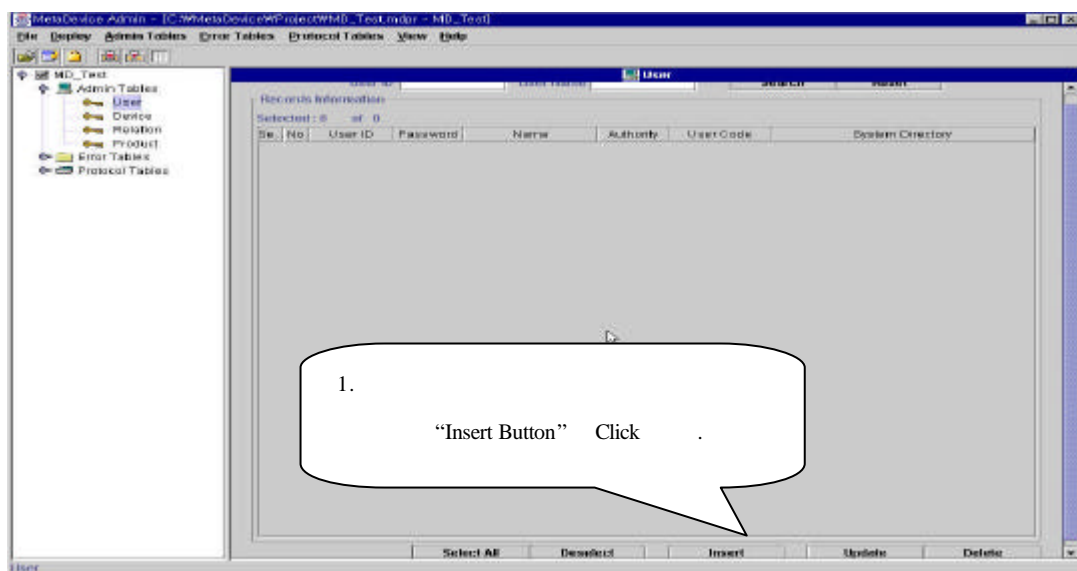
File Menu



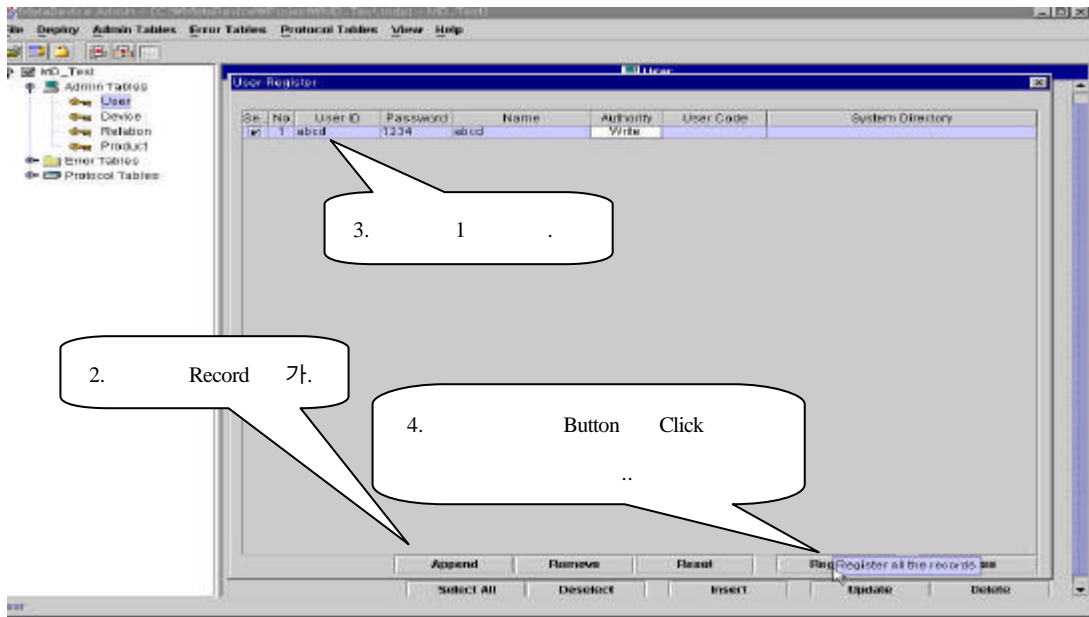
(19)

System ID/Passwd

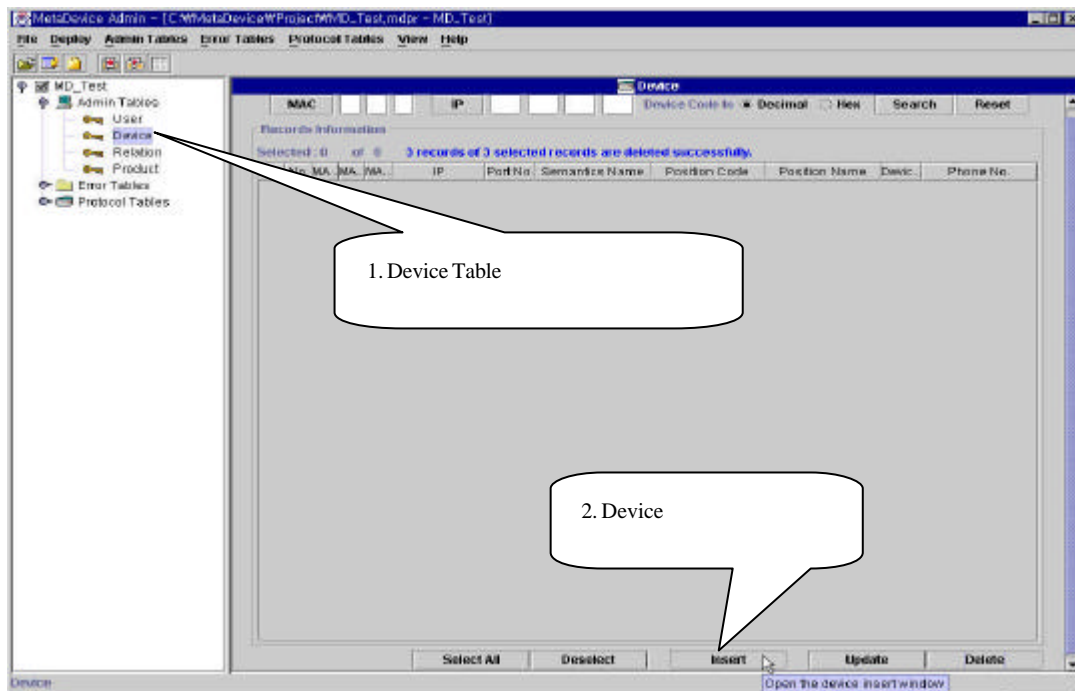
“admin/admin”



## MetaDevice

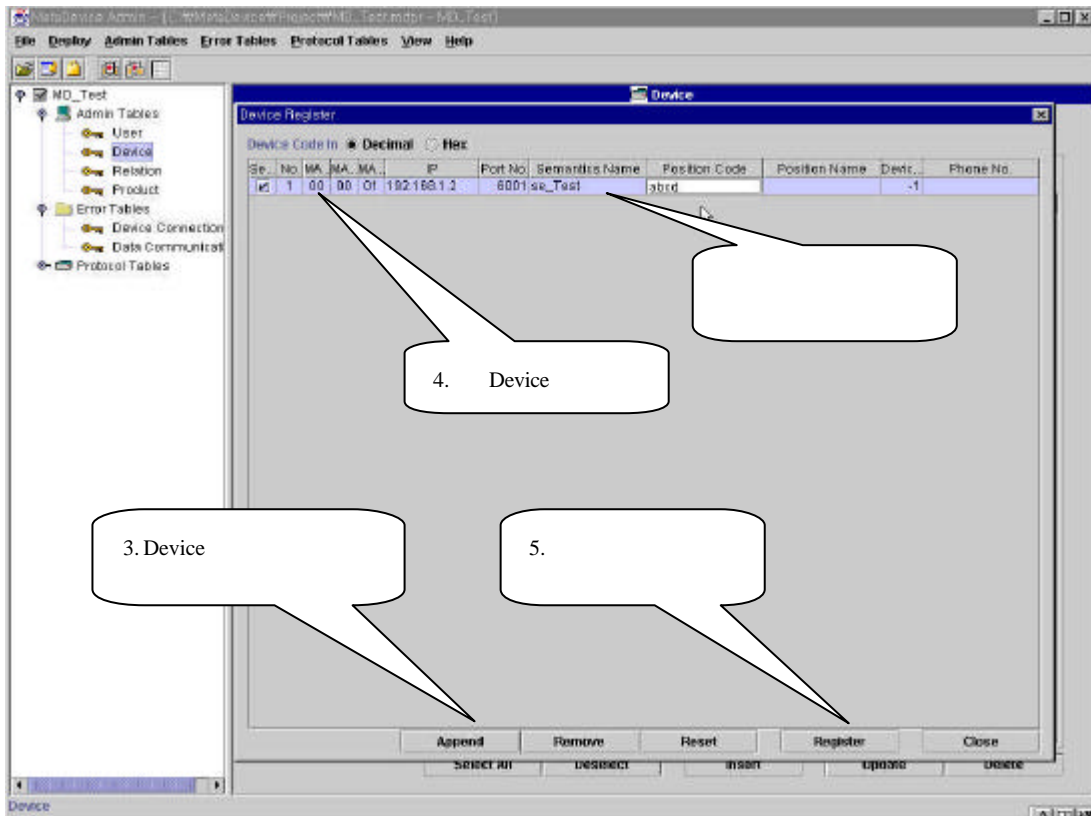


(20) Device

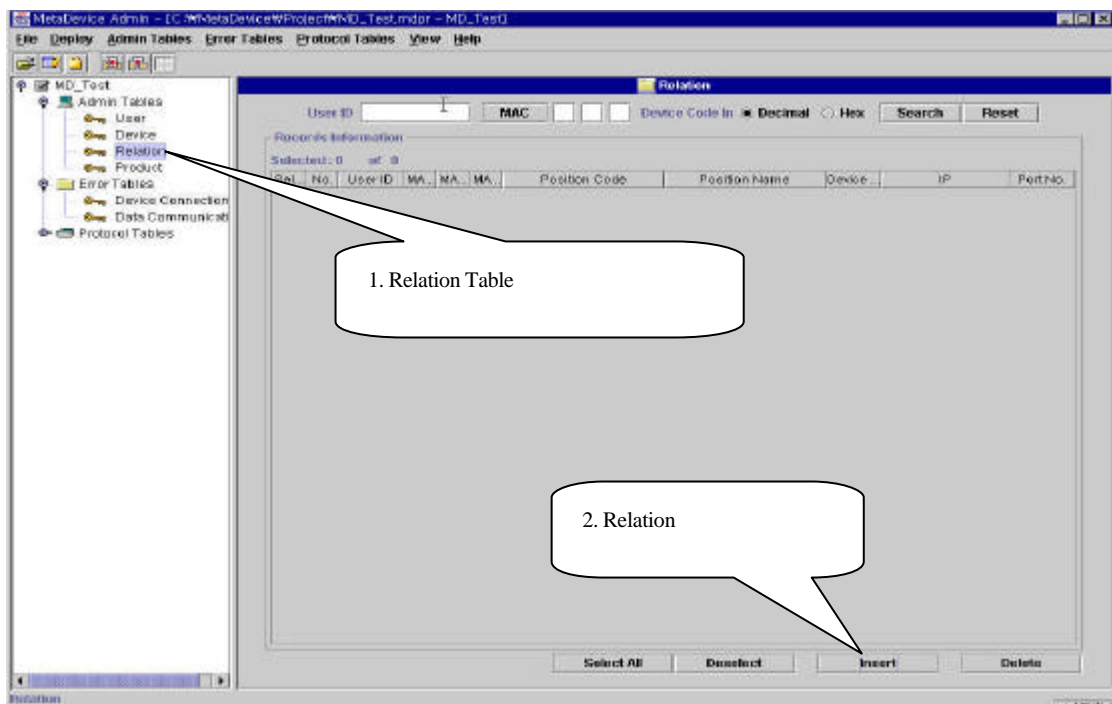




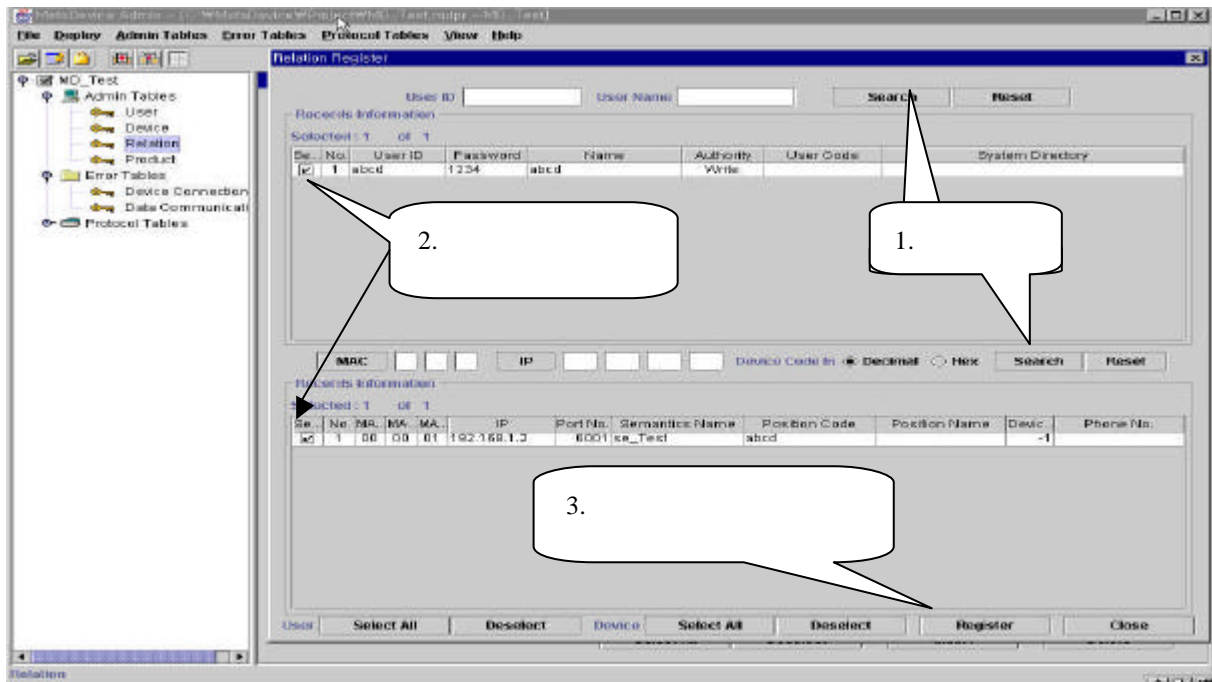
## MetaDevice



(21) Device



## MetaDevice



(22) Admin

Admin Exit

(23) Server Program Deploy

Server Manager

Deploy Menu "Make Server"

Run-Time

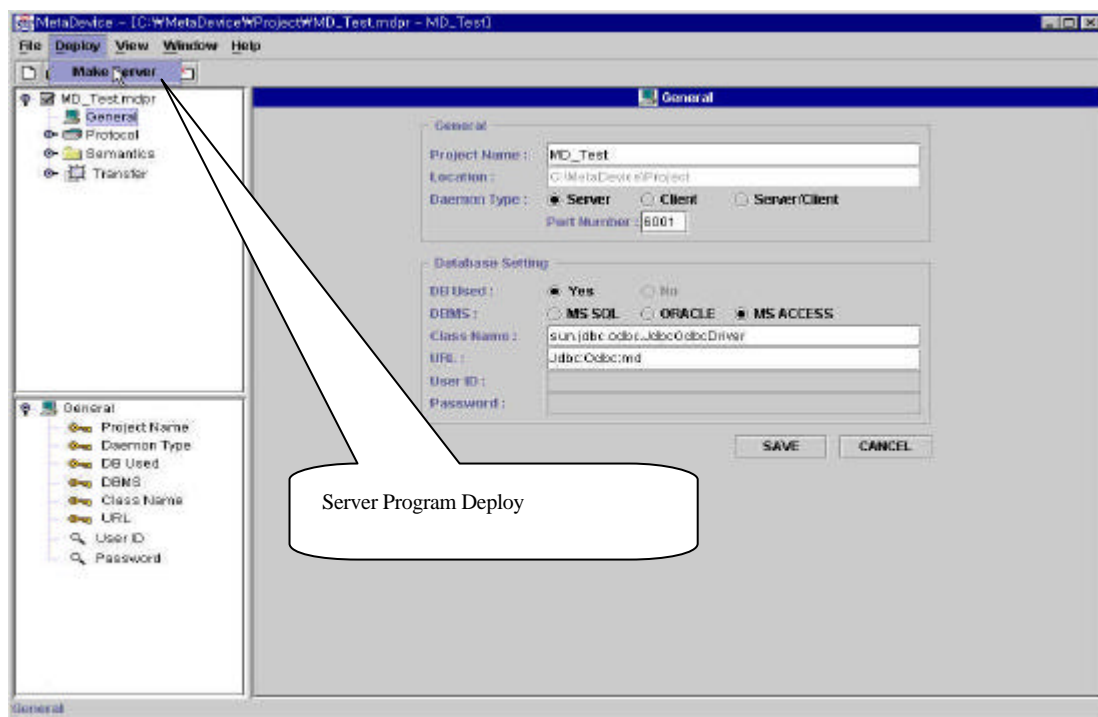
Project\Server\MD\_Test.bat file

File

가

Deploy (15)

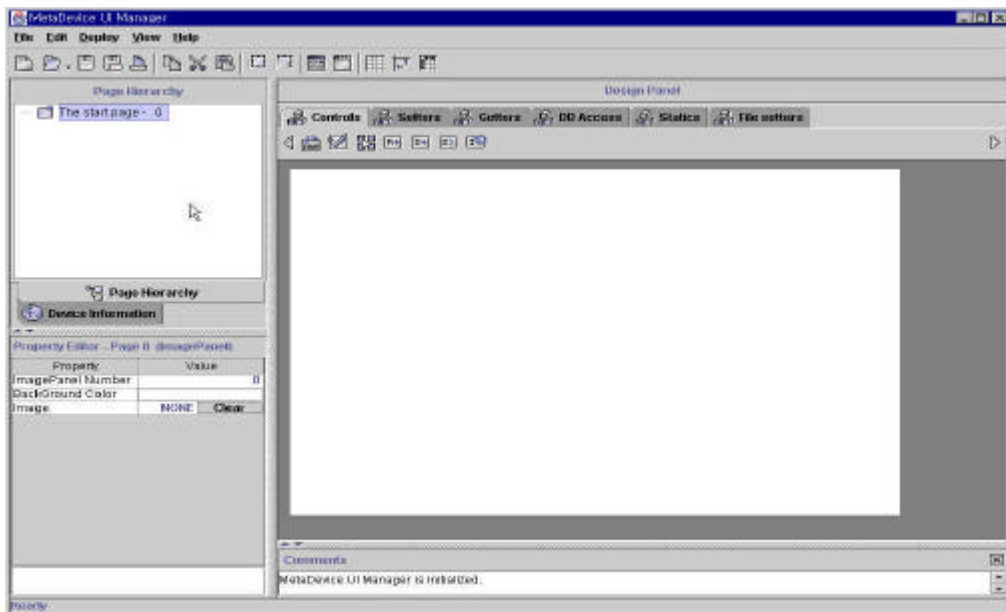
(16)



## - MetaDevice UI Manager

(1) UI ManagerICON

UI Manager

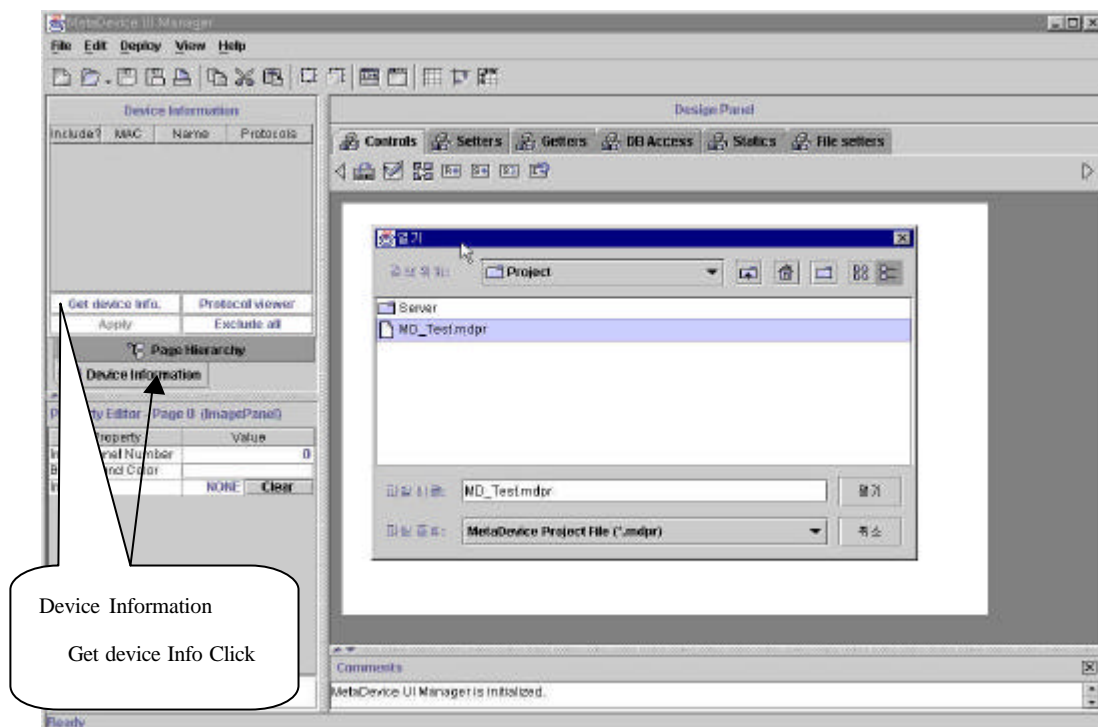


(2) Device Information

Get device Info. Tab

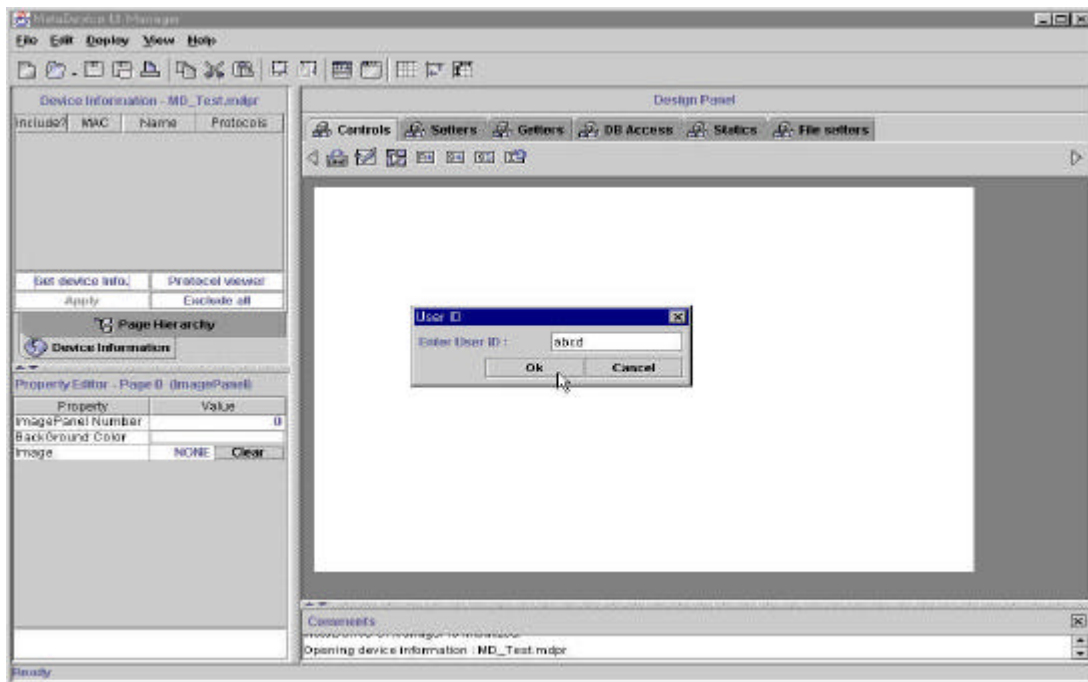
Server Manager

MD\_Test.mdpr file

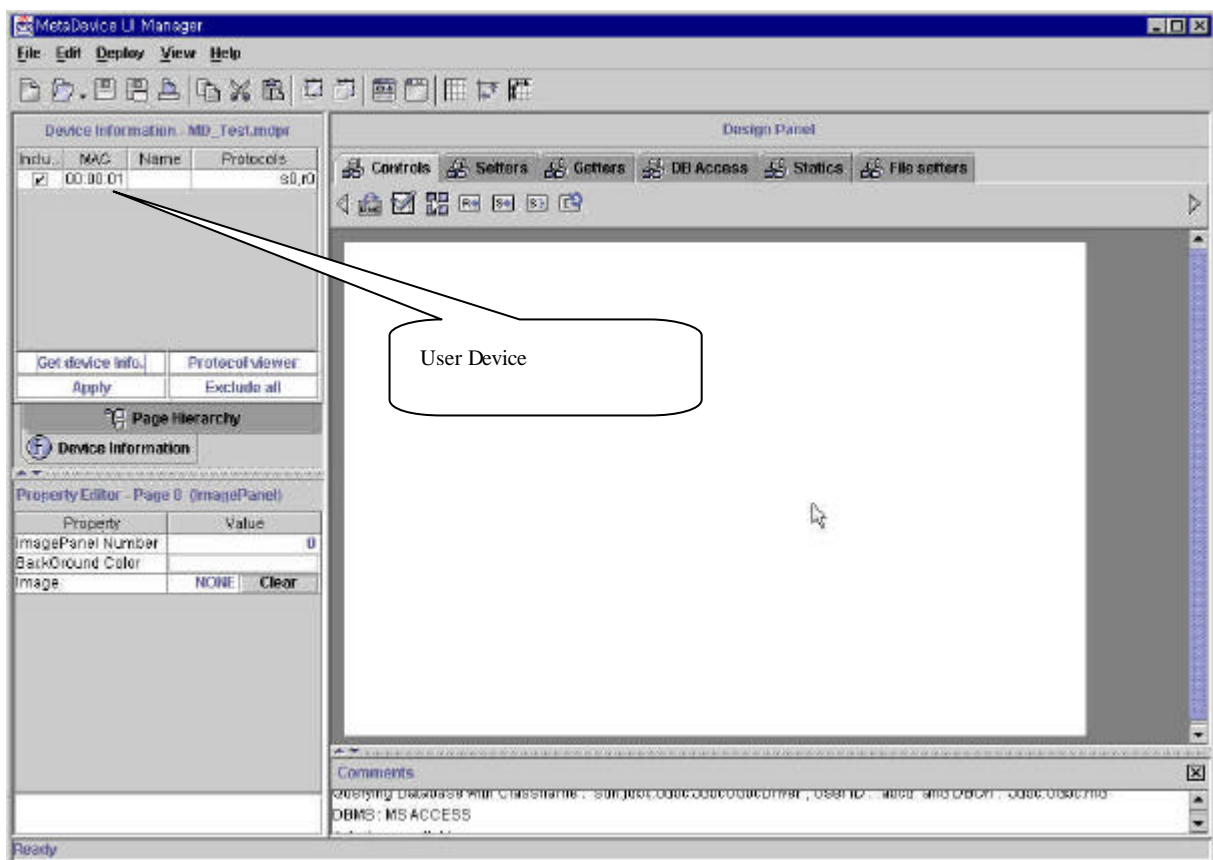


## MetaDevice

(3) MDPR File import DB User ID .

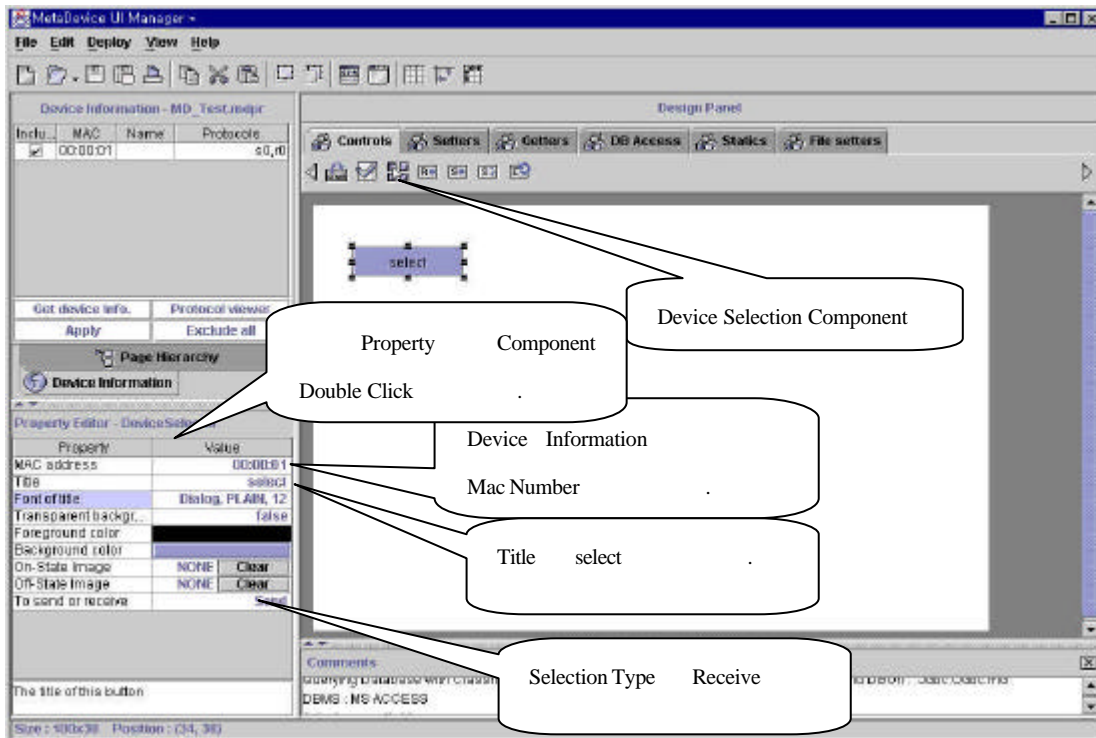


(4) abcd User Device Device Information .

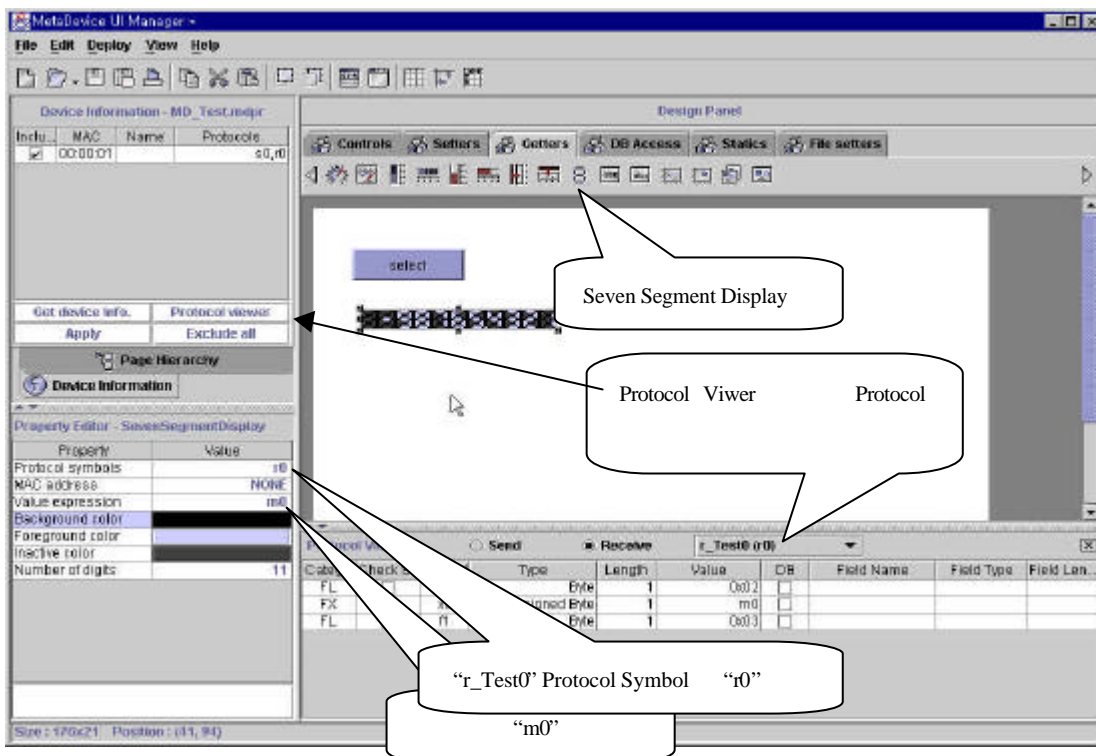


## MetaDevice

### (5) Device Selection Component Design Panel

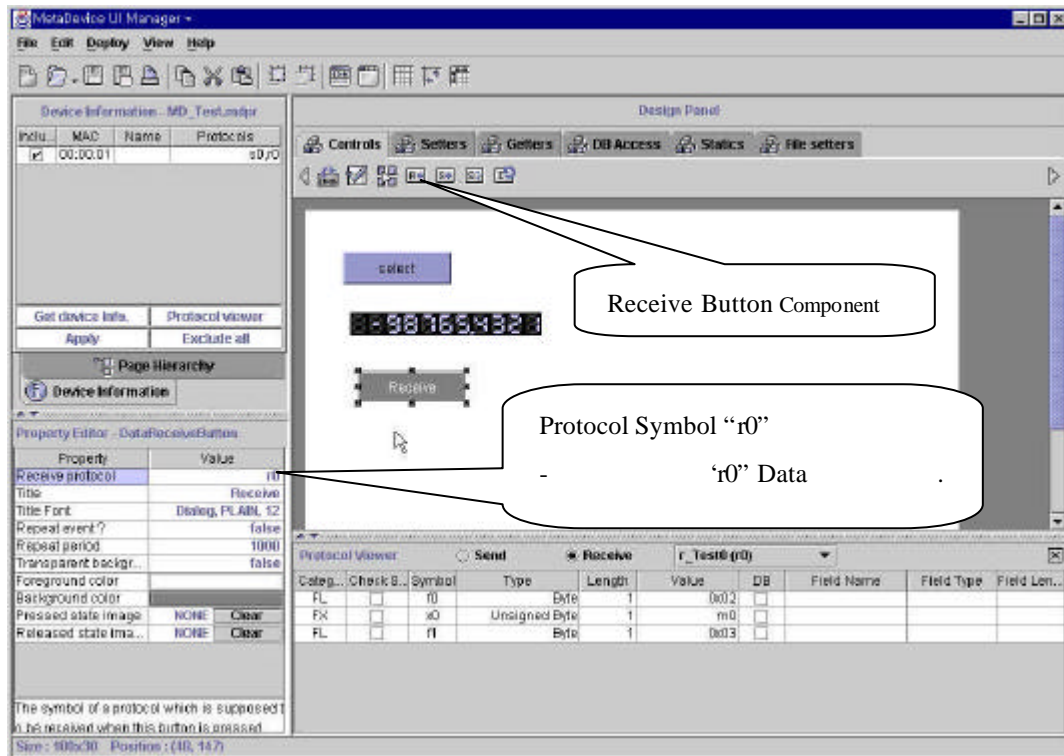


### (6) Server Manager Group Seven Segment Display

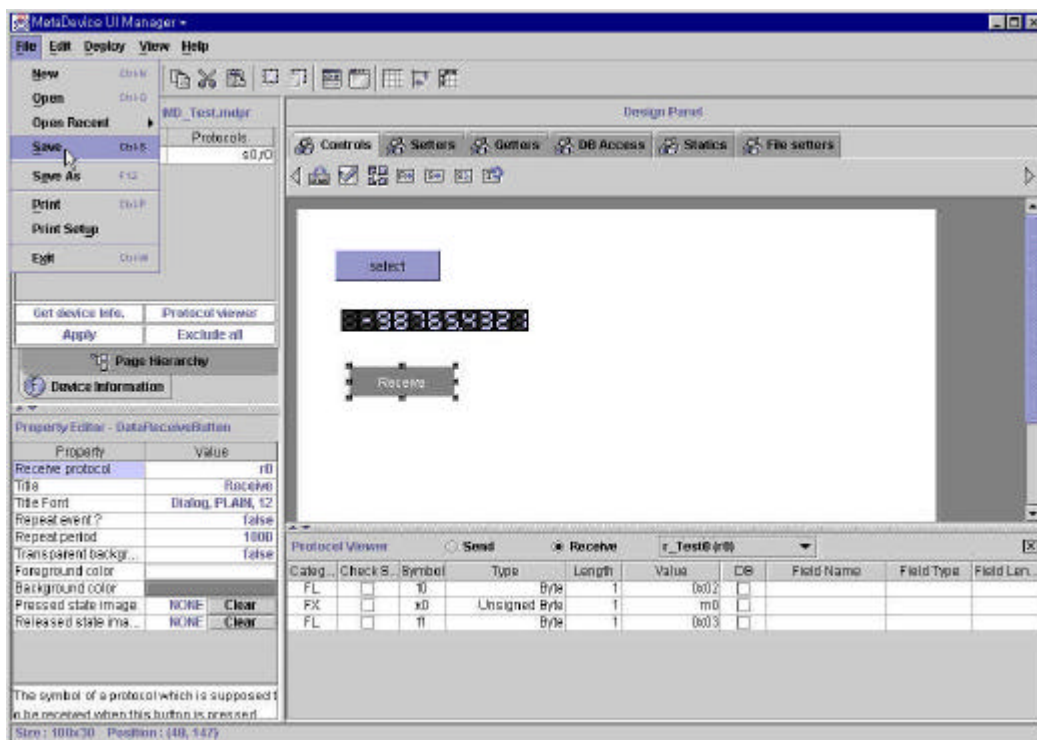




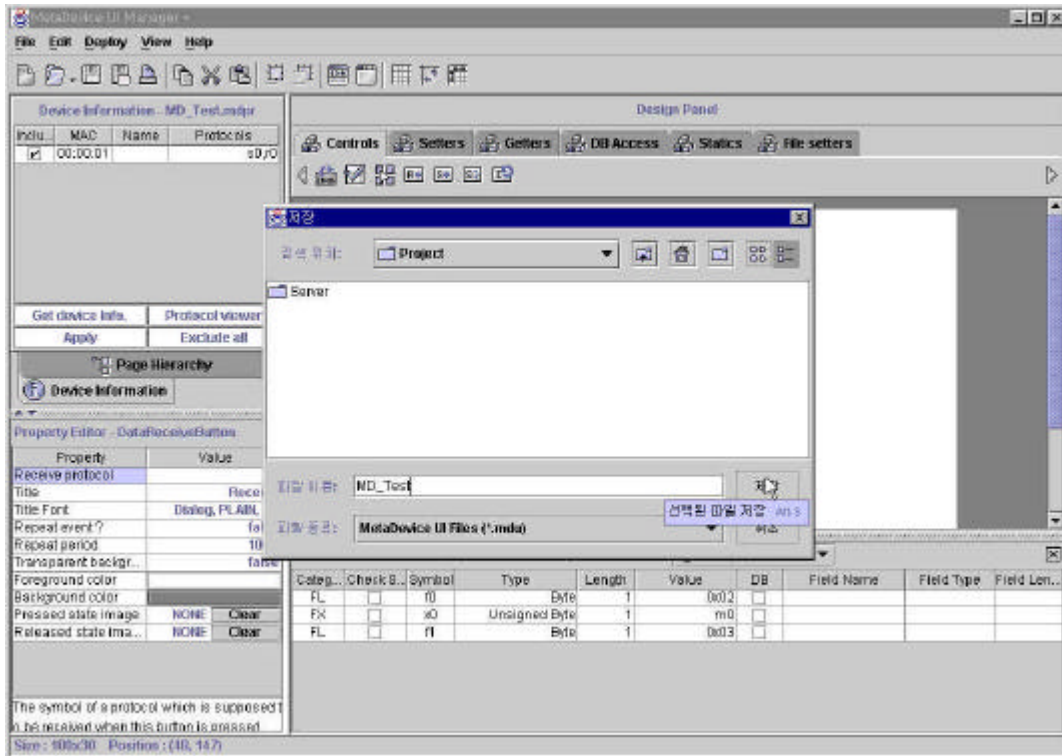
(7) Receive Button Component



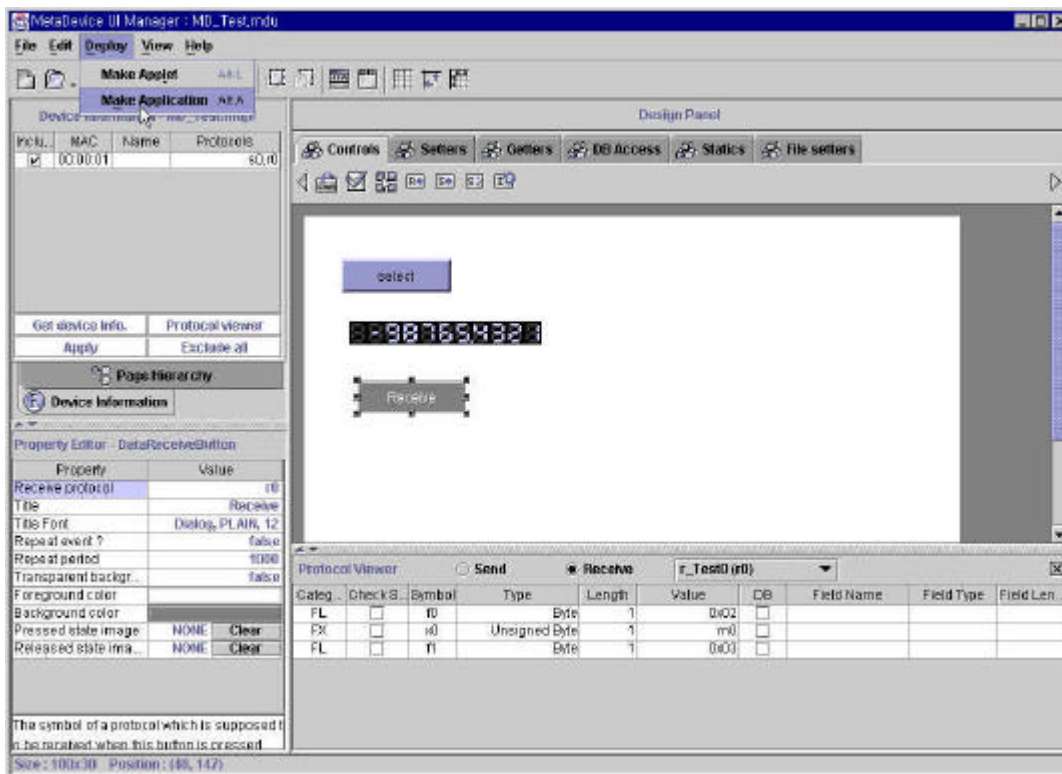
(8) MDU



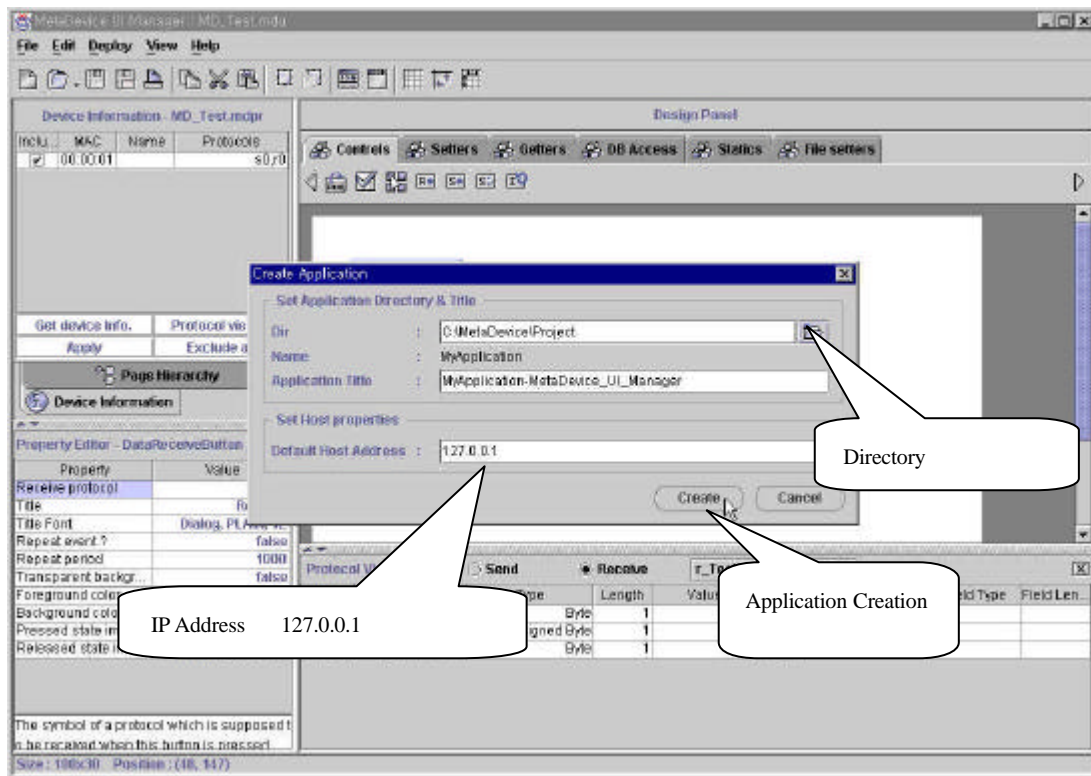
(9) (MD\_Test)



(10) Application Deploy



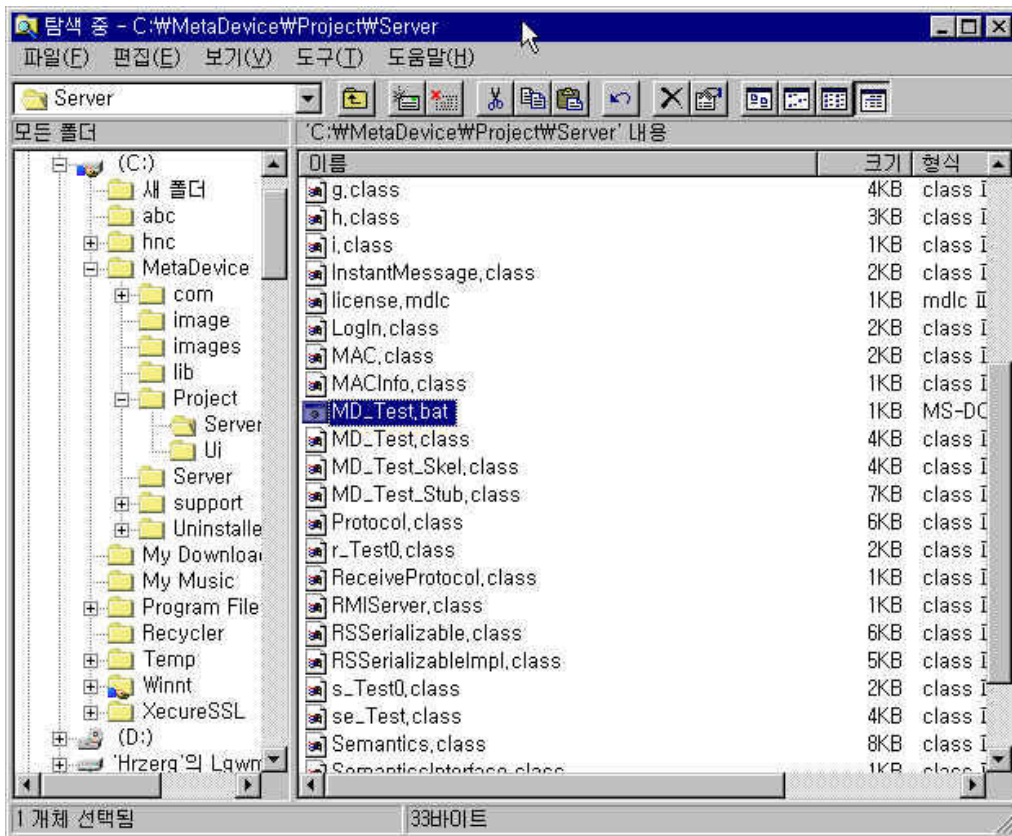
(11) Deploy Directory



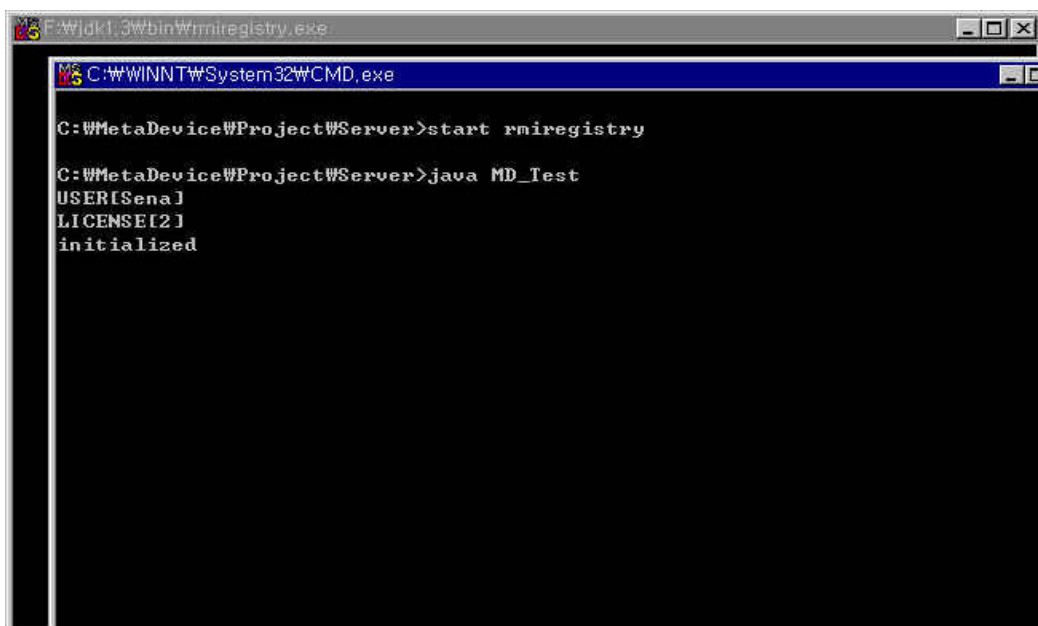
(12)



- (1) MD\_Test.bat (Project\Server\MD\_Test.bat)

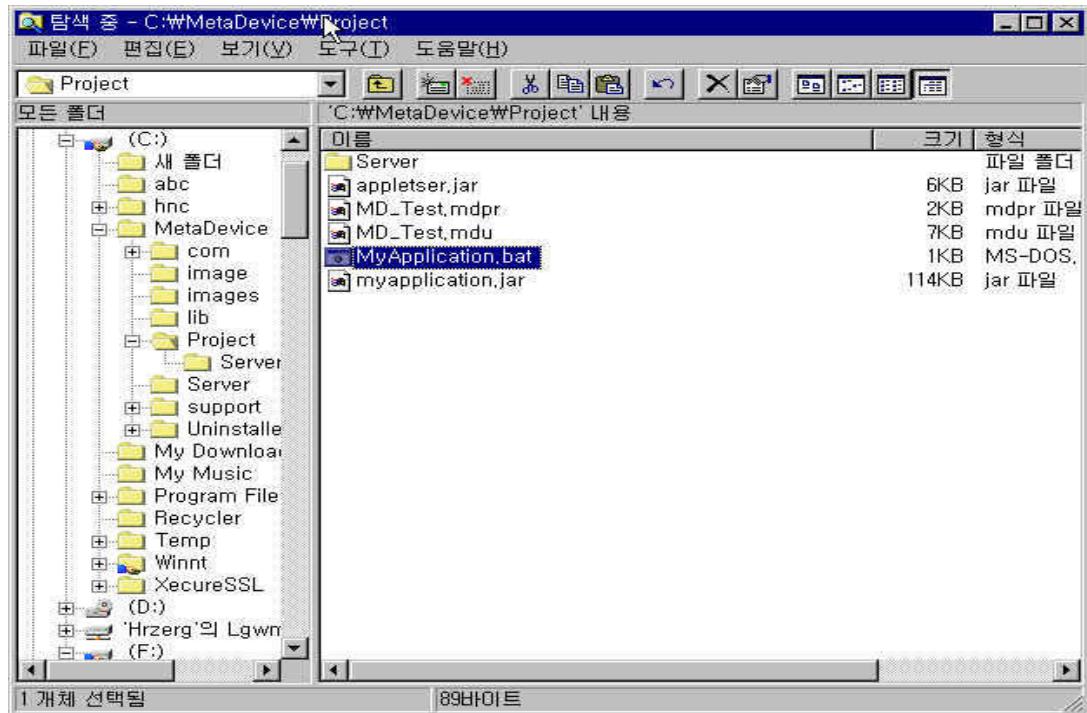


- (2)

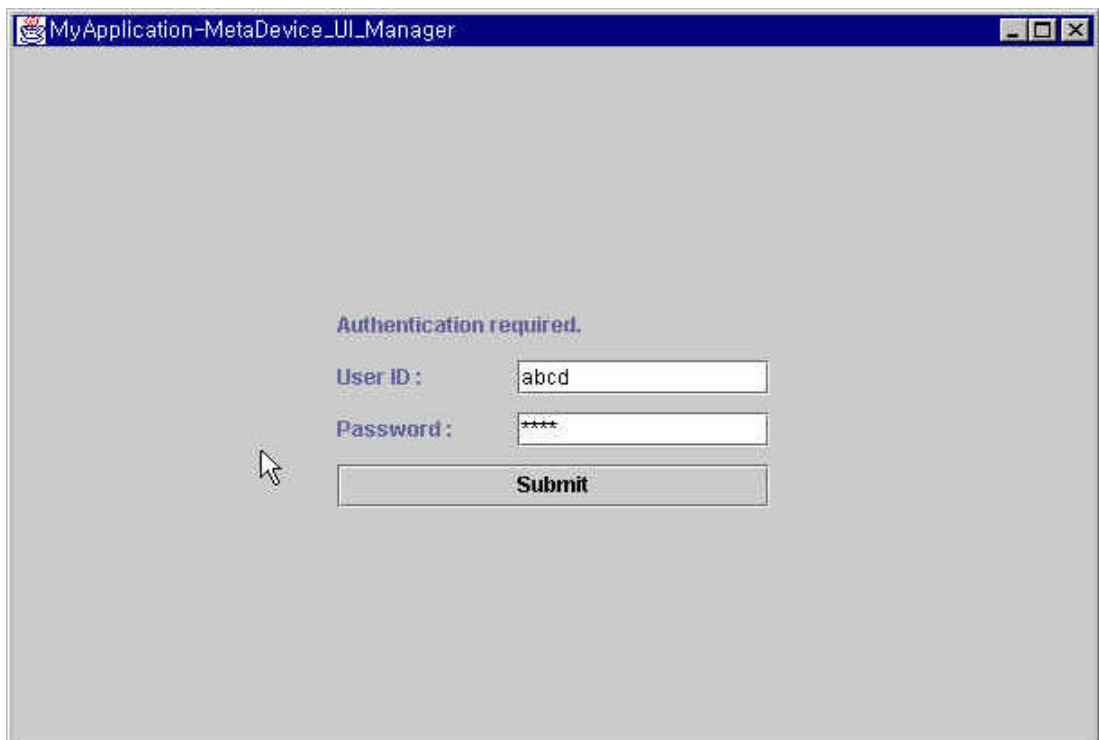


- Client UI

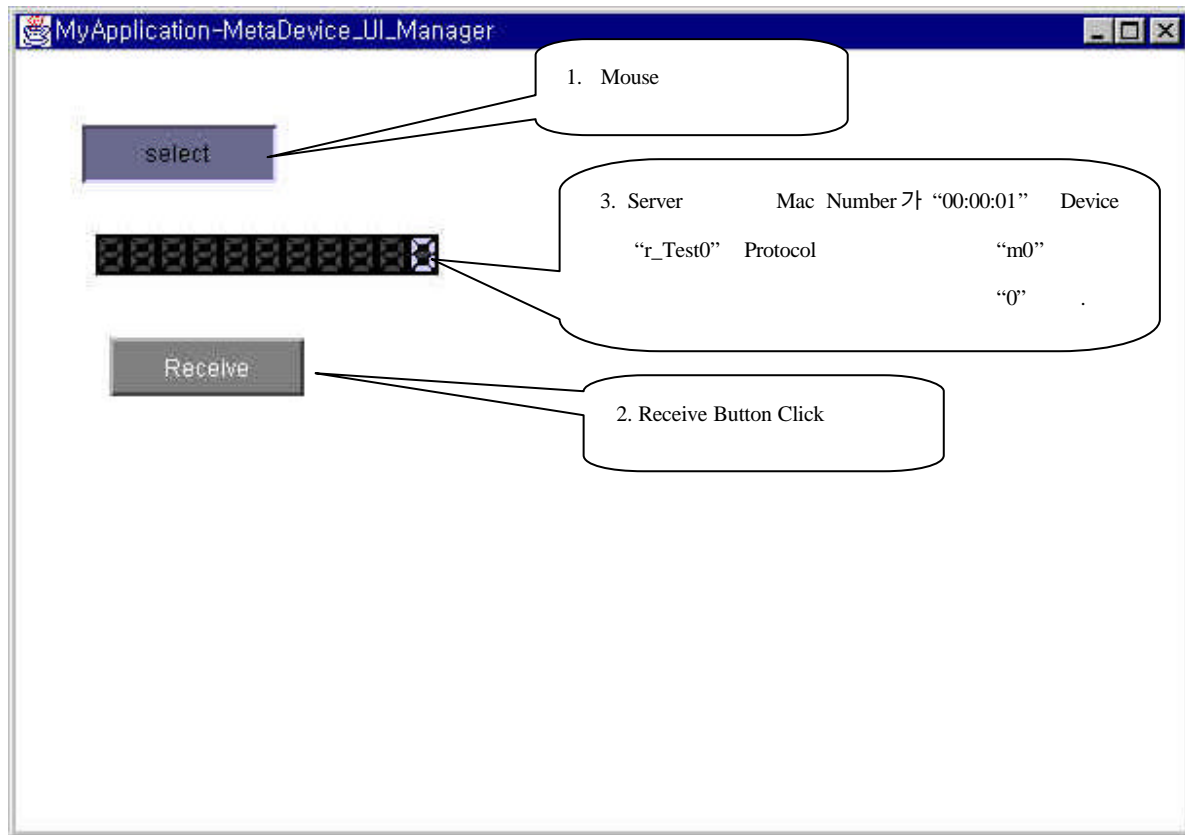
(1) MyApplication.bat



(2) DB ID (abcd/1234)



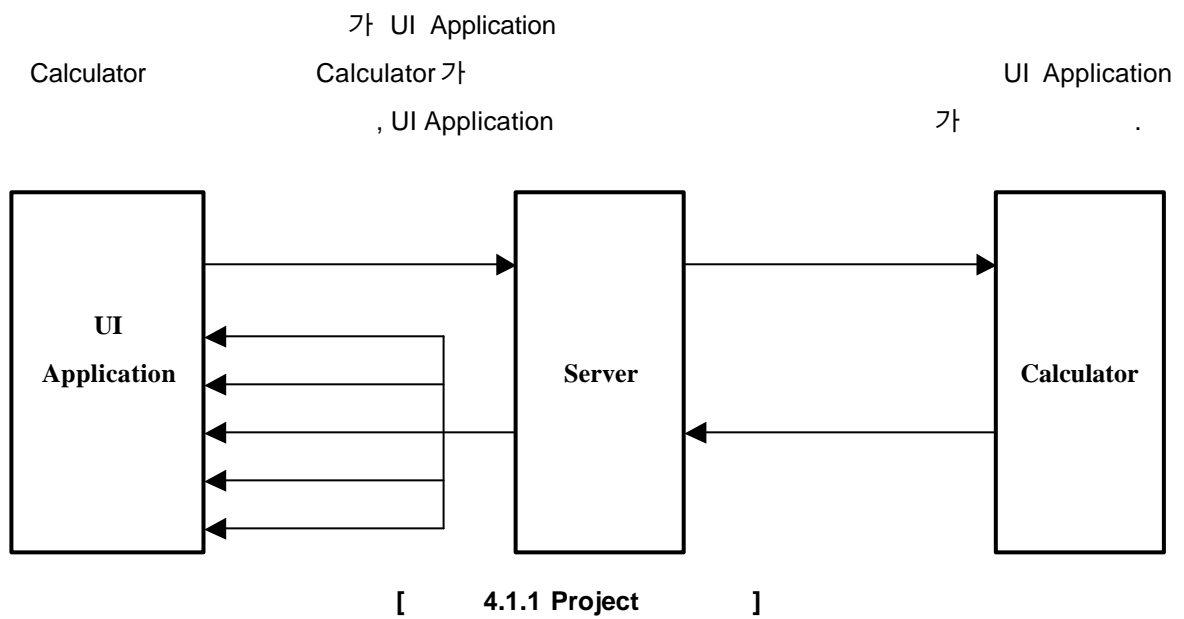
(3)



## 2.

Manager UI Application .  
 , Semantics Transfer . , UI

### 2.1



#### 1. UI Application

- 1) 가 .
- 2) .
- 3) UI Manager .

#### 2.

- 1) UI Application Calculator .
- 2) Calculator .
- 3) Calculator UI Application ( , , , , )
- 4) Server Manager .

#### 3. Calculator

- 1) .
- 2)
- 3) 가 Server Manager .
- 4) .

4.

- 1) : 18 bytes
- 2)

|     |          |          |     |
|-----|----------|----------|-----|
| 1   | 2 ~ 9    | 10 ~ 17  | 18  |
| STX | Operand1 | Operand2 | ETX |

- 3) STX
  - TYPE : byte
  - LENGTH : 1byte
  - VALUE : 0x02
- 4) Operand1
  - TYPE : double
  - LENGTH : 8byte
  - VALUE : UI Application 가
- 5) Operand2  
Operand1
- 6) ETX
  - TYPE : byte
  - LENGTH : 1byte
  - VALUE : 0x02

5.

- 1) : 35 byte
- 2)

|     |       |          |          |         |       |     |
|-----|-------|----------|----------|---------|-------|-----|
| 1   | 2 ~ 9 | 10 ~ 17  | 18 ~ 25  | 26 ~ 33 | 34    | 35  |
| STX | Add   | Subtract | Multiply | Divide  | Error | ETX |

- 3) STX : STX
- 4) Add : TYPE – double , LENGTH – 8byte , VALUE – Operand1 + Operand2
- 5) Subtract : TYPE – double , LENGTH – 8byte , VALUE – Operand1 - Operand2
- 6) Multiply : TYPE – double , LENGTH – 8byte , VALUE – Operand1 \* Operand2
- 7) Divide : TYPE – double , LENGTH – 8byte

operand 2 = 0      VALUE – 0 ,      VALUE – Operand1 / Operand2

8) Error : TYPE – unsigned byte , LENGTH – 1byte

operand 2 = 0      VALUE – 1 ,      VALUE – 0

9) ETX :      ETX

6.

1) : 28 byte

2)

|     |           |         |          |           |         |     |
|-----|-----------|---------|----------|-----------|---------|-----|
| 1   | 2 ~ 9     | 10      | 11 ~ 18  | 19        | 20 ~ 27 | 28  |
| STX | Operand 1 | AddSign | Operand2 | EqualSign | Add     | ETX |

3) STX :      STX

4) Operand1 : TYPE – double , LENGTH – 8byte

5) AddSign : TYPE – text , LENGTH – 1byte , VALUE – “+”

6) Operand1 : TYPE – double , LENGTH – 8byte

7) EqualSign : TYPE – text , LENGTH – 1byte , VALUE – “=”

8) Add :

9) ETX :      STX

7.

1) : 28 byte

2)

|     |           |              |          |           |          |     |
|-----|-----------|--------------|----------|-----------|----------|-----|
| 1   | 2 ~ 9     | 10           | 11 ~ 18  | 19        | 20 ~ 27  | 28  |
| STX | Operand 1 | SubtractSign | Operand2 | EqualSign | Subtract | ETX |

3) STX :      STX

4) Operand1 : TYPE – double , LENGTH – 8byte

5) SubtractSign : TYPE – text , LENGTH – 1byte , VALUE – “-”

6) Operand1 : TYPE – double , LENGTH – 8byte

7) EqualSign : TYPE – text , LENGTH – 1byte , VALUE – “=”

8) Subtract :

9) ETX :      STX

8.

1) : 28 byte

2)

|   |       |    |         |    |         |    |
|---|-------|----|---------|----|---------|----|
| 1 | 2 ~ 9 | 10 | 11 ~ 18 | 19 | 20 ~ 27 | 28 |
|---|-------|----|---------|----|---------|----|

STX      Operand 1      MultiplySign      Operand2      EqualSign      Multiply      ETX

- 3) STX :                      STX
- 4) Operand1 : TYPE – double , LENGTH – 8byte
- 5) MultiplySign : TYPE – text , LENGTH – 1byte , VALUE – “\*”
- 6) Operand1 : TYPE – double , LENGTH – 8byte
- 7) EqualSign : TYPE – text , LENGTH – 1byte , VALUE – “=”
- 8) Multiply :
- 9) ETX :                      STX

9.

- 1)                      : 28 byte
- 2)

|   |       |    |         |    |         |    |
|---|-------|----|---------|----|---------|----|
| 1 | 2 ~ 9 | 10 | 11 ~ 18 | 19 | 20 ~ 27 | 28 |
|---|-------|----|---------|----|---------|----|

STX      Operand 1      DivideSign      Operand2      EqualSign      Divide      ETX

- 3) STX :                      STX
- 4) Operand1 : TYPE – double , LENGTH – 8byte
- 5) DivideSign : TYPE – text , LENGTH – 1byte , VALUE – “/”
- 6) Operand1 : TYPE – double , LENGTH – 8byte
- 7) EqualSign : TYPE – text , LENGTH – 1byte , VALUE – “=”
- 8) Divide :
- 9) ETX :                      STX

10.

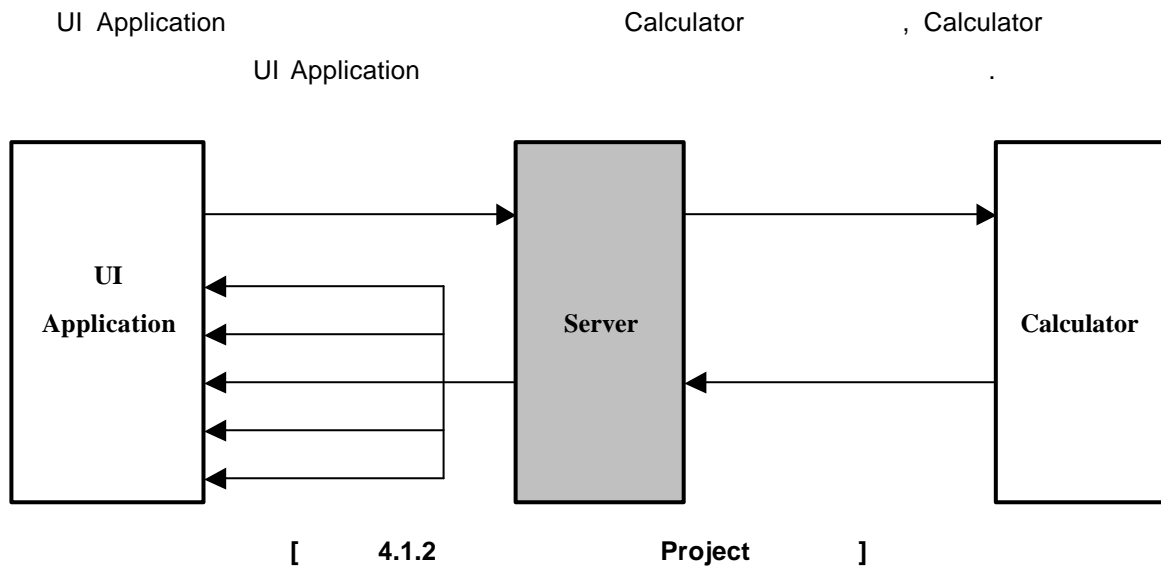
- 1)                      : 가
- 2)

|   |       |     |
|---|-------|-----|
| 1 | 2 ~ n | n+1 |
|---|-------|-----|

STX                                      Message                                      ETX

- 3) STX :                      STX
- 4) Message : UI Program
  - :                      Error = 0
  - 0                      :                      Error = 1
  - Calculator                      가
  - Calculator                      가
- 5) ETX :                      STX

## 2.2



### 1. General Property

- 1) Project Name : TheServer

TheServer                      Project                      .

- 2) Location : D:\Manual\ThisIsServer

D:\Manual\ThisIsServer                      .

- 3) Daemon Type : Client

Calculator  
Daemon Type    Client                      .

- 4) DBMS : MS ACCESS

MS ACCESS                      .

- 5) Class Name : sun.jdbc.odbc.JdbcOdbcDriver

SUN    가                      JdbcOdbcDriver                      .

- 6) URL : Jdbc:Odbc:server

ODBC                      (DSN)    server                      .

- 7) User ID, Password :

.

### 2. Send Protocol

- 1)                      Send Protocol                      .

- 2)                      Calculator                      Send Protocol

.

- 3)                      SPData                      Send Protocol                      .

- 4) UI Application                      SPData                      .



### 3. Receive Protocol

- 1) (Calculator) UI Application  
Receive Protocol .
- 2) (Calculator) RPResult Receive Protocol  
.
- 3) UI Application , , , ,  
RPAdd, RPSubtract, RPMultiply, RPDivide, RPMessage Receive Protocol  
.

### 4. Transfer

- 1) (Calculator) RPResult UI Application RPAdd,  
RPSubtract, RPMultiply, RPDivide, RPMessage Transfer TRResult  
.
- 2) (Calculator) RPResult 가 RPMessage 가  
TRNoData Transfer .
- 3) (Calculator) RPResult 가  
RPMessage TRParseError Transfer .
- 4) RPMessage TRUnknownError Transfer  
.

### 5. Semantics

- Calculator RPResult UI Application  
RPAdd, RPSubtract, RPMultiply, RPDivide, RPMessage Semantics  
SETheServer .

### 6. – 가

- 1) OS – Windows 98
- 2) JDK – jdk1.3.1\_02 installed
- 3) MS ACCESS – Microsoft Access 2000 installed
- 4) IP Address – 192.168.0.32

### 7.

- 1) D:\ Manual .
- 2) D:\Manual ThisIsServer .
- 3) D:\Manual\ThisIsServer 가 .

## 8. ODBC

- 1) [ / / ] [ ] .
- 2) [ ] [ODBC (32 )] [ODBC ] .
- 3) [ODBC ] [ DSN] [ ] . ( DSN .)
- 4) [ 가] [ ] .
- 5) [ ] [ ] [Driver do Microsoft Access (\*.mdb)] [ ] .
- 6) [ODBC Microsoft Access ] [ ] [server] , [ ] .
- 7) [ ] [ ] [d:] , [ ] [d:\Manual\ThisIsServer] [ ] [server.mdb] [ ] .
- 8) [ODBC Microsoft Access ] [ ] .

## 9. Project

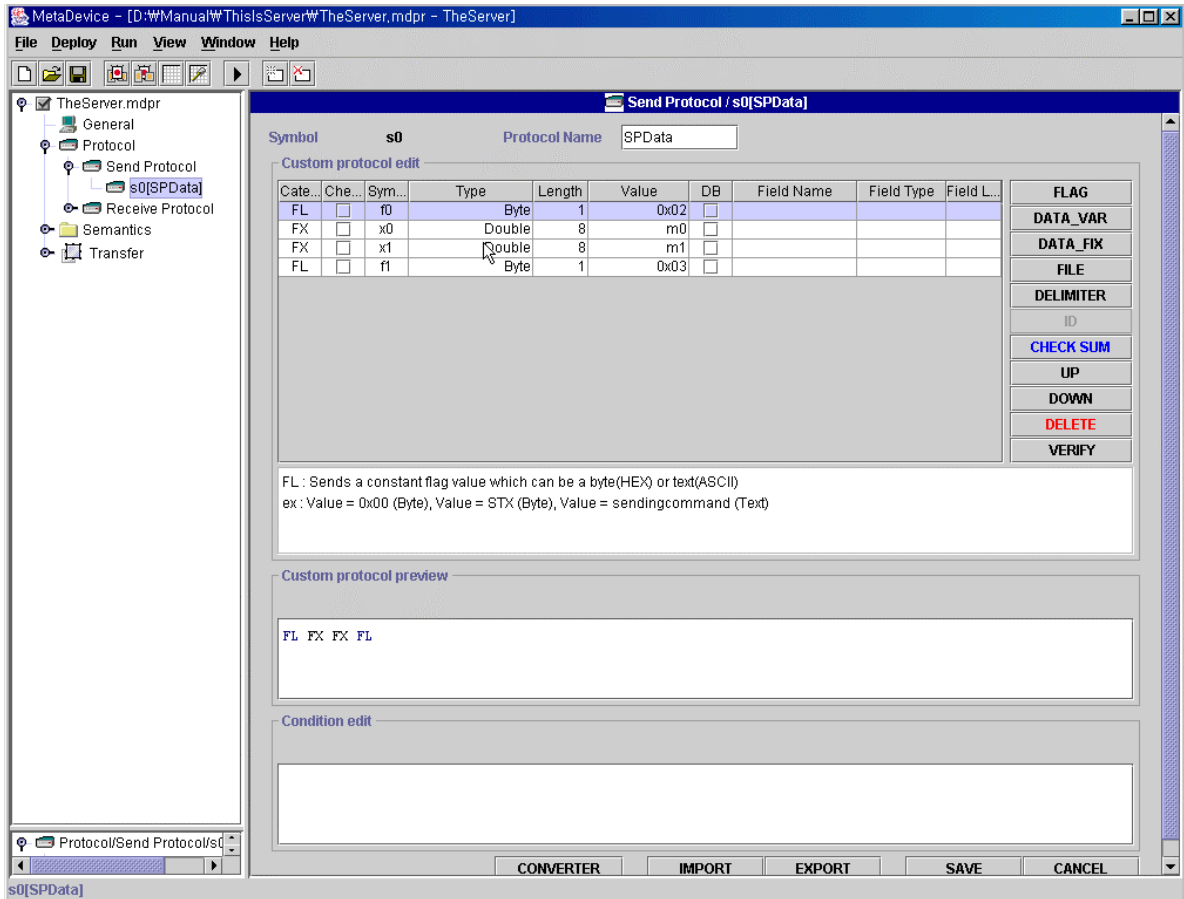
- 1) Server Manager .
- 2) [File / New] [New Project] .
- 3) [New Project] .
  - Project Name : TheServer
  - Location : D:\Manual\ThisIsServer (Location .)
  - Daemon Type : Client (Client )
  - DBMS : MS ACCESS (MS ACCESS )
  - Class Name : sun.jdbc.odbc.JdbcOdbcDriver
  - URL : Jdbc:Odbc:server
- 4) [SAVE] [TheServer] Project .

## 10. Send Protocol

- 1) [Project Pane] [Project] [Send Protocol] .
- 2) [Content Pane] [Send Protocol List Panel] [Append] [New Serial Protocol] .
- 3) [New Serial Protocol] [Protocol Name] [SPData] [OK] [SPData] Protocol .

## 11. Send Protocol

- 1) [Send Protocol List Panel] [SPData] Protocol [Send Protocol Edit Panel]
- 2) [Send Protocol Edit Panel]



[ 4.2 SPData ]

- 3) [SPData] Protocol Calculator , UI Application
- 4) FIXED DATA Type m0 가 Operand1 , FIXED DATA Type m1 Operand 2

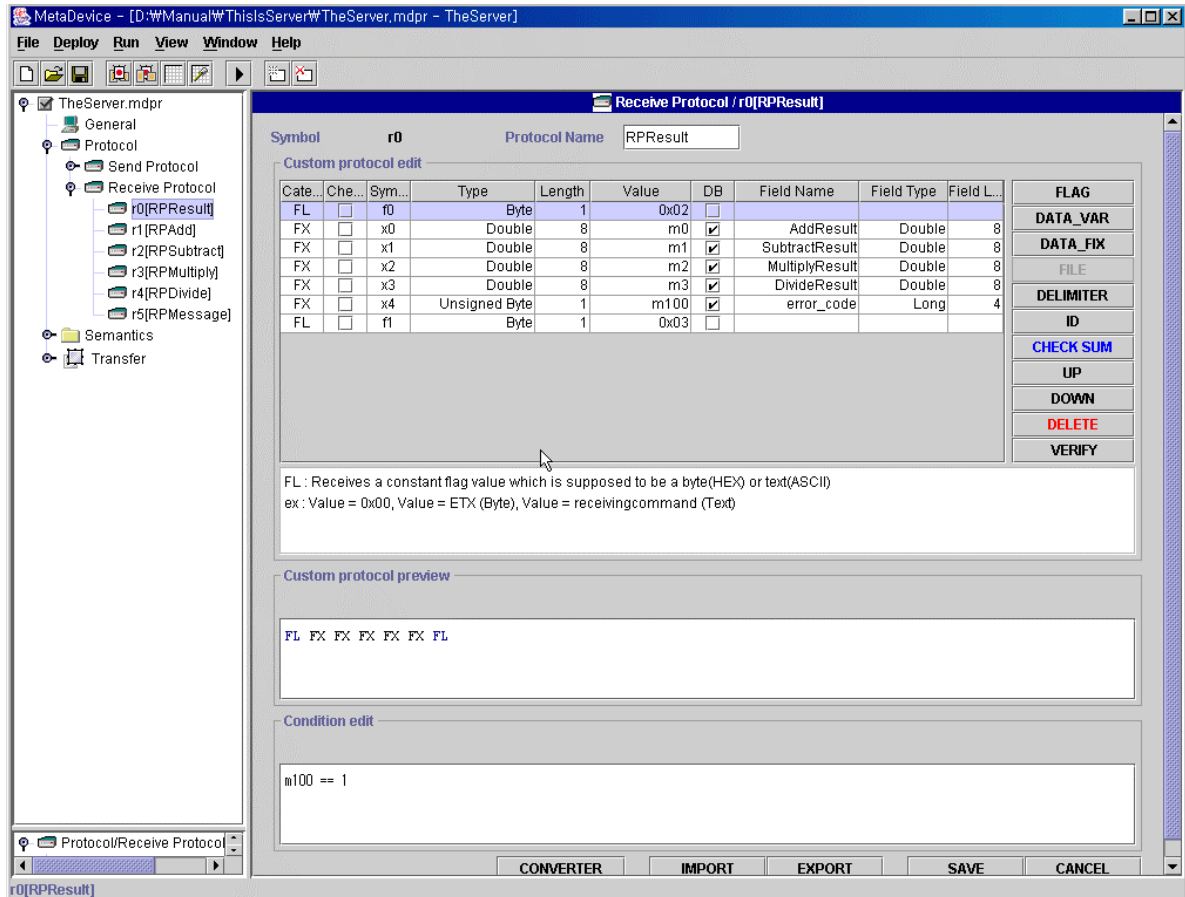
## 12. Receive Protocol

- 1) [Project Pane] [Project] [Receive Protocol]
- 2) [Content Pane] [Receive Protocol List Panel] [Append]  
[New Serial Protocol]
- 3) [New Serial Protocol] [Protocol Name] [RPRResult]  
[OK] [RPRResult] Protocol

- 4) 2) ~ 3) [Protocol Name] 5 .  
 . (RPSAdd, RPSubtract, RPMultiply, RPDivide, RPMessage)

### 13. RPResult Receive Protocol

- 1) [Receive Protocol List Panel] [RPResult] Protocol [Receive Protocol Edit Panel]  
 2) [Receive Protocol Edit Panel]



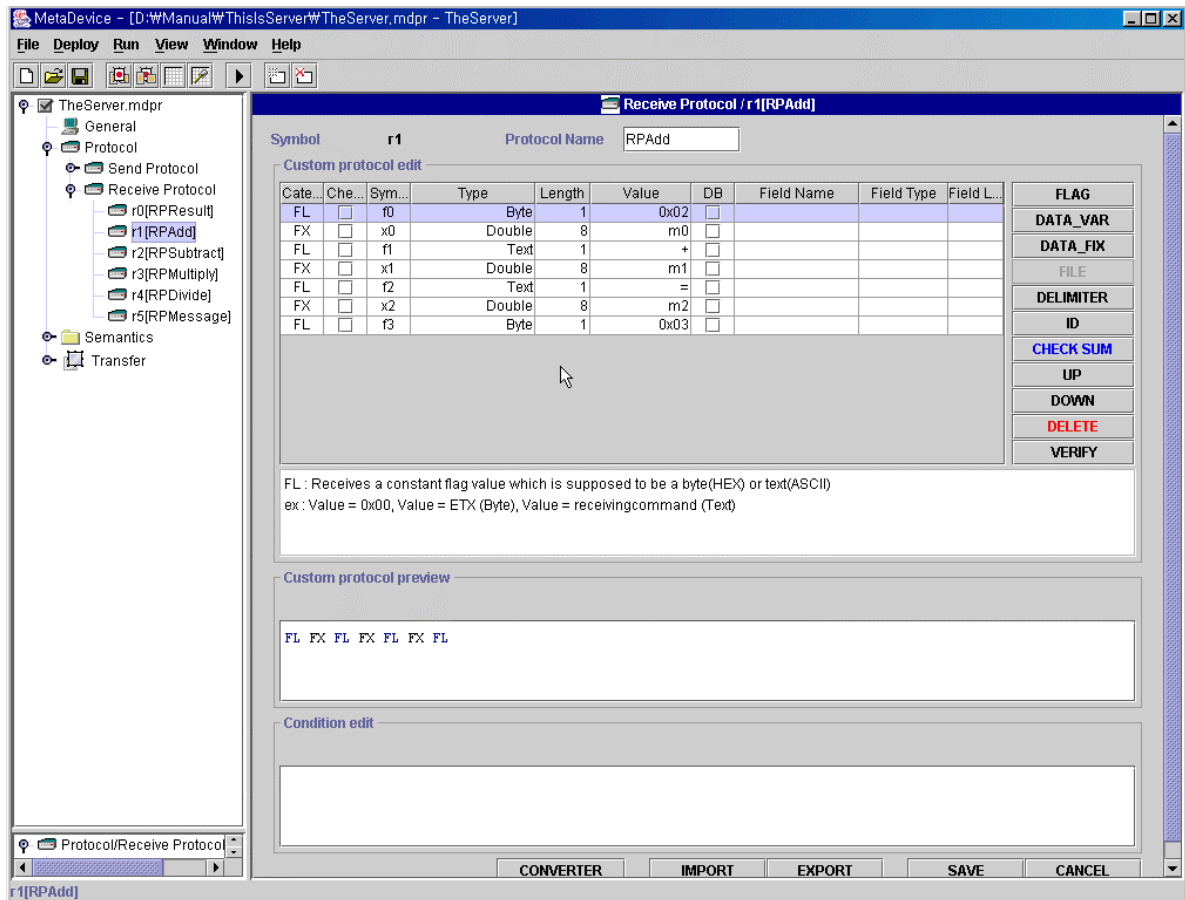
### [ 4.3 RPResult ]

- 3) [RPResult] Protocol Calculator , UI Application  
 RPSAdd, RPSubtract, RPMultiply, RPDivide, RPMessage  
 Protocol Transfer .  
 4) FIXED DATA Type m0 , FIXED DATA Type m1  
 , .FIXED DATA Type m2 , FIXED DATA  
 Type m3 . FIXED DATA Type m100 0  
 1 [SPData] Operand2 가 0 0 Error 가 .  
 5) , , , DB [Protocol Edit  
 Table] [DB] Check [Field Name], [Field Type], [Field Length]

- 6) [DB Storage Condition Edit] [m100 == 1] [RPRResult] [m100]  
1, Operand2 가 0 DB  
가 .

#### 14. RPAAdd Receive Protocol

- 1) [Receive Protocol List Panel] [RPAAdd] Protocol [Receive Protocol Edit Panel]  
2) [Receive Protocol Edit Panel]

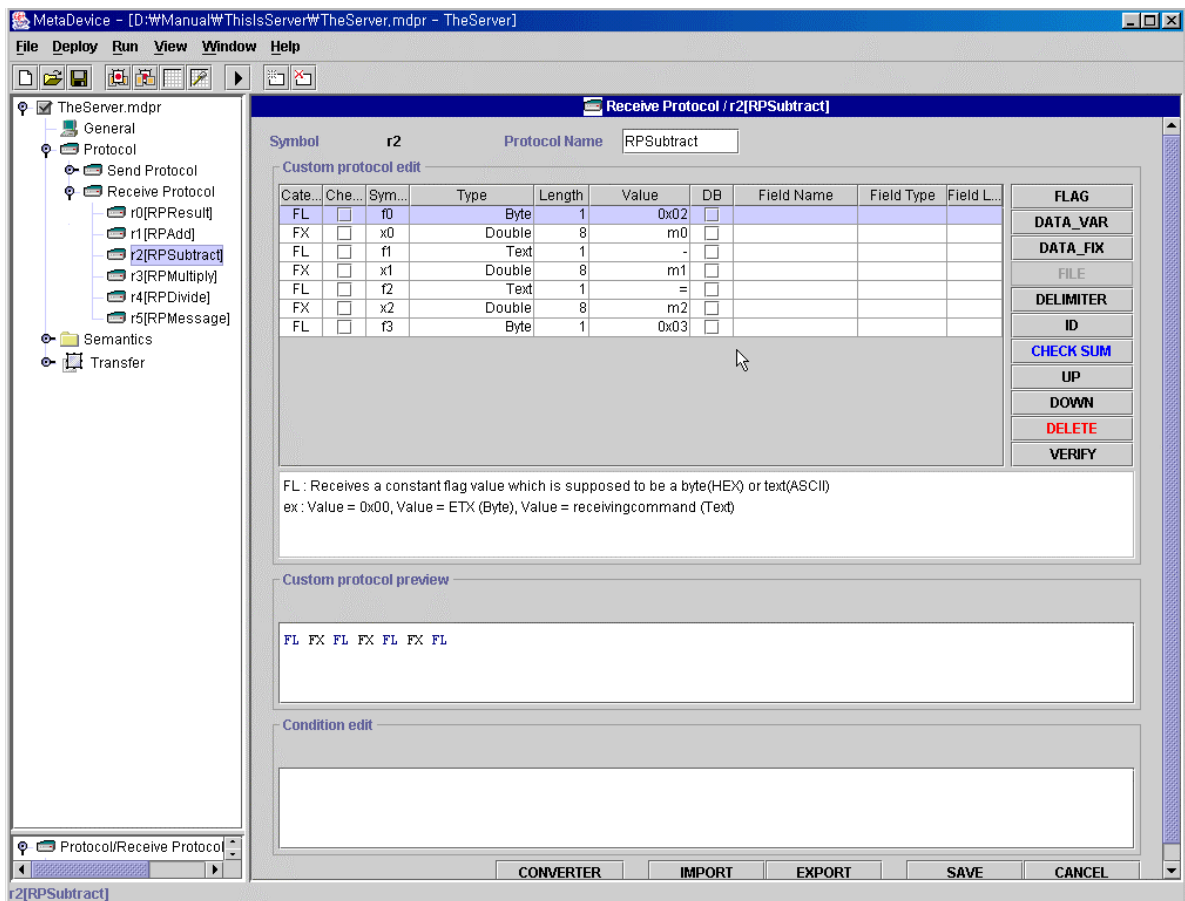


### [ 4.4 RPAAdd ]

- 3) [RPAAdd] Protocol Calculator UI Application  
RPAAdd, RPSubtract, RPMultiply, RPDIVide, RPMMessage Protocol  
UI Application 가 가 .
- 4) FIXED DATA Type m0 [SPData] Operand1 m0, FIXED DATA Type  
m1 [SPData] Operand2 m1, .FIXED DATA Type m2
- 5) [RPSubtract], [RPMultiply], [RPDIVide] RPAAdd . m2

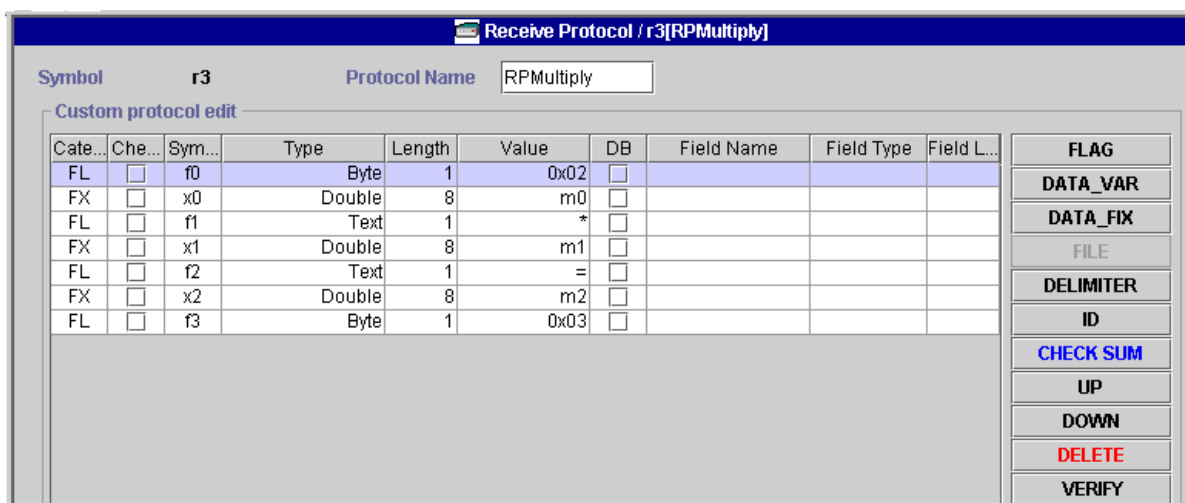
가 , , . [RPAAdd] [EXPORT] [Receive  
Protocol Edit Panel] [IMPORT]  
Protocol

### 15. RPSubtract Receive Protocol



[ 4.5 RPSubtract ]

### 16. RPMultiply Receive Protocol



[ 4.6 RPMultiply ]

## 17. RPDivide Receive Protocol

**Receive Protocol / r4[RPDivide]**

Symbol: **r4** Protocol Name: **RPDivide**

Custom protocol edit

| Cate... | Che...                   | Sym... | Type   | Length | Value | DB                       | Field Name | Field Type | Field L... | FLAG      |
|---------|--------------------------|--------|--------|--------|-------|--------------------------|------------|------------|------------|-----------|
| FL      | <input type="checkbox"/> | f0     | Byte   | 1      | 0x02  | <input type="checkbox"/> |            |            |            | DATA_VAR  |
| FX      | <input type="checkbox"/> | x0     | Double | 8      | m0    | <input type="checkbox"/> |            |            |            | DATA_FIX  |
| FL      | <input type="checkbox"/> | f1     | Text   | 1      | /     | <input type="checkbox"/> |            |            |            | FILE      |
| FX      | <input type="checkbox"/> | x1     | Double | 8      | m1    | <input type="checkbox"/> |            |            |            | DELIMITER |
| FL      | <input type="checkbox"/> | f2     | Text   | 1      | =     | <input type="checkbox"/> |            |            |            | ID        |
| FX      | <input type="checkbox"/> | x2     | Double | 8      | m2    | <input type="checkbox"/> |            |            |            | CHECK SUM |
| FL      | <input type="checkbox"/> | f3     | Byte   | 1      | 0x03  | <input type="checkbox"/> |            |            |            | UP        |
|         |                          |        |        |        |       |                          |            |            |            | DOWN      |
|         |                          |        |        |        |       |                          |            |            |            | DELETE    |
|         |                          |        |        |        |       |                          |            |            |            | VERIFY    |

[ 4.7 RPDivide ]

## 18. RPMessage Receive Protocol

- 1) [Receive Protocol List Panel] [RPMessage] Protocol [Receive Protocol Edit Panel]
- 2) [Receive Protocol Edit Panel]

**Receive Protocol / r5[RPMessage]**

Symbol: **r5** Protocol Name: **RPMessage**

Custom protocol edit

| Cate... | Che...                   | Sym... | Type       | Length | Value | DB                       | Field Name | Field Type | Field L... | FLAG     |
|---------|--------------------------|--------|------------|--------|-------|--------------------------|------------|------------|------------|----------|
| FL      | <input type="checkbox"/> | f0     | Byte       | 1      | 0x02  | <input type="checkbox"/> |            |            |            | DATA_VAR |
| VA      | <input type="checkbox"/> | v0     | Byte Array | f1     | v0    | <input type="checkbox"/> |            |            |            | DATA_FIX |
| FL      | <input type="checkbox"/> | f1     | Byte       | 1      | 0x03  | <input type="checkbox"/> |            |            |            | FILE     |

[ 4.8 RPMessage ]

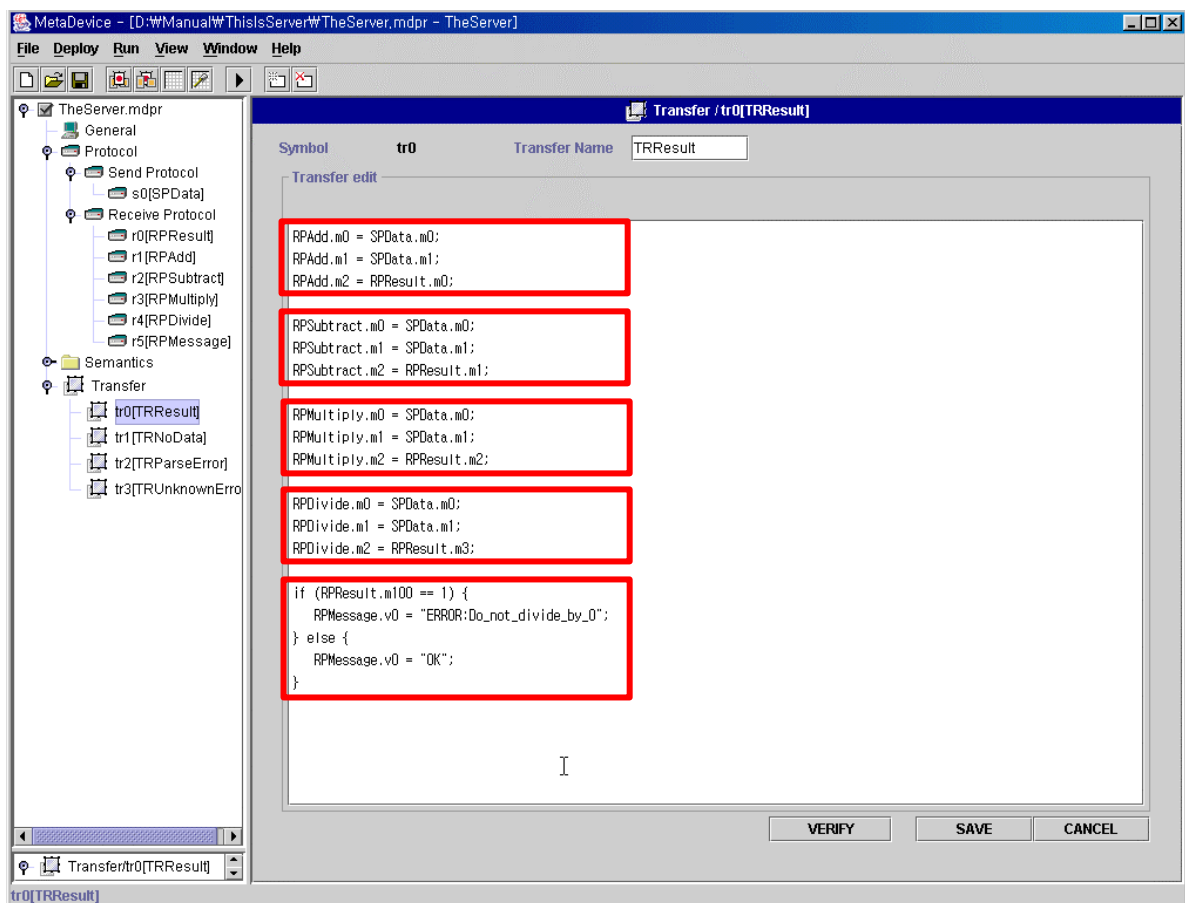
- 3) [RPMessage] Protocol Calculator UI Application  
( 0 Error). , Calculator [RPResult]  
UI Application . Calculator  
가 [RPResult]
- 4) VARIABLE DATA Type v0 UI Application

## 19. Transfer

- 1) [Project Pane] [Transfer]
- 2) [Content Pane] [Transfer List Panel] [Append]  
[New transfer]
- 3) [New transfer] [Transfer Name] [TRResult]  
[OK] [TRResult] Transfer
- 4) 2) ~ 3) [Transfer Name] 3 . Transfer  
. (TRNoData, TRParseError, TRUnknownError)

## 20. TRResult Transfer

- 1) [Transfer List Panel] [TRResult] Transfer [Transfer Edit Panel]
- 2) [Transfer Edit Panel]



[ 4.9 TRResult ]

- 3) [TRResult] Transfer Calculator UI Application  
RPSData, RPSResult, RPSMessage Protocol  
Transfer
- 4) [SPData] [RPSResult] [RPSData]

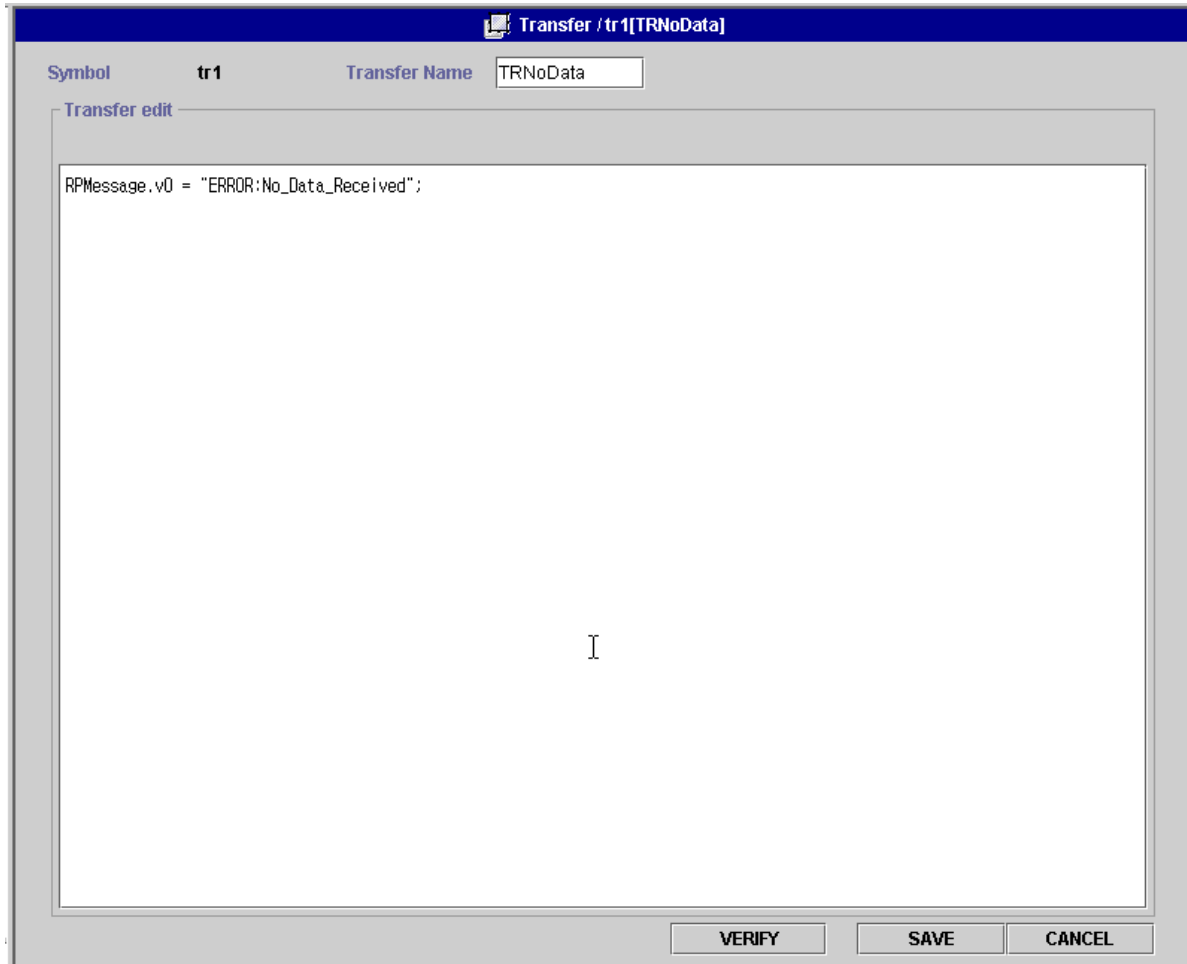


MetaDevice

- 5) [SPData] [RPSResult] [RPSubtract] .
  - 6) [SPData] [RPSResult] [RPMultiply] .
  - 7) [SPData] [RPSResult] [RPDivide] .
  - 8) [RPSResult] [RPMMessage] . [RPSResult].
- m100] 1 Error , 0
- . ( : String Space " " Underscore ("")
- .)

21. TRNoData Transfer

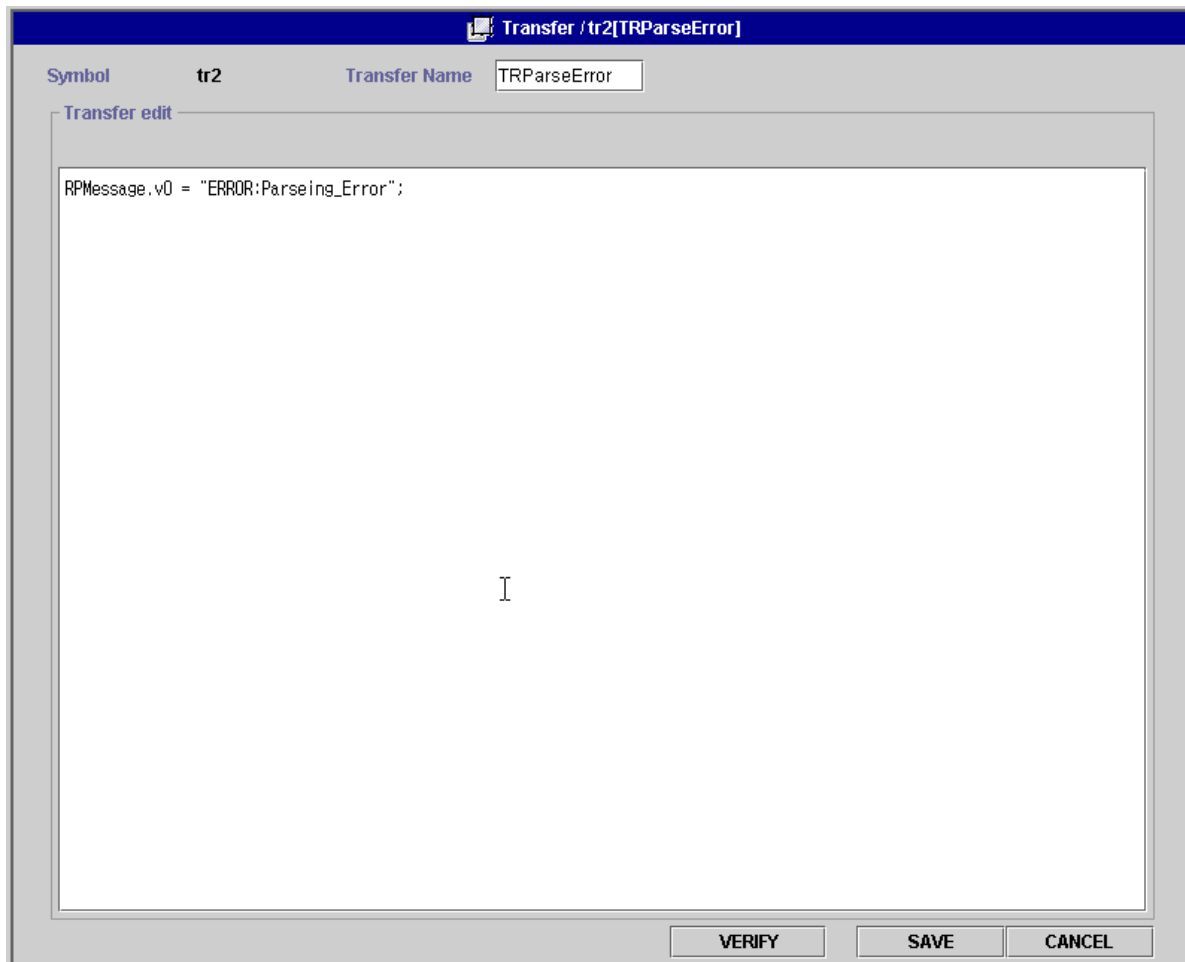
- 1) [Transfer List Panel] [TRNoData] Transfer [Transfer Edit Panel] .
- 2) [Transfer Edit Panel] .



- [ 4.10 TRNoData ]
- 3) [TRNoData] Transfer Calculator [RPSResult] [RPSMessage]
  - "ERROR:No\_Data\_Received" UI Application

## 22. TRParseError Transfer

- 1) [Transfer List Panel] [TRParseError] Transfer [Transfer Edit Panel]
- 2) [Transfer Edit Panel]

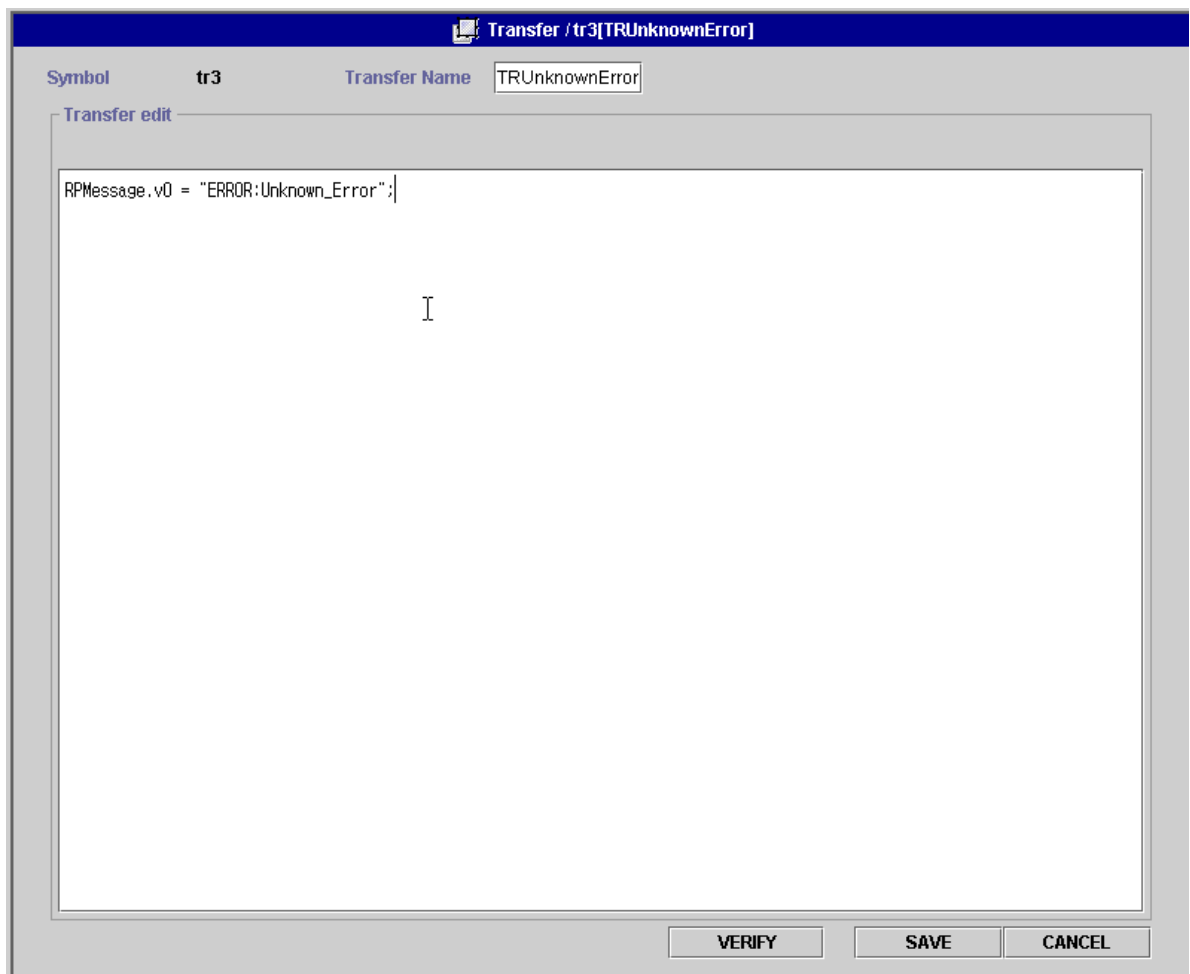


### [ 4.11 TRParseError ]

- 3) [TRParseError] Transfer Calculator 가 [RPRResult]  
[RPMMessage] "ERROR:Parsing\_Error" UI Application

## 23. TRUnknownError Transfer

- 1) [Transfer List Panel] [TRUnknownError] Transfer [Transfer Edit Panel]
- 2) [Transfer Edit Panel]



[ 4.12 TRUnknownError ]

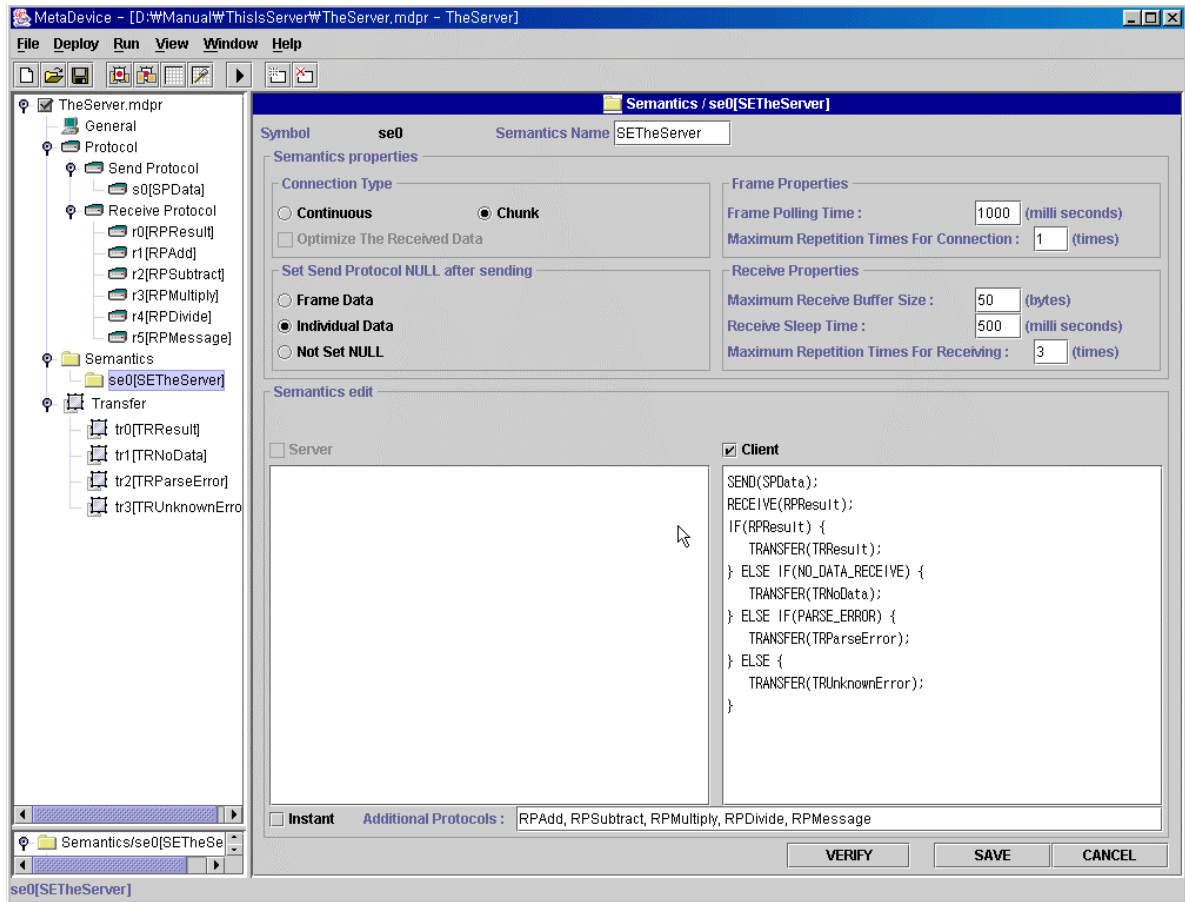
- 3) [TRUnknownError] Transfer Calculator Errorr 가  
[RPMMessage] ""ERROR:Unknown\_Error" UI Application  
. Error Check Sum Check Sum  
Error 가 Check Sum  
Error .

24. Semantics

- 1) [Project Pane] [Semantics] .  
2) [Content Pane] [Semantics List Panel] [Append]  
[New semantics] .  
3) [New semantics] [Semantics Name] [SETheServer]  
[OK] [SETheServer] Semantics .

## 25. SETheServer Semantics

- 1) [Semantics List Panel] [SETheServer] Semantics [Semantics Edit Panel]
- 2) [Semantics Edit Panel]



### [ 4.13 SETheServer ]

- 3) [Connection Type] [Chunk] Calculator [SPData], [RPResult]
- 4) [Set Send Protocol NULL after sending] [Individual Data] [SPData]  
UI Application [SPData]가 Calculator [SPData]
- 5) [Frame Polling Time] [1000] 1 Calculator
- 6) [Maximum Repetition Times For Connecion] 1 Calculator
- 7) [Maximum Receive Buffer Size] [RPResult] 50 가 Calculator  
[RPResult] 50byte
- 8) [Receive Sleep Time] [500], [Maximum Repetition Times For Receiving]  
[3] 가 [RPResult] Calculator 가

1.5(500 X 3 ) , 가 가  
0.5 . ( : [Maximum Repetition Times

For Receiving] [1] Server Manager  
1 .)

- 9) [Client Semantics] [Client Semantics Edit] .  
**SEND(SPData);** 가 Calculator [SPData] .  
**RECEIVE(RPResult);** 가 Calculator [RPResult] .  
**IF(RPResult) {** Calculator 가 [RPResult]  
    **TRANSFER(TRResult);** TRResult .  
**} ELSE IF(NO\_DATA\_RECEIVE) {** Calculator 가  
    **TRANSFER(TRNoData);** TRNoData .  
**} ELSE IF(PARSE\_ERROR) {** 가 [RPResult]  
    **TRANSFER(TRParseError);** TRParseError .  
**} ELSE {**  
    **TRANSFER(TRUnknownError);** TRUnknownError .  
**}**  
10) [Client Semantics Edit] SEND RECEIVE  
    [SPData],[RPResult] Transfer [RPAAdd], [RPSubtract],  
    [RPMultiply],[RPDivide],[RPMessage] [Additional Protocols] .

## 26. Admin

- 1) [File / Save] project (TheServer.mdpr) .  
2) Admin Module Admin  
    Server Manager TheServer.mdpr . [File/Open].  
3) Admin Table  
    Admin Module [Deploy / Create Admin Tables] Admin Table .  
    [User ID] [admin], [PassWd] [admin] [Login] Admin  
    Login .  
4) Protocol Table  
    Admin Module [Deploy / Create Protocol Tables] Protocol Table  
5)  
    Table User Table Insert Append  
    Record , [User ID] [jrkim], [Password] [jrkim], [Name] [JRKim]  
    [Register] .  
6)  
    Calculator 가 Calculator  
    . Table Device Table Insert Append

Record , [MAC Number] [00], [00], [01] [Current IP]  
 [192.168.18.10], [Port No] [6001], [Semantics] [SETheServer], [Device Code] [-1]  
 . [Current IP] Calculator 가 IP .

Server Manager

Calculator IP 가 192.168.18.10 . [Register]

Calculator Device .

## 7) Relation

Table Relation Table Insert Relation .  
 [User Search] [Device Search]

Device . [rkim] ,

[0][0][1] Device [Register ] Relation .

## 8) 2 Server Manager/Admin "2. Admin "

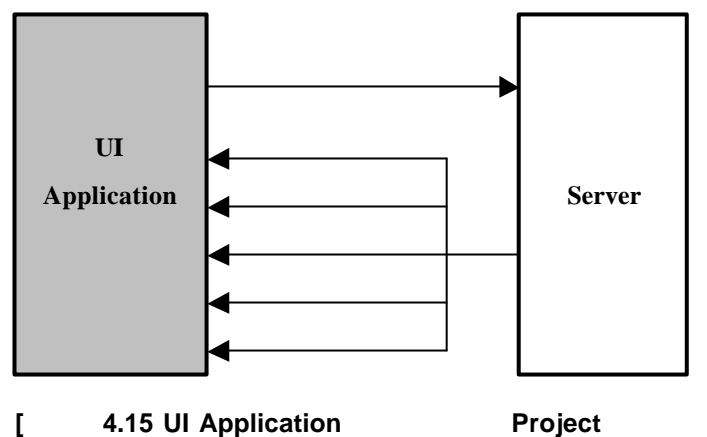
27.

1) ServerManager [Deploy / Make Server] .

2) D:\Manual\ThisIsServer\Server 가 .

## 2.3

[SPData]  
 , [RPAAdd], [RPSubtract], [RPMultiply], [RPDivide]  
 [RPMMessage]



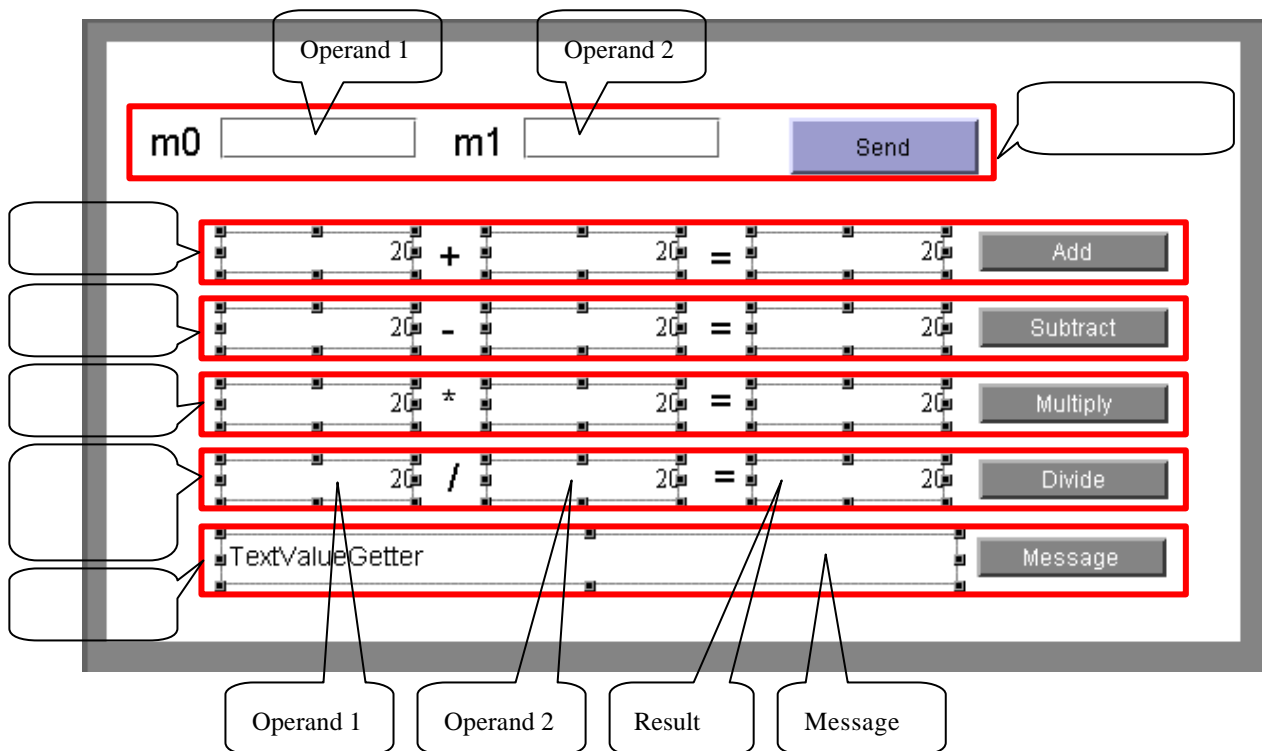
1.

D:\Manual ThisIsUI .

## 2. UI Project

- 1) UI Manager .
- 2) [File / New] UI Project .
- 3) [Device Info & Page Panel] [Get device Info.] , [Open]  
 UI Application Project [D:\Manual\ThisIsServer\TheSe  
 rver.mdpr] [OPEN] .
- 4) [User ID] [Server] [User] Table  
 [jrkim] [OK] UI Application Device 가

## 3. Design Panel



[ 4.16 Design Panel ]

- 1) [Statics] Component Group [StaticText] Component  
 - [m0], [m1]  
 - , , , [+], [-], [\*], [/], [=]
- 2) [Setters] Component Group [InputFieldValueSetter] Component  
 - Text Field( [Operand1][Operand2] )
- 3) [Controls] Component Group [DataSendButton] Component  
 - [Send]

- 4) [Getters] Component Group [LabelValueGetter] Component
  - , , , [Operand1][Opeand2]
  - [Result] Text Field
- 5) [Getters] Component Group [TextLabelValueGetter] Component
  - [Message] Text Field
- 6) [Controls] Component Group [DataReceiveButton] Component
  - , , , , [Add], [Subtract], [Multiply], [Divide], [Message]

#### 4. Properties

- 1) 가 Send [SPData]

- 2) [Property Panel] [m0] StaticText Properties

| Property Editor - StaticText |                  |
|------------------------------|------------------|
| Property                     | Value            |
| Text                         | m0               |
| Font                         | Arial, PLAIN, 20 |
| Text alignment               | CENTER           |
| Transparent backgr...        | true             |
| Text color                   |                  |
| Background color             |                  |

StaticText Properties [Text]  
[m0]

#### [ 4.17 [m0] StaticText Properties ]

- 3) [m1] StaticText Properties [Text] [m1]
- 4) [Operand1] InputFieldValueSetter Properties

| Property Editor - ValueSetterInputField |                      |
|-----------------------------------------|----------------------|
| Property                                | Value                |
| Protocol symbols                        | s0                   |
| MAC address                             | 00:00:01             |
| Value expression                        | NONE                 |
| Write destination                       | m0                   |
| Write expression                        | s                    |
| Value input or Text i...                | Value input          |
| Font                                    | Helvetica, PLAIN, 12 |
| Foreground color                        |                      |
| Background color                        |                      |

[MAC address] : Admin Program  
Device MAC address  
[Protocol symbols] : [SPData]  
symbol  
[Write destination] : [SPData] (Opera  
nd1 SPData m0 )

#### [ 4.18 [Operand1] InputFieldValueSetter Properties ]

- 5) [Operand2] InputFieldValueSetter Properties [Operand1] [Write destination]  
[SPData] Operand2 [m1]
- 6) [Send] DataSendButton Properties



| Property Editor - DataSendButton |                   |
|----------------------------------|-------------------|
| Property                         | Value             |
| Send protocol                    | s0                |
| Receive protocol                 | NONE              |
| Title                            | Send              |
| Title Font                       | Dialog, PLAIN, 12 |
| Repeat event ?                   | false             |
| Repeat period                    | 1000              |
| Transparent backgr...            | false             |
| Foreground color                 |                   |
| Background color                 |                   |
| Pressed state image              | NONE Clear        |
| Released state ima...            | NONE Clear        |

[Send protocol] :  
col symbol

[SPData] Proto

#### [ 4.19 [Send] DataSendButton Properties ]

#### 5. Properties

##### 1) [Add]

[RPAAdd] Protocol

##### 2) [Operand1] LabelValueGetter Properties

| Property Editor - LabelValueGetter |                  |
|------------------------------------|------------------|
| Property                           | Value            |
| Protocol symbols                   | r1               |
| MAC address                        | 00:00:01         |
| Value expression                   | m0               |
| Text Font                          | Serif, PLAIN, 14 |
| ForeGround Color                   |                  |
| BackGround Color                   |                  |
| Horizontal alignment               | RIGHT            |
| LED effect                         | false            |
| IsTransparent                      | false            |

[MAC address] : Admin Program  
Device MAC address

[Protocol symbols] : [RPAAdd]  
symbol

[Value expression] : [RPAAdd] Protocol [Operand  
1] [m0]

#### [ 4.20 [Operand1] LabelValueGetter Properties ]

##### 3) [+] StaticText Properties [Text] [+] .

##### 4) [Operand2] LabelValueGetter Properties [Value expression] [Operand2] [m1] [Operand1] .

##### 5) [=] StaticText Properties [Text] [=] .

##### 6) [Result] LabelValueGetter Properties [Value expression] [AddResult] [m2] [Operand1] .

##### 7) [Add] DataReceiveButton Properties .

| Property Editor - DataReceiveButton |                   |
|-------------------------------------|-------------------|
| Property                            | Value             |
| Receive protocol                    | r1                |
| Title                               | Add               |
| Title Font                          | Dialog, PLAIN, 12 |
| Repeat event ?                      | true              |
| Repeat period                       | 1000              |
| Transparent backgr...               | false             |
| Foreground color                    |                   |
| Background color                    |                   |
| Pressed state image                 | NONE Clear        |
| Released state ima...               | NONE Clear        |

[Receive protocol] : [RPAAdd]  
 symbol  
 [Repeat event?] :  
 [true]  
 [Repeat perion] : 1  
 [1000]

#### [ 4.21 [Add] DataReceiveButton Properties ]

#### 6. Properties

- 1) [Subtract] [RPSubtract]
- 2) [Operand1] LabelValueGetter Properties  
 [Protocol symbols] : [RPSubtract] Protocol symbol [r2]  
 [Value expression] : [RPSubtract] [Operand 1] [m0]  
 [Operand1]
- 3) [-] StaticText Properties [Text] [-]
- 4) [Operand2] LabelValueGetter Properties [Value expression] [Operand2]  
 [m1] [Operand1]
- 5) [=] StaticText Properties [Text] [=]
- 6) [Result] LabelValueGetter Properties [Value expression] [SubtractResult]  
 [m2] [Operand1]
- 7) [Subtract] DataReceiveButton Properties  
 [Receive protocol] : [RPSubtract] symbol [r2]  
 [Title] : [Subtract]  
 [Add] DataReceiveButton

#### 7. Properties

- 1) [Multiply] [RPMultiply]
- 2) [Operand1] LabelValueGetter Properties  
 [Protocol symbols] : [RPMultiply] symbol [r3]  
 [Value expression] : [RPMultiply] [Operand 1] [m0]

- [Operand1] .
- 3) [\*] StaticText Properties [Text] [\*] .
  - 4) [Operand2] LabelValueGetter Properties [Value expression] [Operand2]  
[m1] [Operand1] .
  - 5) [=] StaticText Properties [Text] [=] .
  - 6) [Result] LabelValueGetter Properties [Value expression] [MultiplyResult]  
[m2] [Operand1] .
  - 7) [Multiply] DataReceiveButton Properties .  
[Receive protocol] : [RPMultiply] symbol [r3]  
[Title] : [Multiply]  
[Add] DataReceiveButton .
8. Properties
- 1) [Divide] [RPDivide]  
.
  - 2) [Operand1] LabelValueGetter Properties .  
[Protocol symbols] : [RPDivide] symbol [r4]  
[Value expression] : [RPMultiply] [Operand 1] [m0]  
[Operand1] .
  - 3) [/] StaticText Properties [Text] [/] .
  - 4) [Operand2] LabelValueGetter Properties [Value expression] [Operand2]  
[m1] [Operand1] .
  - 5) [=] StaticText Properties [Text] [=] .
  - 6) [Result] LabelValueGetter Properties [Value expression] [DivideResult]  
[m2] [Operand1] .
  - 7) [Divide] DataReceiveButton Properties .  
[Receive protocol] : [RPDivide] symbol [r4]  
[Title] : [Divide]  
[Add] DataReceiveButton .
9. Properties
- 1) [Message] [RPMessage]  
.
  - 2) [Message] TextLabelValueGetter Properties .

| Property Editor - TextLabelValueGetter |                  |
|----------------------------------------|------------------|
| Property                               | Value            |
| Protocol symbols                       | r5               |
| MAC address                            | 00:00:01         |
| Value expression                       | v0               |
| Text Font                              | Arial, PLAIN, 14 |
| ForeGround Color                       |                  |
| BackGround Color                       |                  |
| Horizontal alignment                   | LEFT             |
| LED effect                             | false            |
| IsTransparent                          | false            |

[MAC address] : Admin Program  
Device MAC address  
[Protocol symbols] : [RPMessag  
e] symbol  
[Value expression] : [RPMessag  
e]  
[Message] [v0]

[ 4.22 [Message] TextLabelValueGetter Properties ]

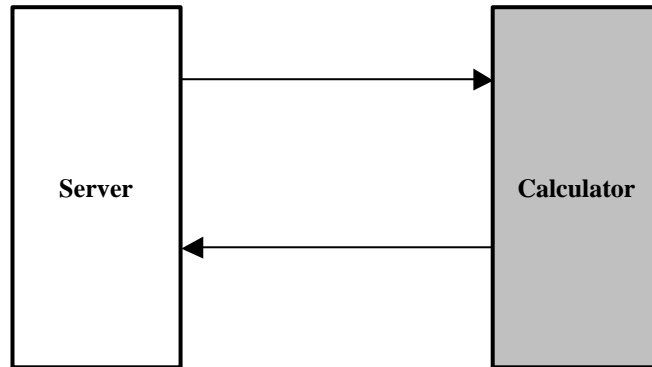
- 3) [Message] DataReceiveButton Properties .
- [Receive protocol] : [RPMessag] symbol [r5]
- [Title] : [Message]
- [Add] DataReceiveButton .

10. UI Application

- 1) [File / Save] UI project [D:\Manual\ThisIsUI\UICalculator.mdu]
- 2) [Deply / Make Application] [Create Application] .
- 3) [Create Application] [Dir] [D:\Manual\ThisIsUI] [Default
- Host Address [127.0.0.1] .
- UI Application . , UI Application
- IP Address [Default Host Address] .

## 2.4

Calculator 가 Device 가 , Calculator 가 Device 가 .  
 가 Receive , 가 Send . Server Manager  
 Send UI Manager UI  
 Calculator UI Send  
 Tran fer .



[ 4.23 Calculator Project ]

### 1. General Property

- 1) Project Name : TheCalculator

TheCalculator Project .

- 2) Location : D:\Manual\ThisIsCalculator

D:\Manual\ ThisIsCalculator .

- 3) Daemon Type : Server

Calculator Device

Calculator Daemon Type .

- 4) Port Number : 6001

가 Port Number Admin Device  
 (2.2 26. Admin 6) Device ) [Port No] [6001]

- 5) DBMS : MS ACCESS

MS ACCESS .

- 6) Class Name : sun.jdbc.odbc.JdbcOdbcDriver

SUN 가 JdbcOdbcDriver .

- 7) URL : Jdbc:Odbc:calculator

ODBC (DSN) calculator .

- 8) User ID, Password :

## MetaDevice

### 2. Send Protocol

- 1) Device Send Protocol .
- 2) Device Send Protocol .
- 3) SPCalculate Send Protocol .
- 4) Receive Protocol RPRResult .

### 3. Receive Protocol

- 1) Device( ) Receive Protocol .
- 2) Device( ) RPData Receive Protocol .
- 3) Send Protocol SPData .

### 4. Transfer

- 1) Device( ) RPData Device SPCalculate .
- 2) UI Send Protocol Transfer  
Send Protocol .
- 3) 0 (Operand2 = 0) Error Code .

### 5. Semantics

- (RPData) Transfer Send  
Protocol(SPCalculator) Semantics SECalculate .

### 6.

D:\Manual ThisIsCalculator .

### 7. ODBC

- 1) [ / / ] [ ] .
- 2) [ ] [ODBC (32 )] [ODBC ] .
- 3) [ODBC ] [ DSN] [ ]  
. ( DSN .)
- 4) [ 가] [ ] .
- 5) [ ] [ ] [Driver do Microsoft  
Access (\*.mdb)] [ ] .
- 6) [ODBC Microsoft Access ] [ ] [calculator]

- , [ ] .
- 7) [ ] [ ] [d:] , [ ]  
 [d:\Manual\ThisIsCalculator] [ ]  
 [calculator.mdb] [ ] .
- 8) [ODBC Microsoft Access ] [ ] .

## 8. Project

- 1) Server Manager .
- 2) [File / New] [New Project] .
- 3) [New Project] .
  - Project Name : TheCalculator
  - Location : D:\Manual\ThisIsCalculator(Location .)
  - Daemon Type : Server (Server )
  - Port Number : 6001
  - DBMS : MS ACCESS (MS ACCESS )
  - Class Name : sun.jdbc.odbc.JdbcOdbcDriver
  - URL : Jdbc:Odbc:calculator
- 4) [SAVE] [TheCalculator] Project .

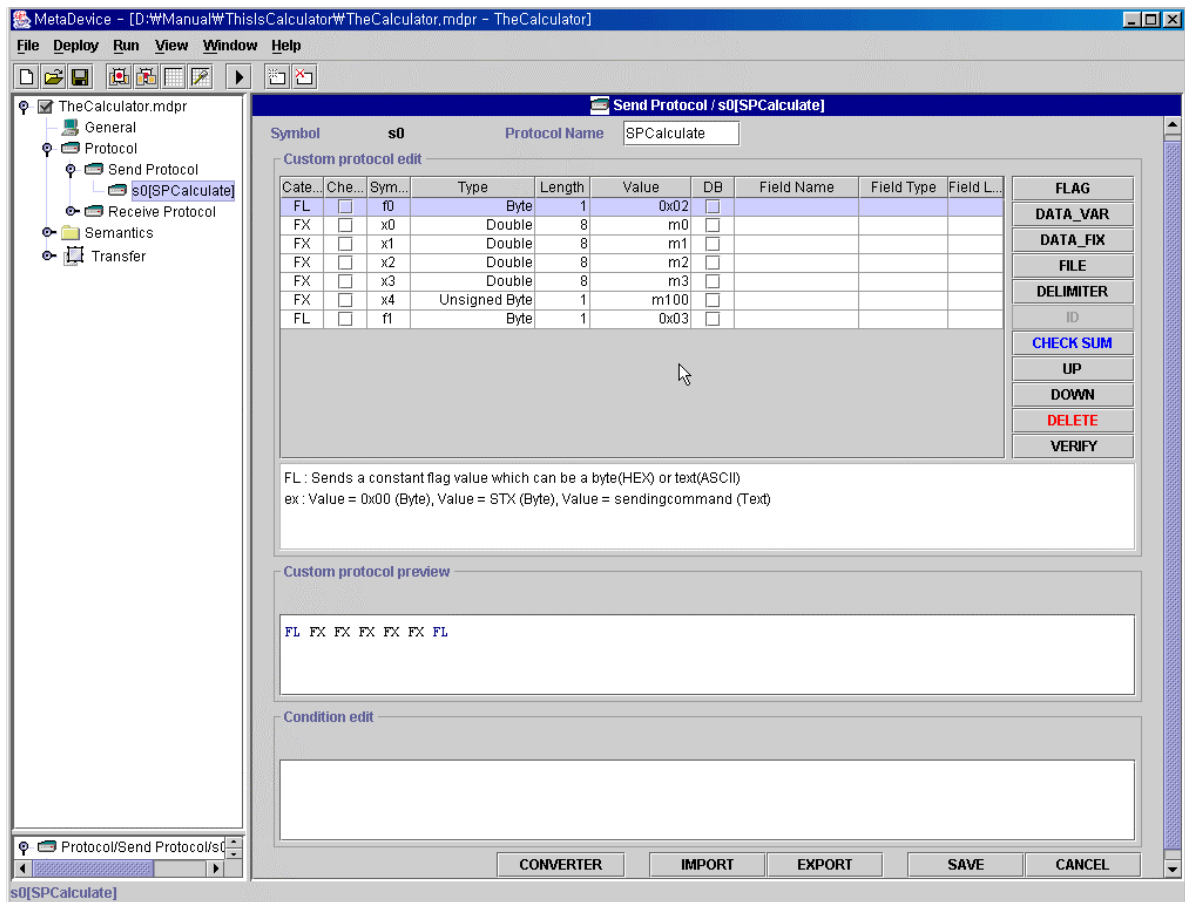
## 9. Send Protocol

- 1) [Project Pane] [Project] [Send Protocol] .
- 2) [Content Pane] [Send Protocol List Panel] [Append]  
 [New Serial Protocol] .
- 3) [New Serial Protocol] [Protocol Name] [SPCalculate]  
 [OK] [SPCalculate] Protocol .

## 10. Send Protocol

- 1) [Send Protocol List Panel] [SPCalculate] Protocol [Send Protocol Edit Panel] .
- 2) [Send Protocol Edit Panel] .

## MetaDevice



### [ 4.24 Calculator SPCalculate ]

3) [SPCalculate] Protocol

4) RPRResult

## 11. Receive Protocol

1) [Project Pane] [Project] [Receive Protocol]

2) [Content Pane] [Receive Protocol List Panel] [Append]  
[New Serial Protocol]

3) [New Serial Protocol] [Protocol Name] [RPData]  
[OK] [RPData] Protocol

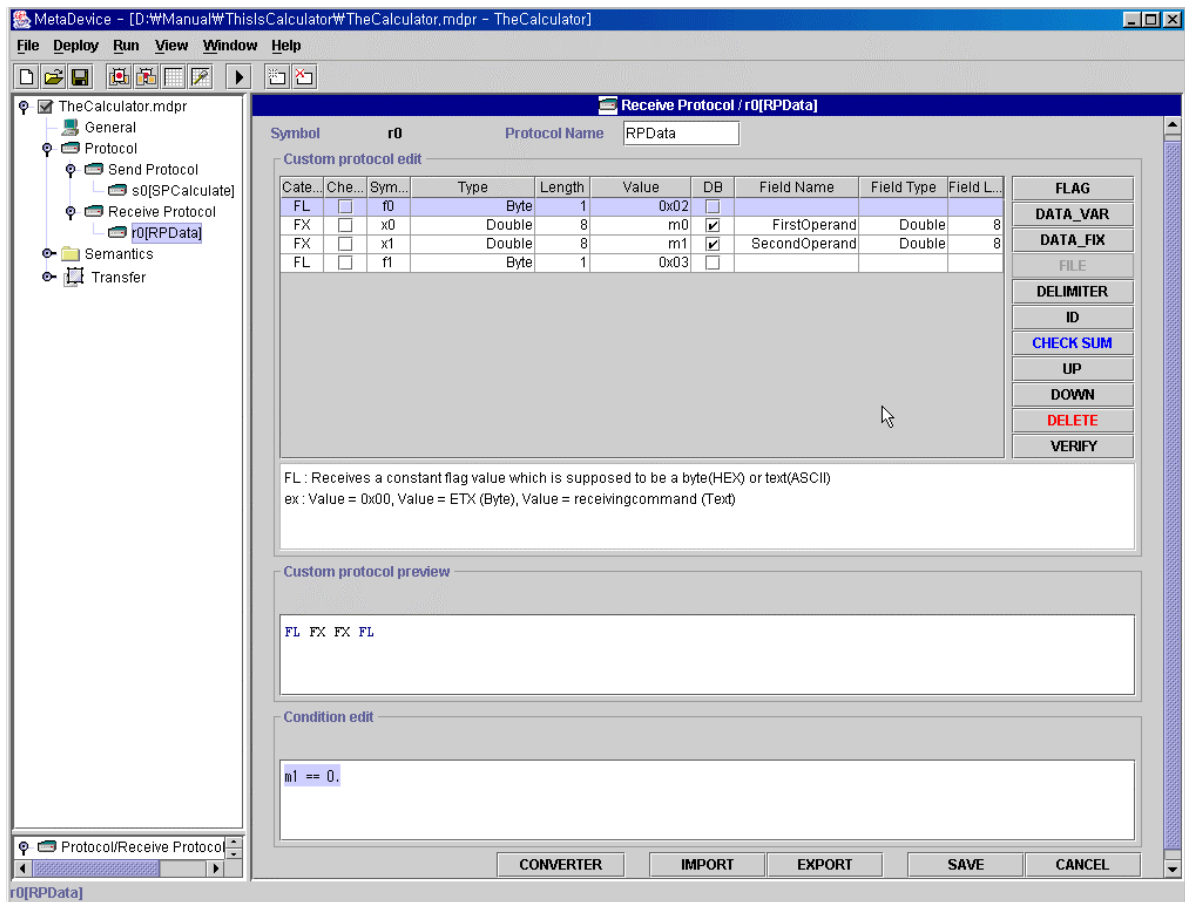
## 12. Receive Protocol

1) [Receive Protocol List Panel] [RPData] Protocol [Receive Protocol Edit Panel]

2) [Receive Protocol Edit Panel]



## MetaDevice



### [ 4.25 Calculator RPData ]

#### 3) [RPData] Protocol

[SPCalculate] Protocol

Transfer

#### 4) [SPData]

#### 5) DB

[Protocol Edit Table]

[DB]

Check

[Field Name], [Field Type], [Field Length]

#### 6) [DB Storage Condition Edit]

[m1 == 0.]

[RPData]

[m1]

0. , Operand2 가 0

DB

가

### 13. Transfer

#### 1) [Project Pane] [Transfer]

#### 2) [Content Pane] [Transfer List Panel] [Append]

[New transfer]

#### 3) [New transfer]

[Transfer Name]

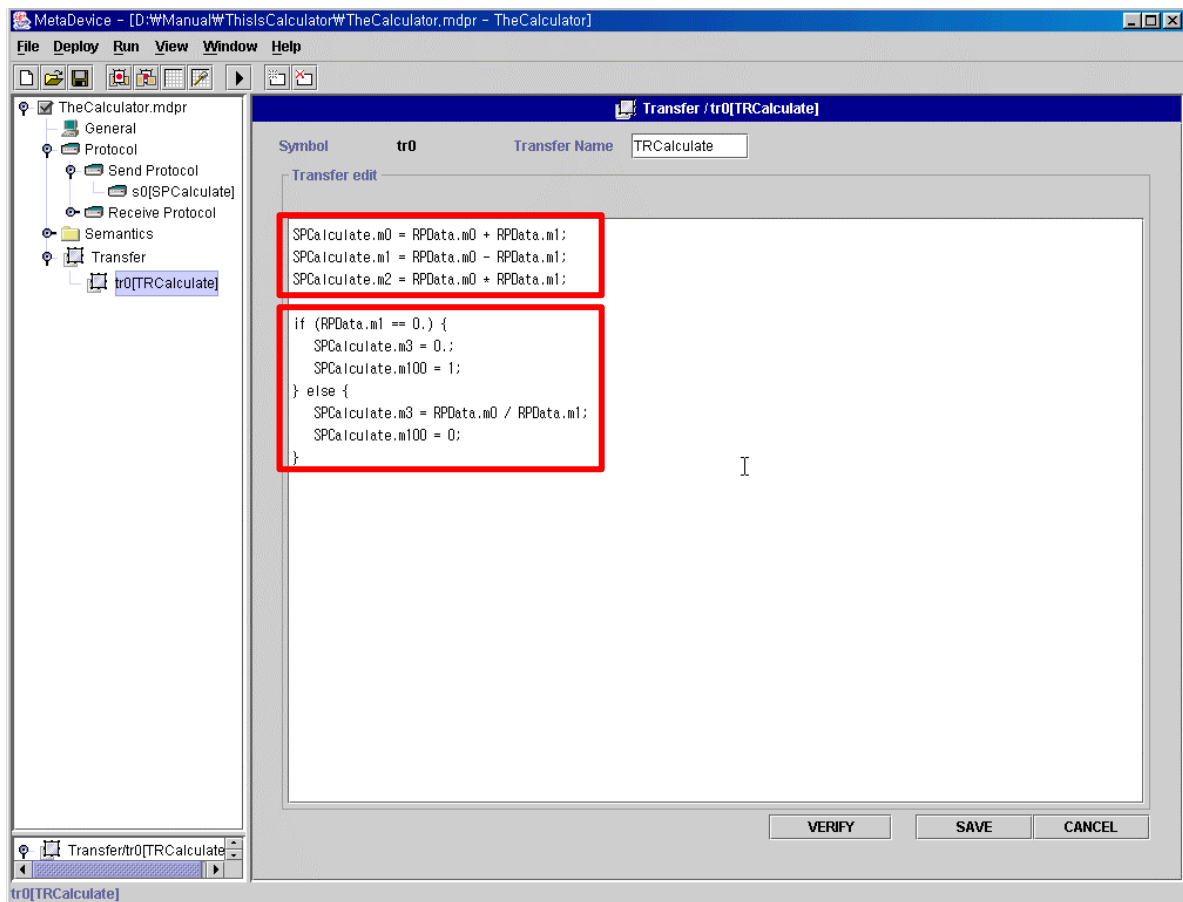
[TRCalculate]

[OK]

[TRCalculate] Transfer

## 14. Transfer

- 1) [Transfer List Panel] [TRCalculate] Transfer [Transfer Edit Panel] .
- 2) [Transfer Edit Panel] .



[ 4.26 Calculator TRCalculate ]

- 3) [TRResult] Transfer

Transfer .

- 4) [RPData] Operand1 Operand2 , ,  
[SPCalculate] .
- 5) [RPData] Operand2 = 0. 0  
Error 1 , Operand2 = 0.  
Error 0 . [RPData] Error [m100]  
[RPResult] [TRResult] [RPMMessage] 0

## 15. Semantics

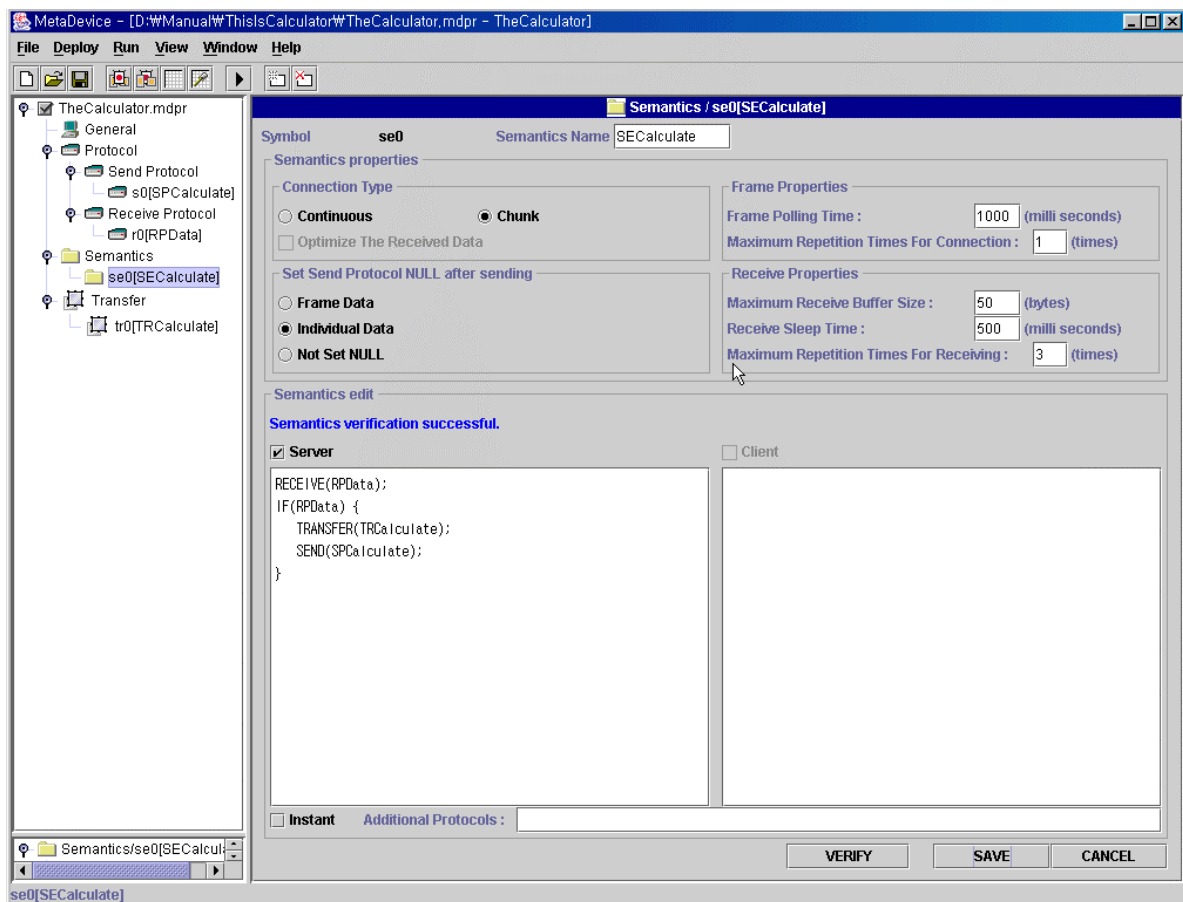
- 1) [Project Pane] [Semantics] .
- 2) [Content Pane] [Semantics List Panel] [Append]

[New semantics]

- 3) [New semantics] [Semantics Name] [SECalculate]  
[OK] [SECalculate] Semantics .

## 16. Semantics

- 1) [Semantics List Panel] [SECalculate] Semantics [Semantics Edit Panel]
- 2) [Semantics Edit Panel]



[ 4.27 Calculate SECalculate ]

- |    |                                          |                   |                          |               |
|----|------------------------------------------|-------------------|--------------------------|---------------|
| 3) | [Connection Type]                        | [Chunk]           | Calculator               | [SPCalculate] |
| 4) | [Set Send Protocol NULL after sending]   | [Individual Data] | [SPCalculate]            |               |
| 5) | [Frame Polling Time]                     | [1000]            | Calculator 가 Daemon Type |               |
| 6) | [Maximum Repetition Times For Connecion] | 1                 | Calculator 가 Daemon Type |               |

- 7) [Maximum Receive Buffer Size] [RPData] 50 Calculator 가  
[RPData] 50byte .
- 8) [Receive Sleep Time] [500] , [Maximum Repetition Times For Receiving]  
[3] 가 [RPData] 가  
1.5(500 X 3 ) , 가 가  
0.5 . ( : [Maximum Repetition Times For  
Receiving] [1] Server Manager  
1 .)
- 9) [Server Semantics] [Server Semantics Edit] .  
**RECEIVE(RPData);** Calculator 가 [RPData] .  
**IF(RPData) {** 가 [RPData] .  
**TRANSFER(TRCalculate);** [RPData] [SPCalculate] .  
**SEND(SPCalculate);** [SPCalculate] .  
**}**

## 17. Admin

- 1) ServerManager [File / Save] project (TheCalculator.mdpr)  
..
- 2) Admin Module Admin  
Server Manager TheCalculator.mdpr . [File/Open].
- 3) Admin Table  
Admin Module [Deploy / Create Admin Tables] Admin Table .  
[User ID] [admin], [PassWd] [admin] [Login] Admin  
Login .
- 4) Protocol Table  
Admin Module [Deploy / Create Protocol Tables] Protocol Table
- 5)  
UI Manager UI  
..
- 6)  
Calculator 가 . Table  
Device Table Insert Append Record  
, [MAC Number] [00], [00], [01] [Current IP] [192.168.0.32], [Port No]  
[6001], [Semantics] [SECalculate], [Device Code] [-1] . [Current IP]  
가 IP .

7) Relation

UI Manager UI

8) 2 Server Manager/Admin “2. Admin ”

18.

1) Server Manager [Deploy / Make Server]

2) D:\Manual\ThisIsCalculator\Server 가

## 2.5

, UI Application, Calculator  
 . Calculator

Porting

Server Manager UI Manager

### 1. Calculator Porting

- 1) Admin [Current IP]  
 ( [192.168.18.10]) [C:\ThisIsCalculator]
- 2) [D:\Manual\ThisIsCalculator] , calculator.mdb, TheCalculator.mdpr  
 Calculator [C:\ThisIsCalculator]
- 3) 2.4 Calculator 7. ODBC Calculator  
 ODBC 7)  
 [C:\ThisIsCalculator\calculator.mdb] [ ]

### 2. Calculator

Calculator [C:\ThisIsCalculator\Server] [TheCalculator.bat]  
 . ( DOS [C:\ThisIsCalculator\Server]  
 [TheCalculator] [ENTER] )

### 3.

[D:\Manual\ThisIsServer\Server] [TheServer.bat]

### 4. UI Application

[D:\Manual\ThisIsUI] [MyApplication.bat] [MyApplication-MetaDevice]

## MetaDevice

\_UI\_Manager] Log In                   가                   Admin  
[jrkim]    User ID    Password                   [Submit]                   [MyApplication-  
MetaDevice \_UI\_Manager] UI Application                   .

### 5. Test

가                   m0 , m1                   [Send]                   . [Add], [Subtract], [Multiply],  
[Divide], [Message]                   1  
. m1                   0                   Message 가 0                   Message 가                   , DB  
Table                   .