CipherLab
User Guide

STREAM Wireless Studio

8000 / 8300 /8400/ 8500 / 9400 / 9500 Series
Mobile Computers

DOC Version 2.07

CIPHERLAB CO., LTD.
Website: http://www.cipherlab.com

RELEASE NOTES

Version	Date	Notes
2.07	May. 05, 2009	▸ Modified: Add 8400 descriptions and delete 9500PPC descriptions.
2.06	Nov. 19, 2008	▸ Modified: section 1.2.1 — Add database View manipulation descriptions. ▸ Modified: section 1.2.2 — Add “Action when matched” property descriptions for database application. ▸ Modified: section 1.3.1 — Add “Edit Screen Identifier” descriptions.
2.05	Aug. 01, 2008	▸ New UI introduced ▸ Modified: section 1.1.2 — replace the [Download Runtime Program] button on the toolbar with [Export 9 Series Terminal Setting] ▸ Modified: section 1.2.2 — [More] field properties for Form: “Show Soft Input Keypad” option available for 9400/9500 ▸ Modified: Appendix II~III support replacement of EAN-128 field separator for all scan engines
2.04	Apr. 17, 2008	▸ Modified: section 1.2.2 Database Application Template – Field Data: Max. Length issue ▸ Modified: section 5.6.1 Load Program & Settings – Remove Options > Function Bars > Task Bar from the client program (9400/9500CE/9500PPC)
2.03	Mar. 07, 2008	▸ New: section 1.1.1 Tools Menu > Install STREAM CE/PPC Client ▸ Modified: section 1.2.1 Database Source – ODBC Database (supports “Enclose field/table name in square brackets when sending SQL commands”.) ▸ New: Appendix III, IV – AIM Code ID (supports “Transmit AIM Code ID” for LR/ELR Laser and 2D scan engines)
2.02	Oct. 12, 2007	▸ New: Support 9400
2.01	Sep. 03, 2007	▸ Modified: Licensing – implementation of key pro ▸ Modified: section 1.1.3 Menu Tree – screenshots updated ▸ Modified: section 1.2.1 Database Source – screenshots updated ▸ New: section 2.2 Login/Logout – 9500CE ▸ New: section 3.1.2 9500 Simulator
2.00	Aug. 03, 2007	New Word template applied ▸ Branded as Power Suite – STREAM Wireless Studio ▸ Modified: 9500PPC, 9500CE client application
1.03	June 14, 2007	▸ Modified: section 1.4 How It Works ▸ Modified: Appendix II – CCD/Laser Scan Engine: add GTIN ▸ Modified: Appendix IV – 2D Scan Engine: add AIM Code ID, Focus Mode…

1.02	June 01, 2007	▸ Modified: section 1.1 Features ▸ New: section 1.4 How It Works ▸ New: Appendix I – Scan Engine Settings ▸ New: Appendix II – CCD/Laser Scan Engine ▸ New: Appendix III – LR/ELR Scan Engine ▸ New: Appendix IV – 2D Scan Engine
1.01	May 16, 2007	▸ Modified: Provides solutions for Database and Terminal Emulation applications
1.00	Jan. 22, 2007	Initial release

CONTENTS

INTRODUCTION

Successfully integrating and enhancing several existing CipherLab applications and download utilities, the **STREAM Wireless Studio** software delivers powerful application solutions in a single package. It is specifically designed for use with the wireless mobile computers capable of 802.11b/g connectivity. Real-time application services and centric management are provided through the *STREAM Server*.

The **STREAM Wireless Studio** software consists of (1) the *STREAM Designer* for configuring application templates and program simulation, and (2) the *STREAM Server* for managing communications as well as surveillance. Currently, the software offers two major solutions for users to collect data and send it back in real-time to a database server or a server supports VT100/220 or 5250 emulation.

This user guide describes how the software provides a total solution for real-time data collection linking with any back-end database. We recommend that you read it thoroughly before use and keep it at hand for quick reference.

Thank you for choosing CipherLab products!

INSTALLING STREAM WIRELESS STUDIO

Install STREAM Wireless Studio from the Power Suite CD-ROM.

The following files can be located in "C:\CipherLab\Stream\" if you did not change to install to a different folder:

File Name	Description
STREAM Wireless Studio User Guide	A copy of this user guide in PDF format is available.
Language folder	▸ Language support – English.lng ▸ For multi-language options, any additional *.lng files must be stored in this folder.
Runtime folder	Runtime programs for different mobile computers – ▸ WS8000.shx, WS8300.shx, WS8400.shx and WS8500.shx can be installed via **Tools > Download Terminal Runtime Program**. ▸ WSClient94CE.exe and WSClient95CE.exe can be installed via **Tools > Install STREAM CE Client**. The device settings defined in the *STREAM Designer* will take effect after being downloaded or copied to the mobile computer. While connecting to the *STREAM Server*, a specific application template will be applied.

UserDB folder	All user-defined databases will be stored in Microsoft Access format in this folder for local access. The data can be imported from or exported to a file in any of the following formats: ▸ Text File (*.txt) ▸ Microsoft Excel (*.xls) ▸ Microsoft Access (*.mdb) ▸ dBase (.dbf)
WS_DBAppSrv.exe	Database Application Service provider – it will be executed automatically when the mobile computer is connected to the computer through the *STREAM Server* and intended to use a Database Application template. It interacts with the mobile computer in the following ways: ▸ Respond to the request from the mobile computer by accessing back-end resources via the Database application template. ▸ Allows the computer to process the data collected and update the associated database.
WS_EmuAppSrv.exe	Terminal Emulation Application Service provider – it will be executed automatically when the mobile computer is connected to the computer through the *STREAM Server* and intended to use a TE application template. It interacts with the mobile computer in the following ways: ▸ Respond to the request from the mobile computer by accessing back-end resources via the TE application template. ▸ Allows the computer to process the barcode data collected and reformat the emulation screens as pre-defined.
WS_Server .exe	*STREAM (Wireless Studio) Server* – The program shortcut has been created on the desktop after installation.
WS_Designer.exe	*STREAM (Wireless Studio) Designer* – The program shortcut has been created on the desktop after installation.
Sim.exe **Sim94.exe** **Sim95.exe**	Simulator, also accessible from inside the *STREAM Designer*. ▸ Sim.exe for 8000/8300/8400/8500 Series ▸ Sim94.exe for 9400 ▸ Sim95.exe for 9500CE
WlanLib.dll	The dll file for wireless communication protocol (TCP/IP).
WS_App.ini	The configuration file used to configure the initial settings (environmental parameters).
WS_App.log	Upon execution of STREAM Wireless Studio, it will generate a log file, which is used to keep a record of the activities or events occurred in the *STREAM Designer* or *STREAM Server*.
WS_Sample .mdb	A sample database in Microsoft Access format, which is for use as database source.
WS_SYSDB .mdb	The default system database in Microsoft Access format. It stores back-end resource information, application templates, user accounts and device settings which are all defined in the *STREAM Designer*.

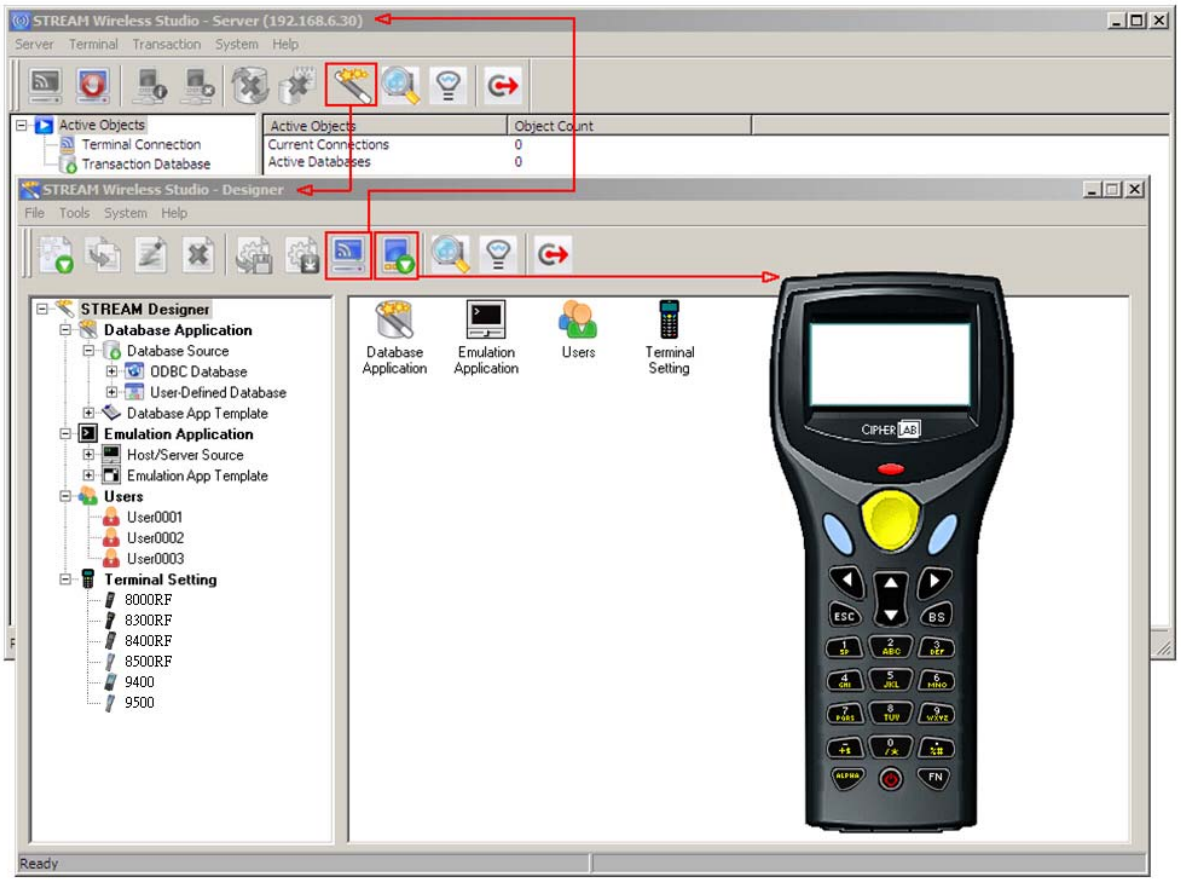
After installation, two program shortcuts are available on the computer desktop; each stands for a component of the software package:

- If you are using the application for the first time, double-click the shortcut to the *STREAM Designer* to start with configuring device settings, the sequences of data processing (templates-based), database links, etc.

  To simulate the running sequences of the applications on the real mobile computer, launch the *Simulator* from inside the *STREAM Designer*.

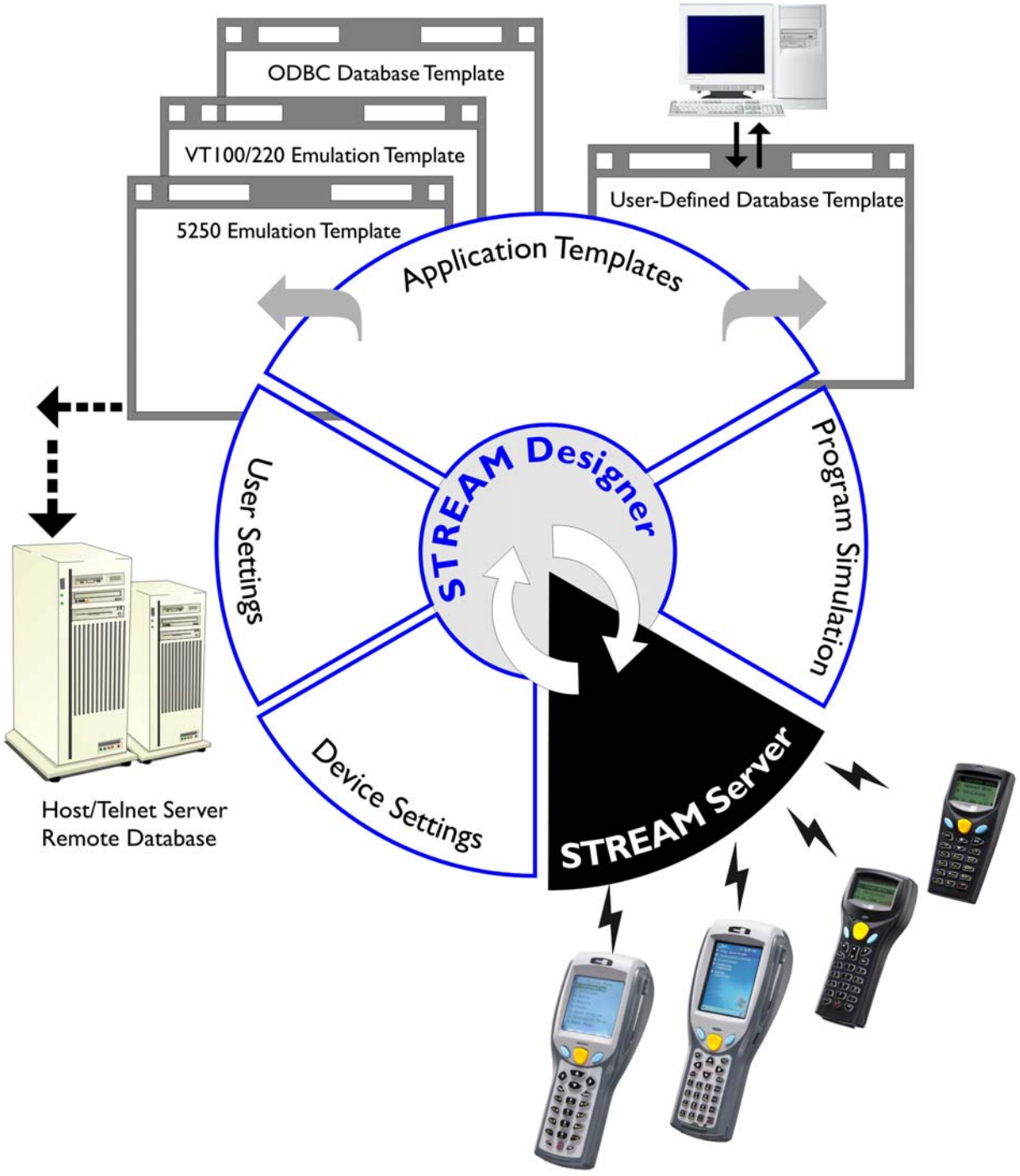
- To link to the specified back-end database or host after having configured everything necessary in the *STREAM Designer*, double-click the shortcut to launch the *STREAM Server* or run it directly from inside the *STREAM Designer*.

The relationship among these components is as shown below.



HOW IT WORKS

The illustration below depicts the deployment of Database and Terminal Emulation applications.



FEATURES

- Supports Microsoft Windows 2000 / XP / Vista
- Centric management of back-end resources, application templates, and activities
  - Templates & Users management via the STREAM Designer
  - Activities management via the Event Manager
  - Resource & Connectivity management via the STREAM Server
- Simplified operation on the mobile computer
  - Only need to download run-time program once
  - Configure and download user settings to the mobile computer in a few clicks
- Multi- and hetero- applications in one system for CipherLab Mobile Computers capable of wireless connectivity

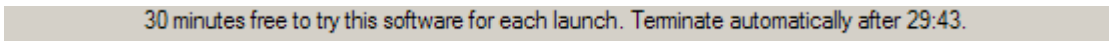
Application Options	Mobile Computer Options	
Database application	8000 Series –	8071
Terminal Emulation application	8300 Series –	8330, 8370
	8400 Series –	8470
	8500 Series –	8570, 8590
	9400 Series –	9400
	9500 Series –	9500CE

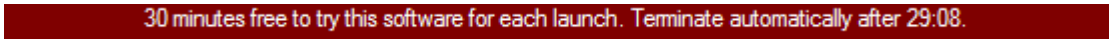
- Smart simulation for debugging, saving plenty time in designing applications
- Easy customization for language support

LICENSING

The **STREAM Wireless Studio** software needs a hardware key for authentication, and a USB dongle is provided for this purpose. The software allows a specific number of legal users to be connected to the *STREAM Server* per purchased licenses. As long as the *STREAM Server* is running, you must always have the dongle connected to a USB port of your computer.

If this hardware key is not present, the *STREAM Server* will run in a restricted mode that allows 30-minute use for each launch. The countdown is displayed on the status bar of the *STREAM Server*, and the message flashes as shown below.





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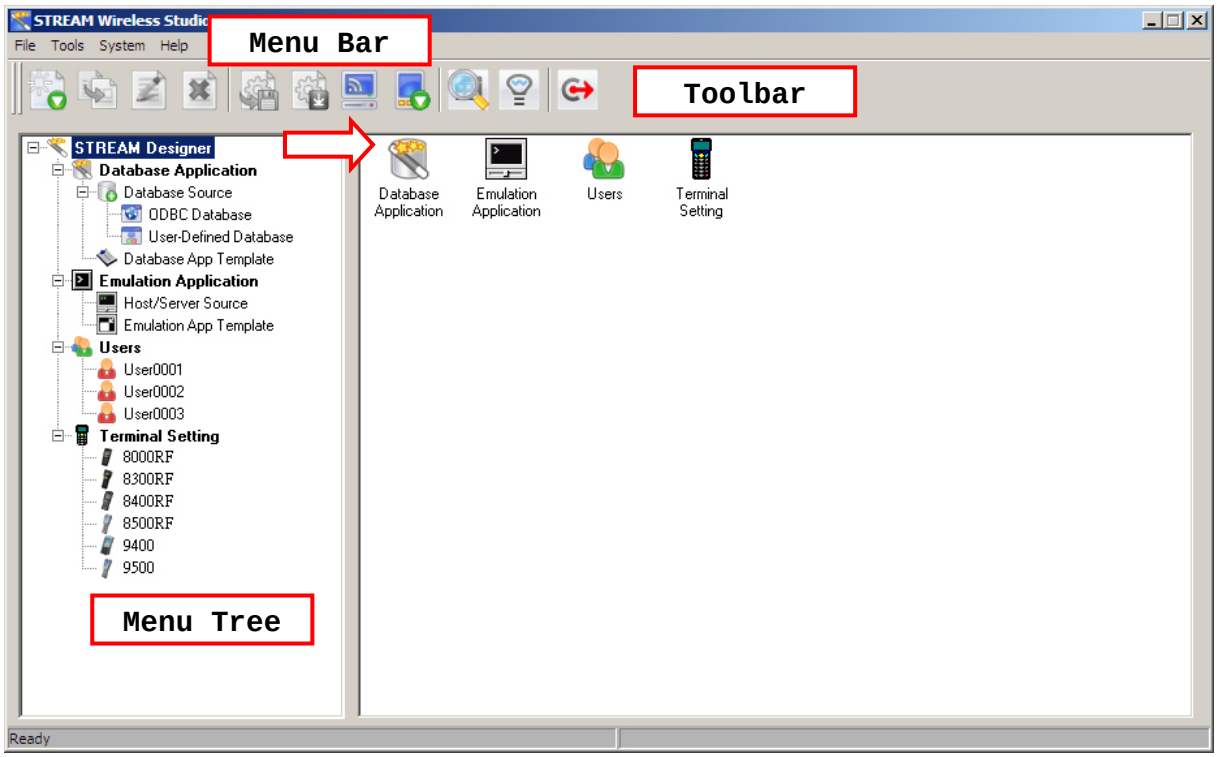
Chapter 1

STREAM WIRELESS STUDIO - DESIGNER

Double-click the program shortcut on the desktop of your computer to launch the *STREAM Designer*. The work area appears as shown below, and each element is described in the following sections.



In the *STREAM Designer*, work out your application solutions step by step:

1) Give back-end resource information and create an application template that can access the back-end resources specified.
2) Create a user account so that you can log in and use the application template.
3) Configure associated device settings, such as the reader settings, WLAN settings, status feedback, and so on.

Warning: The back-end resource information, application templates, user accounts and device settings defined in the STREAM Designer will be stored in the system database in Microsoft Access format. All the work you do in the STREAM Designer can only be accessed and maintained when the same system database is loaded.

IN THIS CHAPTER

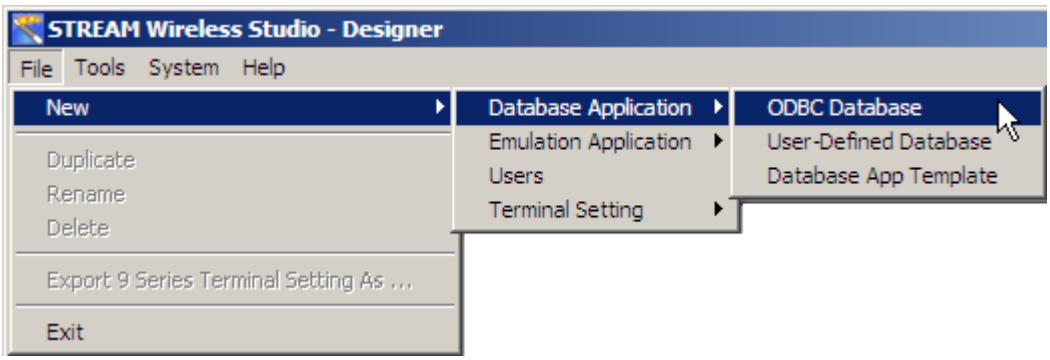
1.1 USER INTERFACE

1.1.1 MENU BAR

The Menu Bar contains a number of menus that specify which task you want the system to perform. Each menu contains a list of commands and sometimes sub-menus.

Some of the options carry out commands immediately, and others display a window so that you can enter additional information. If an option is followed by [...], it will display a window. Otherwise, the command is carried immediately.

FILE MENU

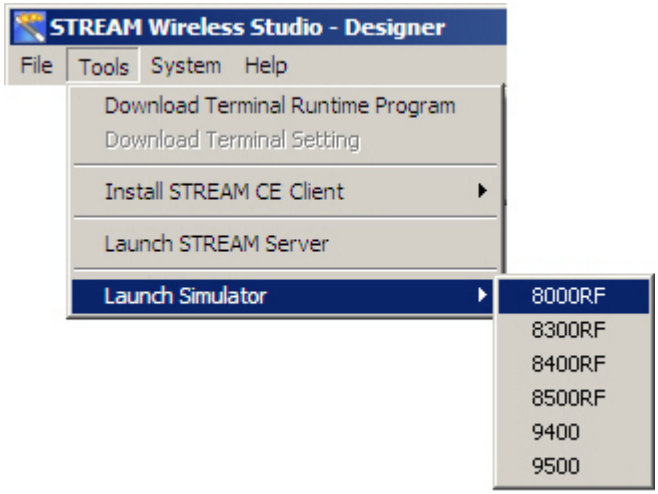


- If you are using the *STREAM Designer* for the first time, you must start with a new task listed below. Refer to the related sections for details on these tasks.
- After having created a new task, the [Duplicate], [Rename] and [Delete] commands will become available.

Tasks	Description
Application Services	▸ Database Application – define your database source and create a template. ▸ Emulation Application – define your host/server source and create a template.
Users	Establish a relationship between a user and a specific application template. User accounts are used by the STREAM Server for authenticating one to the system database.

Terminal Settings	Configure device settings for different mobile computers - ▸ 8000/8300/8400/8500 Series: the associated settings must be downloaded to the specific mobile computer. ▸ 9400/9500 Series: the associated settings must be exported to a .W94 or .W95 file. Then, copy or move the configuration file to the mobile computer via ActiveSync.

TOOLS MENU

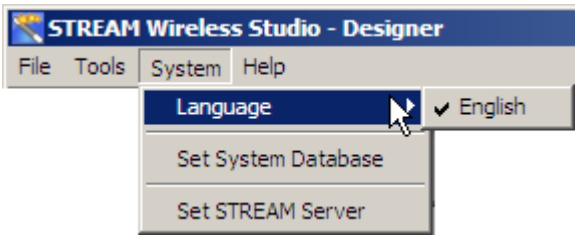


Options	Description
Download Terminal Runtime Program	▸ 8000/8300/8400/8500 Series: Before using a real mobile computer to start with data collection, you must download the corresponding runtime (WS8*.SHX) program to the specific mobile computer. ▸ 9400/9500 Series: Not applicable
Download Terminal Settings	Once the runtime program has been downloaded, proceed to download the corresponding device settings to the mobile computer. ▸ 8000/8300/8400/8500 Series: This option will be available only when you select an associated configuration record. ▸ 9400/9500 Series: First, export the configuration record to a file (.W94 or .W95). Then, copy or move the file to the mobile computer.
Install STREAM CE Client	Seat your mobile computer in the Cradle that connects to your computer via ActiveSync, and install the client application. Depending on your mobile computer, a specific set of the followings files will be installed to "\Program Files\Stream\" – ▸ WS9400_CE.exe and 9400CE_Dll.dll ▸ WS9500_CE.exe and 9500CE_Dll.dll

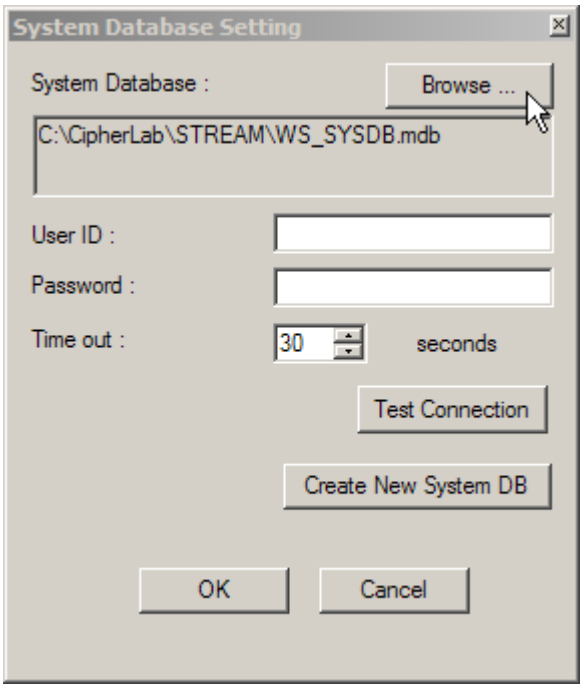
Warning:	Being installed to the default directory "\Program Files\Stream\", the client program and configuration file (.ini) on your mobile computer will be removed automatically after hardware reset. Therefore, we suggest you to use the Backup Utility for regular backups.

Launch STREAM Server	After everything is set, launch the STREAM Server so that you can run either the corresponding Simulator or a real mobile computer to connect to the STREAM Server. Refer to section 2. STREAM Wireless Studio - Server. ▸ Use the corresponding Simulator to verify whether the mobile computer will behave correctly in every aspect. ▸ 8000/8300/8400/8500 Series: After downloading the runtime and device settings to a real mobile computer, use the specific mobile computer to establish a wireless connection with your computer. ▸ 9400/9500 Series: After installing the STREAM CE Client to a real mobile computer via ActiveSync (to \Program Files\Stream\), as well as copying or moving the configuration record (.W94 or .W95), run the client application (.exe) and establish a wireless connection with your computer.
Launch Simulator	After launching the STREAM Server, select the corresponding Simulator. ▸ 8000RF Simulator for 8071 mobile computer ▸ 8300RF Simulator for 8330 or 8370 mobile computer ▸ 8400RF Simulator for 8470 mobile computer ▸ 8500RF Simulator for 8570 or 8590 mobile computer ▸ 9400 Simulator for 9400 mobile computer ▸ 9500 Simulator for 9500CE mobile computer Refer to section 3. Program Simulation.

SYSTEM MENU



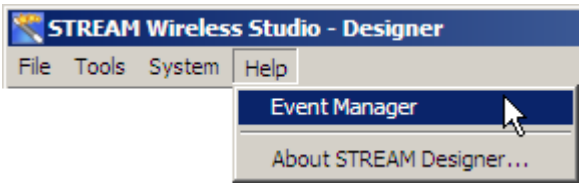
Settings	Description
Language	For multi-language options, any additional *.lng files, e.g. Traditional Chinese, must be stored in the Language folder - C:\CipherLab\Stream\Language\ ▸ Default: English Refer to section 1.5.1 System - Prompt Items and section 5.3.2 Localization.
Set System Database	The default system database is RFSYSDB.mdb, which stores back-end resource information, application templates, user accounts and device settings. ▸ All the work you do in the STREAM Designer can only be accessed and maintained when the same system database is loaded. ▸ Click [Create New System DB] to create a new system database. ▸ To apply a new database or change to an existing database, click [Browse] to select it.



Set STREAM Server	Configure login prompt and communication settings. ▸ Telnet Port: 6000 (default) Refer to the STREAM Server - section 2.2.1 Settings.

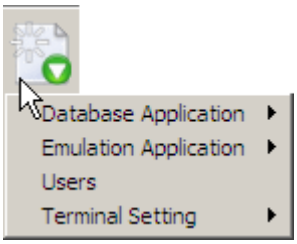
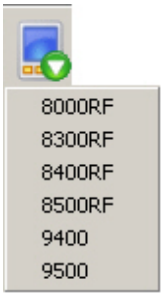
Warning: Before you click [OK] to change the system database and close the System Database Setting dialog box, you must close all the connections and exit the STREAM Server. Otherwise, you may encounter errors while restarting the STREAM Server.

HELP MENU



Options	Description
Event Manager	Open the Event Manager, which keep a record of the activities or events occurred in the STREAM Designer or the STREAM Server. Refer to the Event Management.
About STREAM Designer	View information about the STREAM Designer.

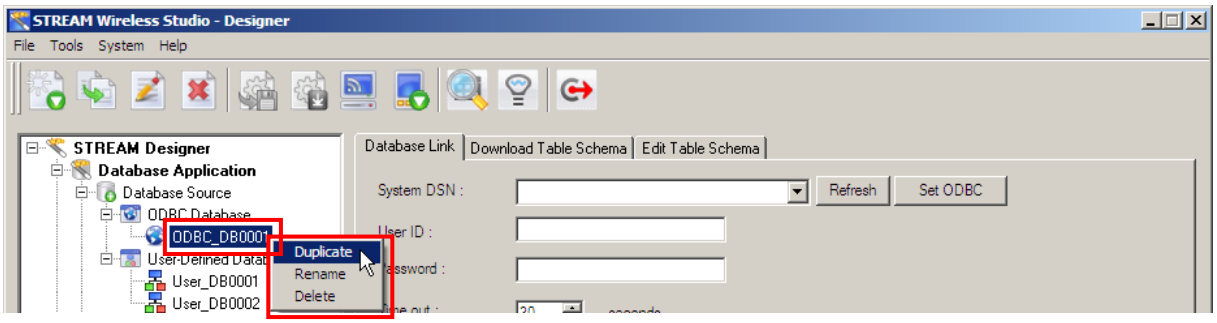
1.1.2 TOOLBAR

Icons	Description
	To create a new task. ▸ It does the same as menu command - **File > New** 
	To duplicate an existing task. ▸ It does the same as menu command - **File > Duplicate**
	To rename an existing task. ▸ It does the same as menu command - **File > Rename**
	To delete an existing task. ▸ It does the same as menu command - **File > Delete**
	To download 9 Series device settings to the 9400/9500CE mobile computers. ▸ It's the same as menu command - **File > Export 9 Series Terminal Setting As...**
	To download device settings to the 8000/8300/8400/8500 Series mobile computers. ▸ It does the same as menu command - **Tools > Download Terminal Settings** ▸ To download the run-time program (*.SHX) to the 8000/8300/8400/8500 Series mobile computers, go to **Tools > Download Terminal Runtime Program**
	To launch the STREAM Server. ▸ It does the same as menu command - **Tools > Launch STREAM Server**
	To launch the Simulator. ▸ It does the same as menu command - **Tools > Launch Simulator** 
	To open the Event Manager. ▸ It does the same as menu command - **Help > Event Manager**
	To view information about the STREAM Designer. ▸ It does the same as menu command - **Help > About the STREAM Designer**
	To exit the STREAM Designer. ▸ It does the same as menu command - **File > Exit**

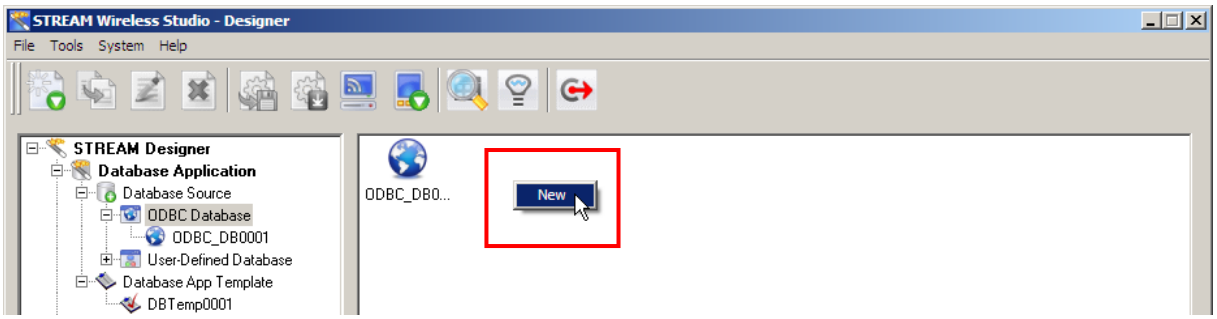
1.1.3 MENU TREE

In the work area, a menu tree is displayed on the left pane for navigation.

- Click "+" to expand the tree or "-" to collapse it.
- Click an existing item from the tree list. Its contents will be displayed on the right pane.
- Right-click an item from the tree list. Its contents will be displayed on the right pane. In addition, you can create a new task or execute any other commands available to that item.



- Right-click any white area on the right pane (not the grey area as shown above), you can create a new task.

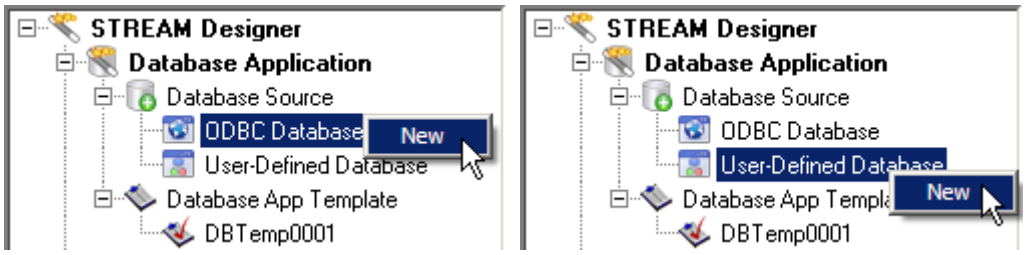


1.2 DATABASE APPLICATION

The Database Application service allows you to gather data schema information from local computer or remote server, depending on your database source. Based on your mobile computer type, create an application template so that you can access a specific database via the *STREAM Server*.

1.2.1 DATABASE SOURCE

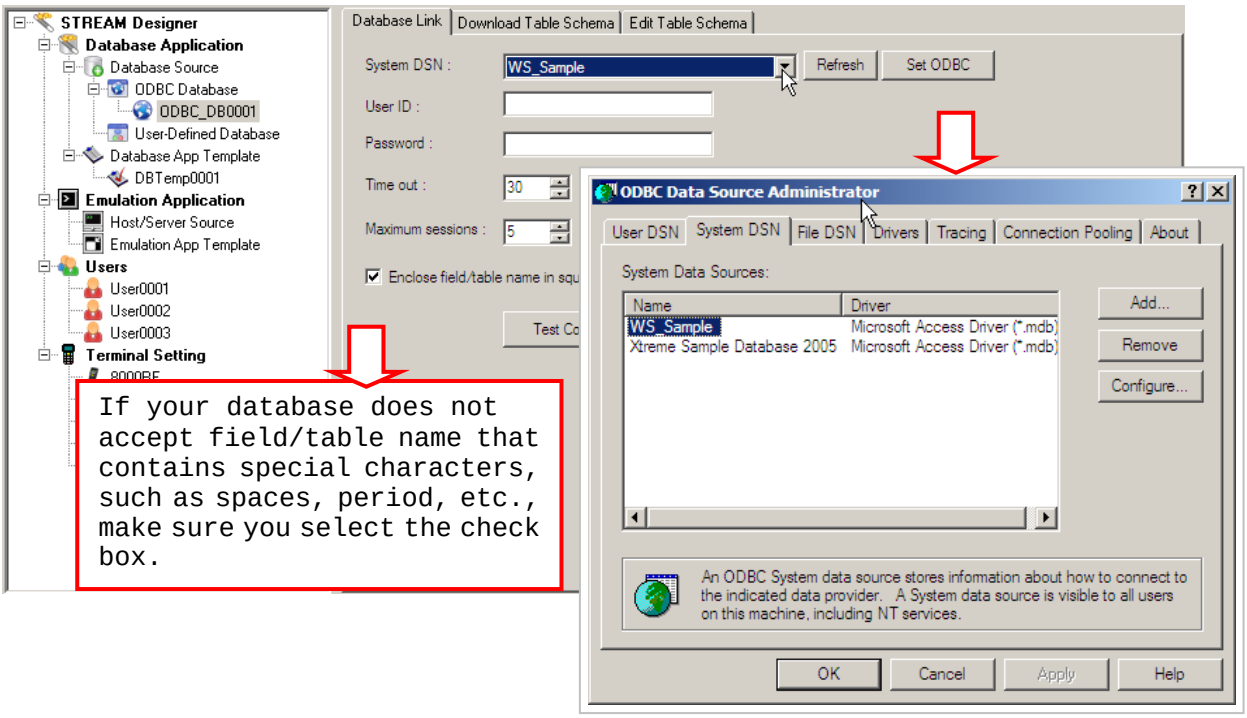
1) Go to **File Menu > New > Database Application > ODBC Database / User-Defined Database** and create your own database source.



- ODBC Database – Access an existing database via ODBC, either a remote database on the server or a local database on your computer.
- User-Defined Database – Create a user database from scratch, and it will be stored on your computer (C:\CipherLab\Stream\UsrDB) for local access only.

2) Specify how to access and make use of your database as follows.

ODBC DATABASE



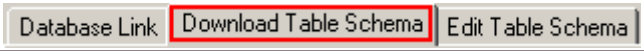
Database Link

Select your database by System DSN (Database Source Name). Click [Test Connection] to verify whether the database link works. It will fail to access the database if the information given is incorrect. For example, you may need user ID and/or password to access a database while not exceeding the given time and sessions allowed.

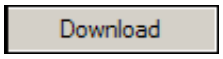
Note: Maximum sessions – enter 0 if there is no limit on the number of connections.

- If the desired database is not on the drop-down menu of System DSN, click [Set ODBC] to add it in the ODBC Data Source Administrator as shown above.
- If you access the Administrative Tools – Data Sources (ODBC) from the Control Panel, click [Refresh] to update the list.
- If your database does not accept SQL commands with field/table name containing special characters, such as spaces, period, etc., make sure you select the check box of [Enclose field/table name in square brackets when sending SQL commands]. As a result, the field/table names will be enclosed in a pair of square brackets when sending SQL commands, for example, `SELECT [Field 1], [Field 2] FROM [Table]`.

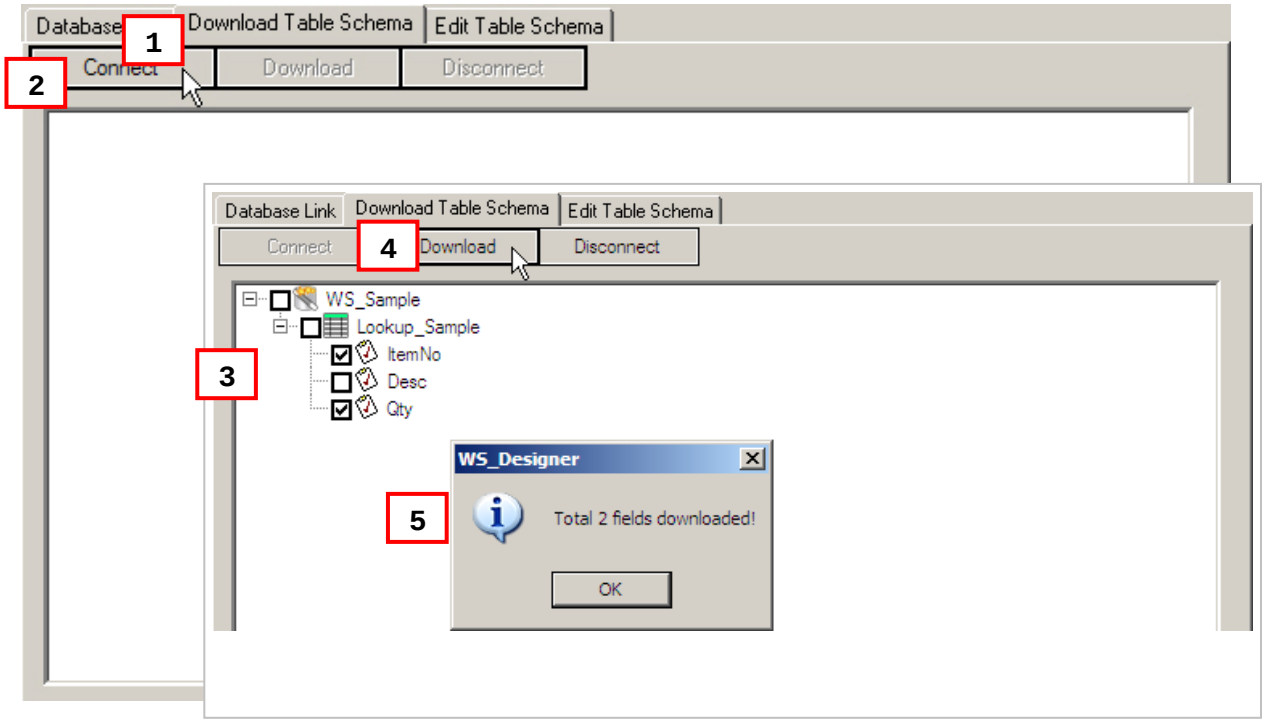
Download Table Schema



1. Click the Download Table Schema tab.
2. Click 

to access the database.
3. Select which table(s) and fields(s) are needed for data collection.
4. Click 

to download the selected table(s)/view(s) and field(s).
5. After downloading, click [OK].


Database
Download Table Schema
Edit Table Schema
1
2
Connect
Download
Disconnect
Database Link
Download Table Schema
Edit Table Schema
Connect
4
Download
Disconnect
WS_Sample
Lookup_Sample
ItemNo
Desc
Qty
3
WS_Designer
5
Total 2 fields downloaded!
OK

Edit Table Schema

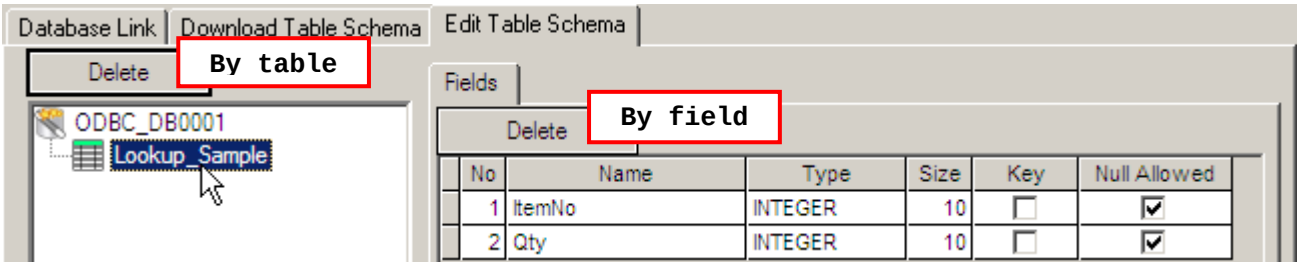
Click the Edit Table Schema tab. You can view and manage the table schema.

Delete an unwanted table (on the left pane) or field (on the right pane) if necessary. To restore a deleted item, repeat the Download Table Schema steps.

Set at least one key field, and decide whether a field can be left empty (Null Allowed).

Proceed to configure an application template.

Warning: At least one key field is required and must be referred in your form. It will affect the settings of a database application template if you delete a database, table or field that is referred to.



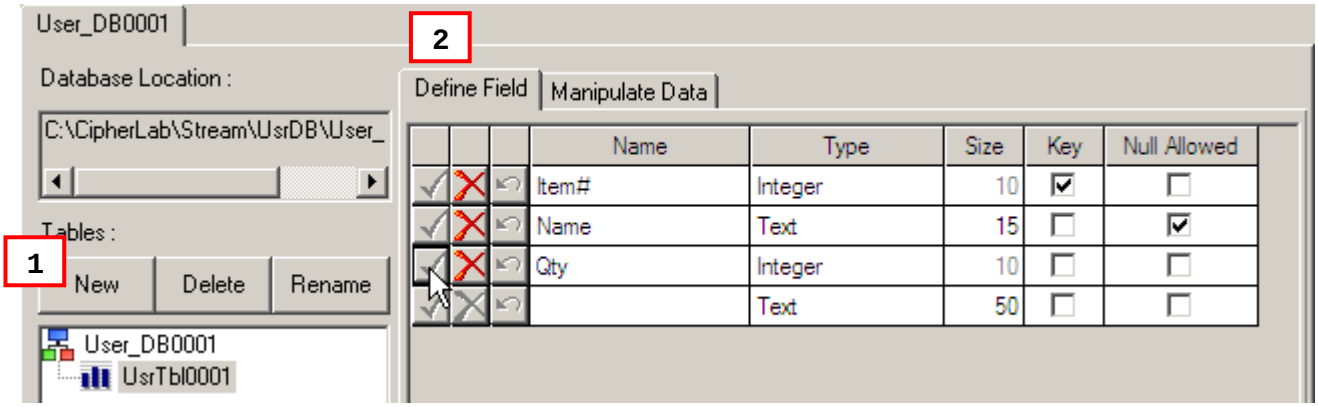
Note: If you click [Delete] on the right pane, the last field will be deleted. To delete a specific field, select the field before you click [Delete].

USER-DEFINED DATABASE

The databases defined in the *STREAM Designer* will be stored locally.

Items	Description
Database Location	The default file path is C:\CipherLab\Stream\UsrDB.
New	▸ To create a table from scratch.
Copy Structure/Data from	▸ To create a table based on the structure/data of an existing database.
Delete	▸ To delete the selected table.
Rename	▸ To change the name of the selected table.
Define Field	▸ To configure field settings.
Manipulate Data	You can import data from and export data to files in the following formats: Text Files (*.txt), Microsoft Excel (*.xls), Microsoft Access (*.mdb), and dBase (*.dbf). ▸ The table will be updated while you are collecting data.

- Approach I:



1. Click [New] to create a new table for the database. You can give it a friendly name or rename it later.
2. Define fields in the table one by one.

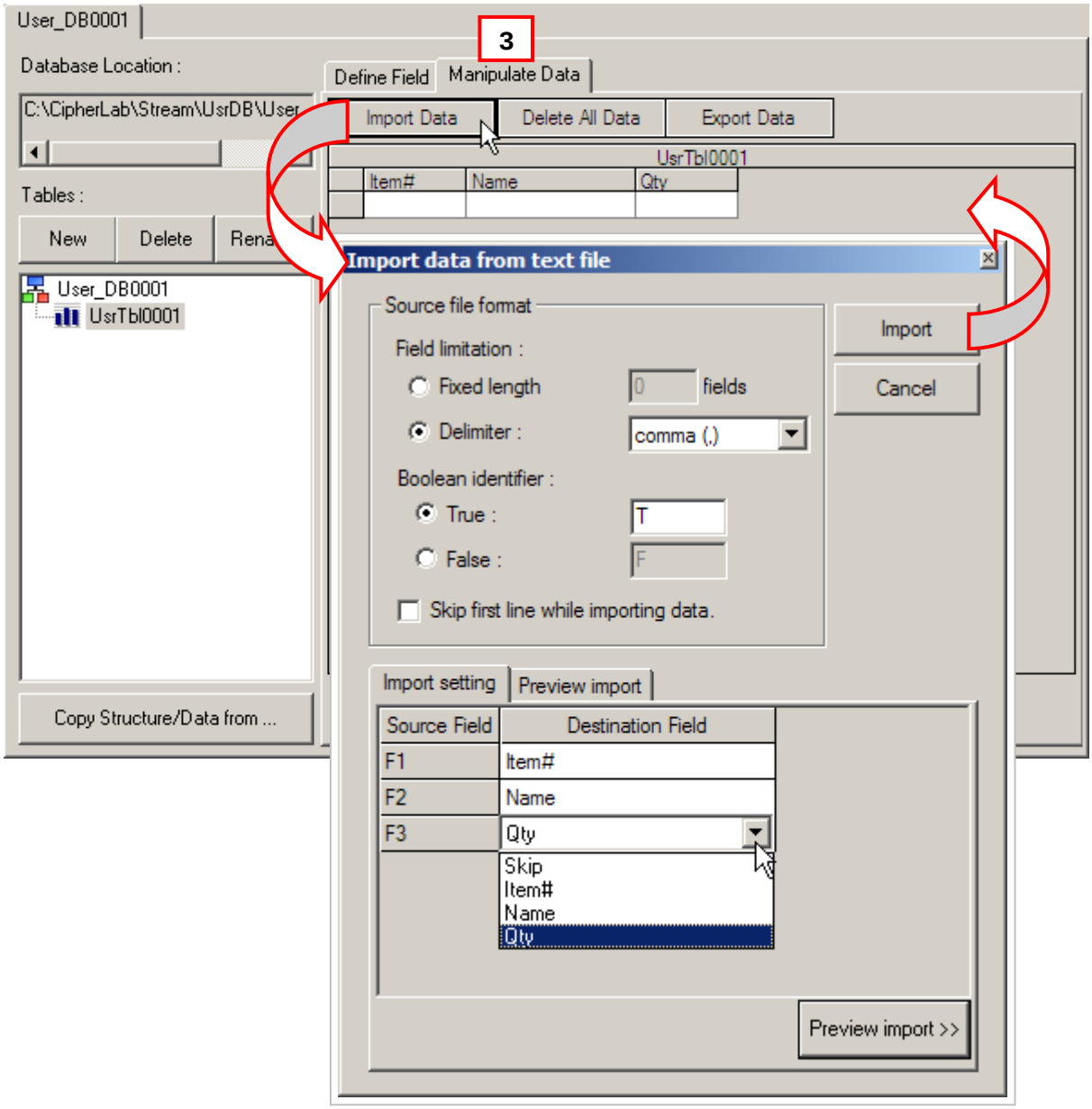
Warning: A new table will not be saved until at least one field is defined by clicking the check mark ✓ to apply.

Field Settings	Description
Name	Give a name for the field
Type	Specify data type: ▸ Text ▸ Integer ▸ Real ▸ Boolean
Size	Specify filed length: ▸ 1~255 for Text ▸ 10 for Integer or Real ▸ 1 for Boolean
Key	Select key field(s): ▸ Single-field index ▸ Multiple-field indexes
Null Allowed	Specify whether a field can be skipped. Only when "Null Allowed" is enabled, the data length setting of the corresponding field in a form can be set 0.
✓	To apply all the settings to the field.
✗	To delete the field.
↶	To undo the settings.

Warning: At least one key field is required and must be referred in your form. You must click the check mark to apply all the settings by field.

3. Click the Manipulate Data tab.

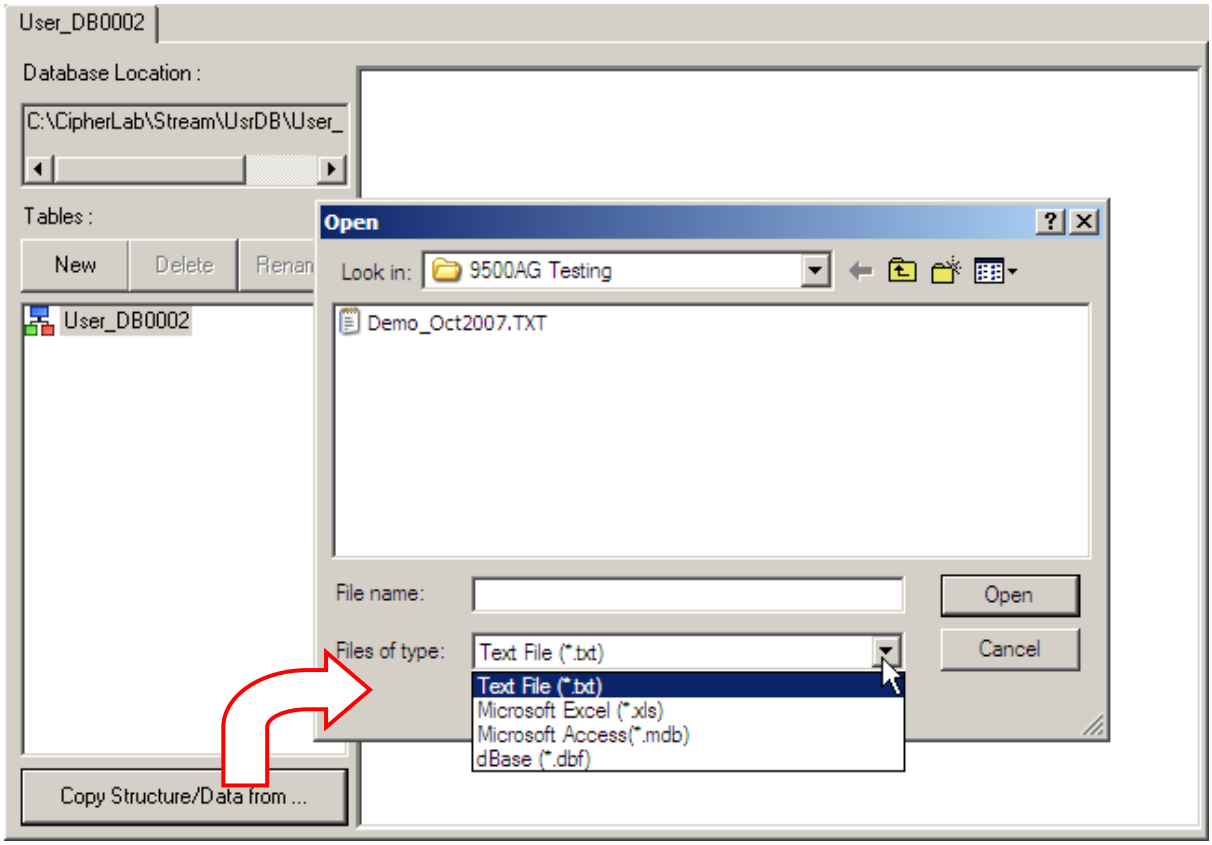
- You can leave the table empty or click Import Data to import data from an existing table.
- Existing records may be updated during data collection. If the data collected has no match in the table, it depends on the [Action when the input has no match] setting in the form.
- When the job is done, you can click Export Data to save the data. If the data is not desired any more, simply click Delete All Data to clear the table.



- Approach II:

Instead of creating tables from scratch, click 

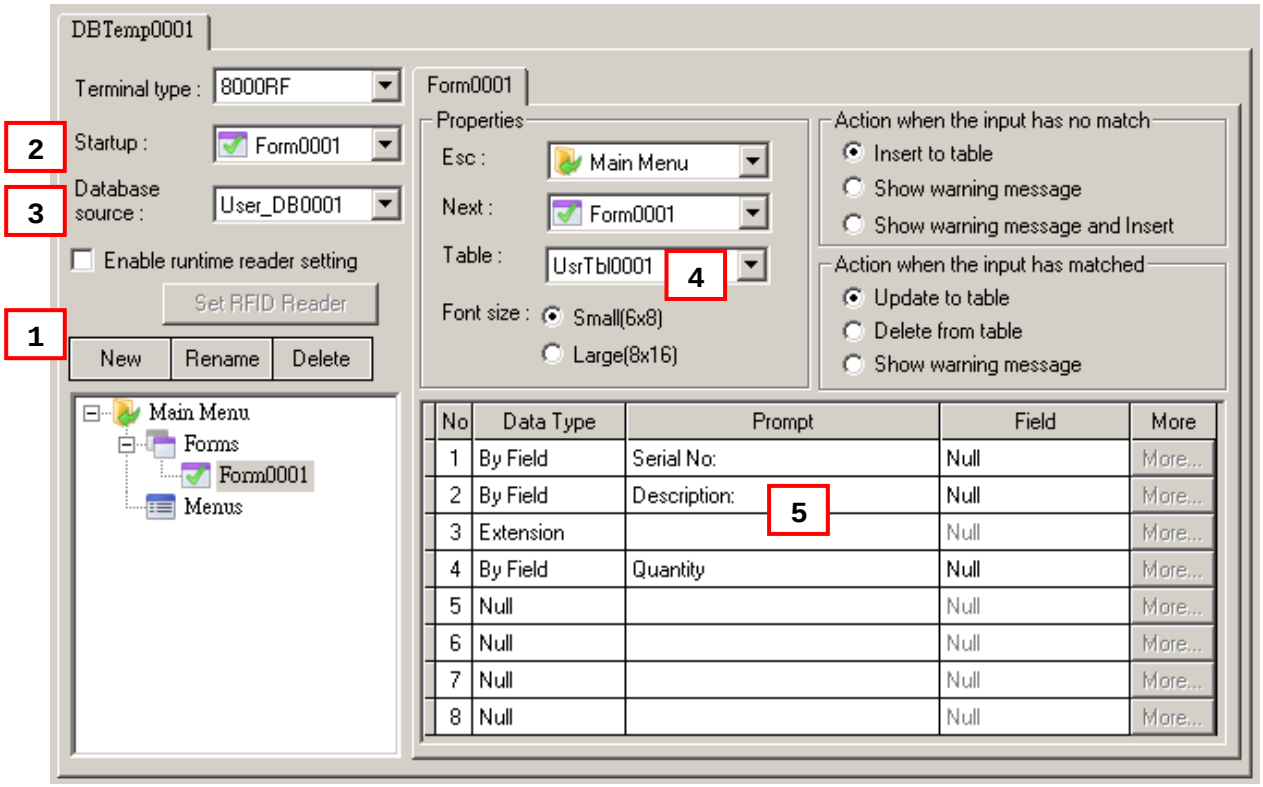
to make use of an existing table. Modify the field settings if necessary.



1.2.2 DATABASE APPLICATION TEMPLATE

Go to **File Menu > New > Database Application > Database App Template**. Define your application template so that you can collect data for specific fields of a table in your database.

The configuration of an application template is pretty much the same as what you used to do with the Wireless Application Generator - the Form, Menu, and Lookup tabs.



TERMINAL TYPE

Select a terminal type that matches your mobile computer. Otherwise, it will fail to log in. Refer to section 2.3.2 Login Error.

STARTUP

Specify which form or menu to start with after logging in successfully. Associated forms or menus must be created first!

DATABASE SOURCE

Select your database source, which is specified in section 1.2.1 Database Source.

ENABLE RUNTIME BARCODE SETTINGS

You can specify how the barcode reader works and which symbologies are enabled in section 1.5 Device Settings. However, you must download or copy the configuration file to your mobile computer for the settings to take effect.

Here is a convenient way to change the reader settings temporarily when you log in to use the application template. Select the check box so that you can change the behavior of barcode/RFID reader and associated settings on the mobile computer during run-time.

Note: When you log out, the reader settings will remain unchanged.

NEW/RENAME/DELETE

- New

  Select Forms or Menus, and then click [New] to create a form or user menu. Alternatively, right-click Forms or Menus, and then select [New].

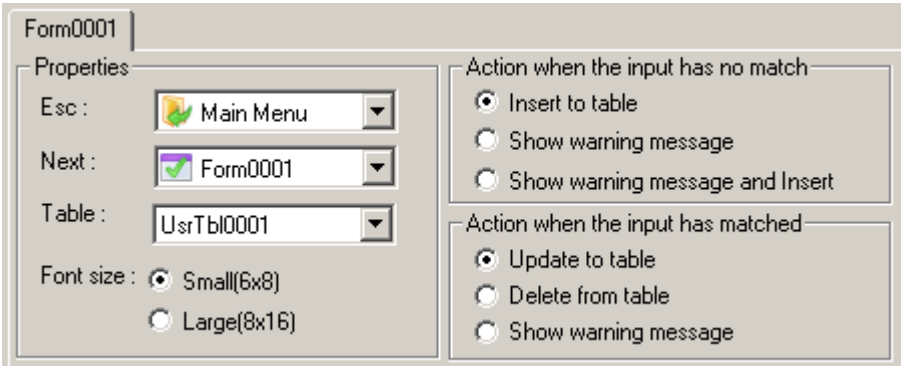
- Rename

  Select an existing form or menu, and then click [Rename] to change the name. Alternatively, right-click a form or menu, and then select [Rename].

- Delete

  Select an existing form or menu, and then click [Delete] to change the name. Alternatively, right-click a form or menu, and then select [Delete].

FORM – PROPERTIES



- ESC

  Select a form or menu that will be displayed when you press the [ESC] key on the mobile computer. Normally, the [ESC] key is used to return to a previous form or menu.

- Next

  Select a form or menu that will be displayed when the last input field of the current form has been completed. This function is invoked by sending the key value of [Enter] when you finish with the last input field.

If the input source is limited to scanner only, you must have the setting of **More (Properties) > Barcode Input > Auto Enter** enabled.

- Table

  This refers to lookup tables specified in section 1.2.1 Database Source. A form is a table with input fields. Select a lookup table associated with the form.

- Font Size

  On the Form and Menu property pages, font size needs to be changed accordingly.

Options	Description
Small font (6x8) *Large font (8x16)*	For 8000/8300/8400/8500 Series, Large font (8x16) must be applied for double-byte languages, such as Chinese, Japanese, etc.
Local Setting *Fixed Size*	For 9400/9500 Series, select “Fixed Size” or leave it to “Local Setting” to apply the current setting of the mobile computer. Screen scrolling is supported, allowing 50 characters by 80 lines.

FORM - ACTION WHEN NO MATCH

A form makes reference to a table of the database. There must be at least one input field associated with the key field(s) of the table. Choose the appropriate action to take when the input data does not match that of the key field.

Options	Description
Insert to table	The input data will be inserted to the table.
Show warning message	The program will suspend and prompt a warning message: No match data. Press any key...
Show warning message & Insert	Inserting the input data to the table, the program will suspend and prompt a warning message: No match data. Save OK! Press any key ...

FORM - ACTION WHEN MATCHED

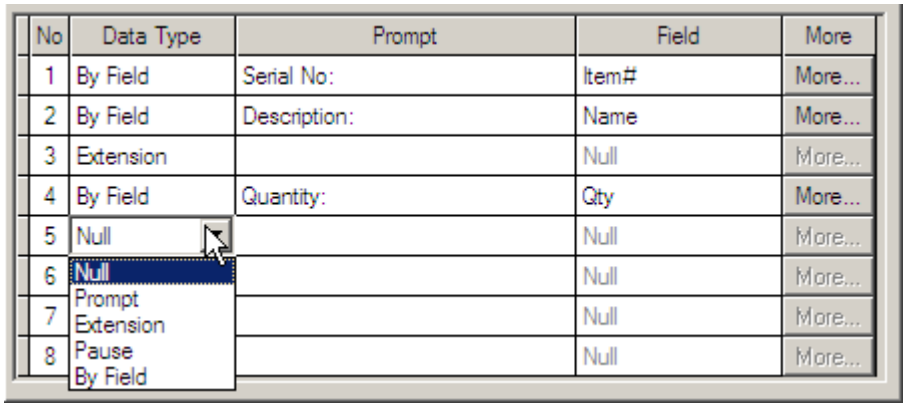
When the input field has matched the key field of the table, choose the appropriate action to take.

Options	Description
Update to table	The input data will be updated to the table. When completed, the program will prompt a message “Save OK” on terminal.
Delete from table	The input data will be deleted from the table when key field input matched the data in the table. The program will prompt a message “Data deleted!” on terminal if data is successful deleted.
Show warning message	The program will suspend and prompt a warning message “Exist same data!” to terminal.

FORM – EDITING

Elements	Description
Data Type	▸ By Field - based on the source field ▸ Extension ▸ Pause ▸ Prompt
(Screen) Prompt	Only available when data type is By Field, Prompt or Pause.
(Lookup) Field	Only available when data type is By Field. ▸ If a key field is referred to and the input data is found matching with the lookup value, the lookup values of the rest input fields will be imported from their associated source fields.
More (Properties)	Only available when data type is By Field and a lookup field specified.

Warning: The key field of database must be referred in a form! When the lookup values are displayed on your mobile computer, you must press [BkSp] (Backspace) to modify or clear a value.

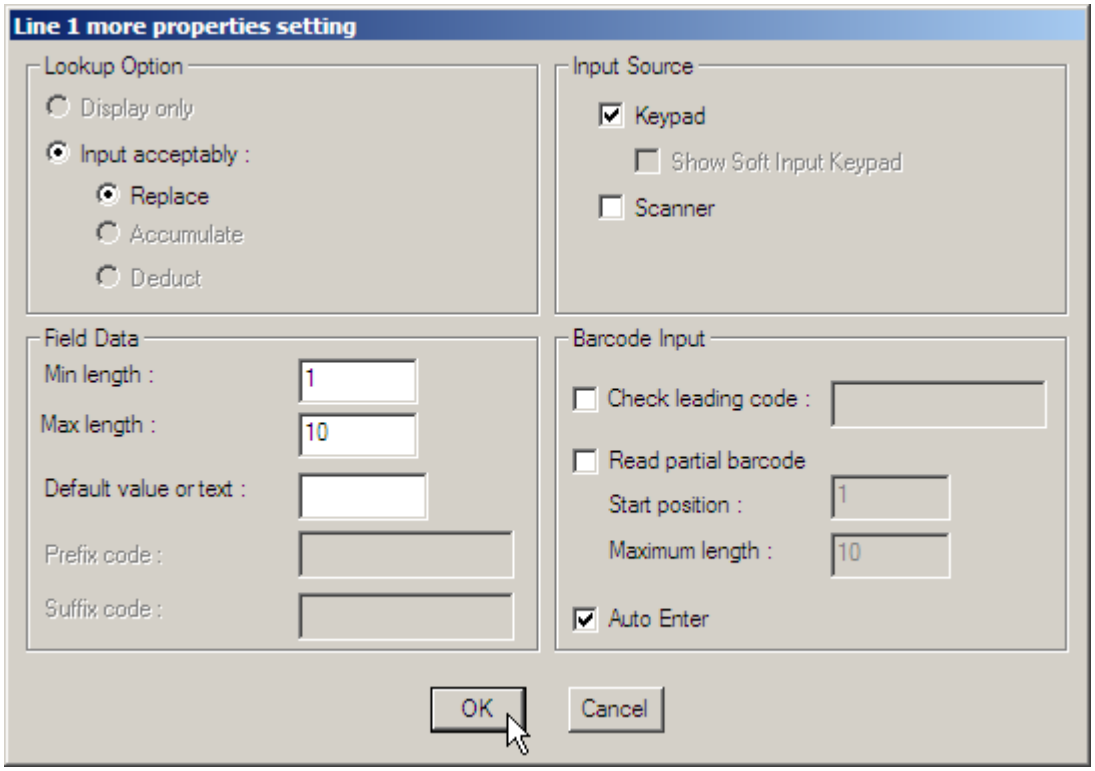


First, specify the data type for each input field according to your needs. Give a prompt string if necessary.

<table>
<tr><th>Data Type</th><th>Description</th></tr>
<tr><td>Null</td><td>Default setting. There will be single line spacing on the mobile computer screen.
No data input is allowed.</td></tr>
<tr><td>Prompt</td><td>The prompt string will be displayed on the mobile computer screen but will not be saved.
No data input is allowed.</td></tr>
<tr><td>Extension</td><td>The line will be reserved as an "extension" of the previous line so that the whole input data can be displayed on the mobile computer screen. You may need more than one line of "Extension", depending on the font size, the size of the mobile computer screen, and the maximum data length of the previous line.
Note that screen scrolling is supported on 9400/9500 Series that allows 50 characters by 80 lines.
<table>
<tr><th>Mobile Computer</th><th>Small (Font 6x8)</th><th>Large (Font 8x16)</th></tr>
<tr><td>8000 Series</td><td>16 characters by 8 lines</td><td>12 characters by 4 lines</td></tr>
<tr><td>8300 Series</td><td>20 characters by 8 lines</td><td>15 characters by 4 lines</td></tr>
<tr><td>8400 Series</td><td>26 characters by 19 lines</td><td>20 characters by 9 lines</td></tr>
<tr><td>8500 Series</td><td>26 characters by 19 lines</td><td>20 characters by 9 lines</td></tr>
</table>
No data input is allowed.
This is not applicable unless the data type of the previous input field is "By Field".</td></tr>
<tr><td>Pause</td><td>The prompt string will be displayed on the mobile computer screen temporarily but will not be saved.
No data input is allowed.
This is not applicable unless the data type of the previous input field is "By Field".</td></tr>
<tr><td>By Field</td><td>The data type is based on the corresponding field of the lookup table.</td></tr>
</table>

Click 

to configure other properties if necessary.



Lookup Option

This depends on the data type of the source field.

- If it is a key field, the option is fixed to "Input acceptably - Replace".

Data Type of Source Field		Text / Boolean	Integer / Real
Display only		v	v
Input acceptably	Replace	v	v
	Accumulate	N/A	v
	Deduct	N/A	v

Replace

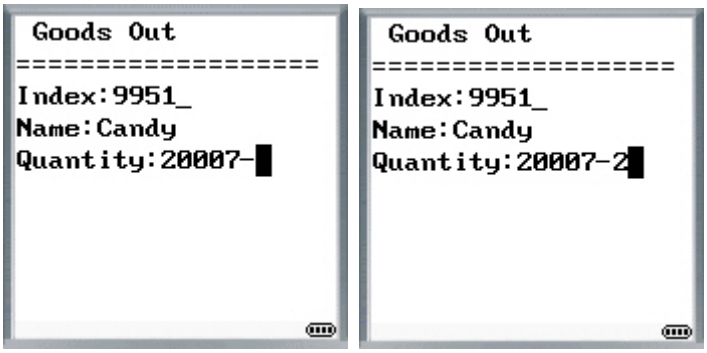
- Waiting for data input, the cursor will stay at the end of the lookup value that is displayed on the mobile computer screen. Press [BkSp] (Backspace) to modify or clear the lookup value.

Accumulate

- Waiting for data input, the cursor will stay on the mobile computer screen after the "+" sign that follows the lookup value.

Deduct

- Waiting for data input, the cursor will stay on the mobile computer screen after the “-” sign that follows the lookup value.



Field Data

Min length Specify the minimum length of an input field.

- The minimum length cannot be set to 0 if "Null Allowed" is not enabled in the field setting of database.
- If data input via the barcode reader is shorter, it will be considered unacceptable. The system will prompt a warning message.

Max length Specify the maximum length of an input field, depending on the data type of source field.

- If data input via the barcode reader is longer, it will be considered unacceptable. The system will prompt a warning message.

Default value or text An initial value or text specified here will be displayed in the input field. It is to be replaced by input data. For example, it can be used to prompt an initial value for quantity.

- The length allowed depends on the maximum length.

Prefix code Only available when data type is By Field - Text. For example, a dollar sign ("$") can be added to the front of the data input for price.

- The length allowed depends on the maximum length.

Suffix code Only available when data type is By Field - Text. You can use the prefix and suffix codes to wrap the input data.

- The length allowed depends on the maximum length.

Input source

Specify from which source data can be collected.

Keypad By default, data input from the keypad is enabled. The system will accept data even when it is longer than the screen can display. You may reserve some "extension" lines to display the whole data.

- “Show Soft Input Keypad” option is only available for 9400/9500

Scanner (barcode) For data input via the barcode reader, the system will prompt a warning message when it is too short/long than the minimum/maximum length specified above.

RFID reader

For data input via the RFID reader, the system will prompt a warning message when it is too short/long than the minimum/maximum length specified above.

Barcode Input

Check leading code

The leading code refers to the digit in the start position of a barcode.

Select the check box to verify the barcode input. When the leading code is not matching, the barcode will be rejected.

Leading code	Barcode scanned	Transaction record
9	9876543210	9876543210
2	9876543210	(Error: code not matching)

Read partial barcode

By default, the system will return the whole barcode that has been decoded. When the check box is selected, the system will return partial barcode according to the settings of the start position and maximum length.

Start position	Max. length	Barcode scanned	Transaction record
2	10	9876543210	876543210
2	3	9876543210	876

Read partial code + Check leading code:

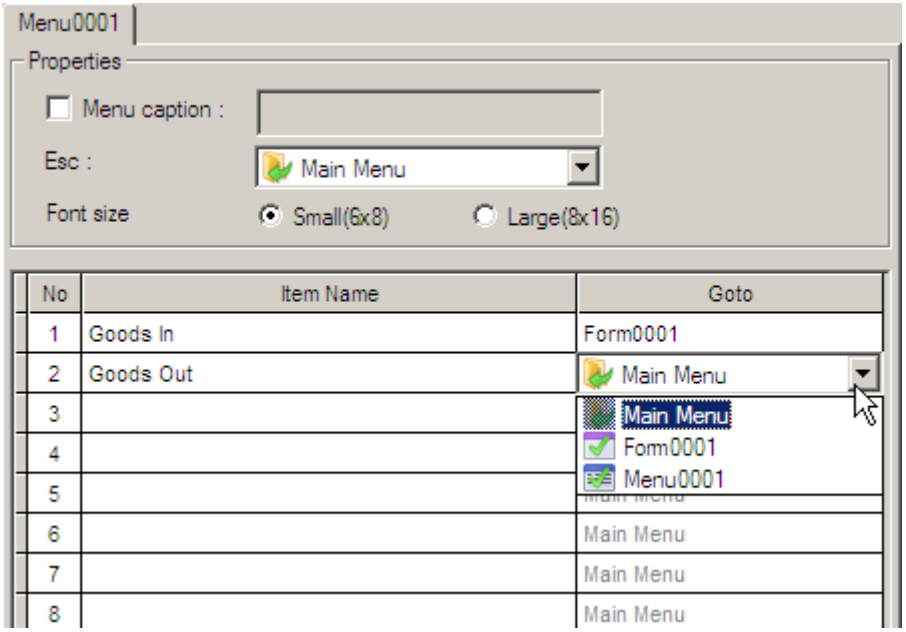
Start position	Max. length	Leading code	Barcode scanned	Transaction record
2	7	8	9876543210	8765432
2	7	9	987654321	(Error)

Auto ENTER

Normally, it is necessary to press the [Enter] key on the mobile computer upon completion of one input field. Then, it will move either to the next input field, or to the next form/menu specified. This function will automatically add a carriage return to the end of the barcode input (= Scan+ENTER).

If the input source is limited to scanner only, you must have the setting of More (Properties) > Barcode Input > Auto Enter enabled.

MENU – PROPERTIES



- Menu Caption

  Select the check box and specify a caption for the current menu. This is optional.

- ESC

  Select a form or menu that will be displayed when you press the [ESC] key on the mobile computer. Normally, the [ESC] key is used to return to a previous form or menu.

- Font Size

  On the Form and Menu property pages, font size needs to be changed accordingly.

Options	Description
Small font (6x8) *Large font (8x16)*	For 8000/8300/8400/8500 Series, Large font (8x16) must be applied for double-byte languages, such as Chinese, Japanese, etc.
Local Setting *Fixed Size*	For 9400/9500 Series, select “Fixed Size” or leave it to “Local Setting” to apply the current setting of the mobile computer. Screen scrolling is supported, allowing 50 characters by 80 lines.

MENU – EDITING

Elements	Description
Item Name	Specify a name for each menu item.
Goto	Select a form or menu that will be displayed when a menu item has been selected. This function will be invoked when you press the [Up/Down] arrow keys to select a menu item and press [Enter].

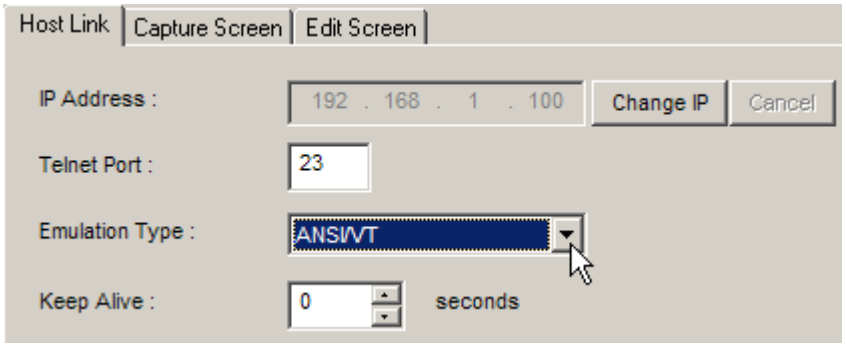
1.3 EMULATION APPLICATION

The Terminal Emulation Application service allows you to reformat screens from a remote host or server that runs VT100/220 or 5250 terminal emulation and process the collected data back to it. Based on your mobile computer type, create an application template so that you can access a specific host or server via the *STREAM Server*.

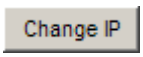
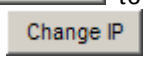
1.3.1 HOST/SERVER SOURCE

1) Go to **File Menu > New > Emulation Application > Host/Server Source** and create your own host/server source.

2) Specify the emulation type, e.g. ANSI/VT, and how to access and reformat the host screens as follows.



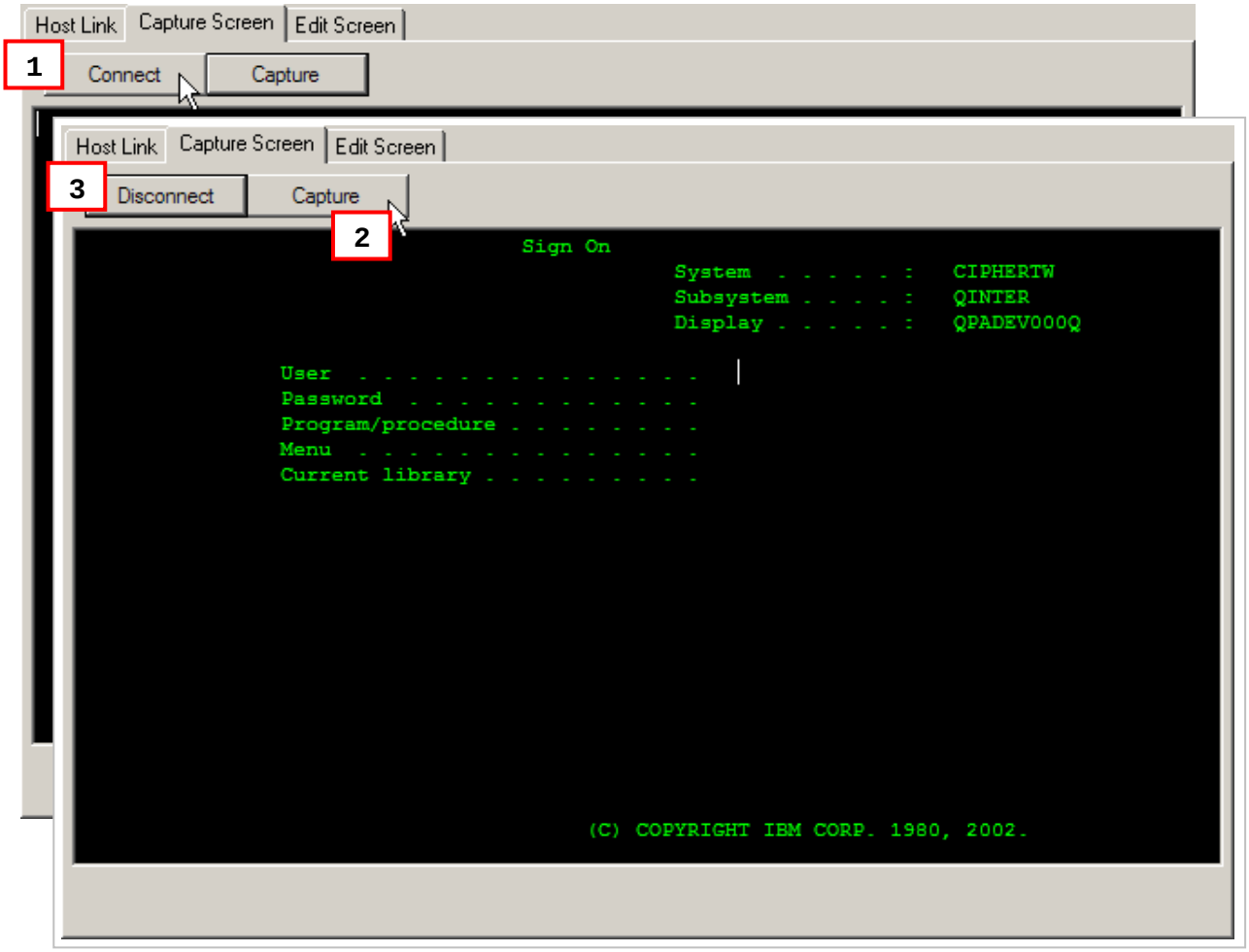
Host Link

Change IP	Click  to change the IP address of your host. After changing the IP, click  again to apply the new IP.
Cancel	Undo the action of changing host IP.
Telnet Port	Specify the telnet port number. Port 23 is assigned by default.
Emulation Type	Select the emulation type, ANSI/VT or 5250.
Keep Alive	0 ~ 65535, in units of second

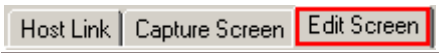
Capture Screen

Connect	Click the [Connect] button to establish a connection with the host.
Capture	During the telnet session, click the [Capture] button to capture host screens that needs editing.

Disconnect Upon completion with capturing the host screens needed, click [Disconnect] to terminate this session. Proceed to edit screens.



Edit Screen



Rename Change the name of a captured screen.

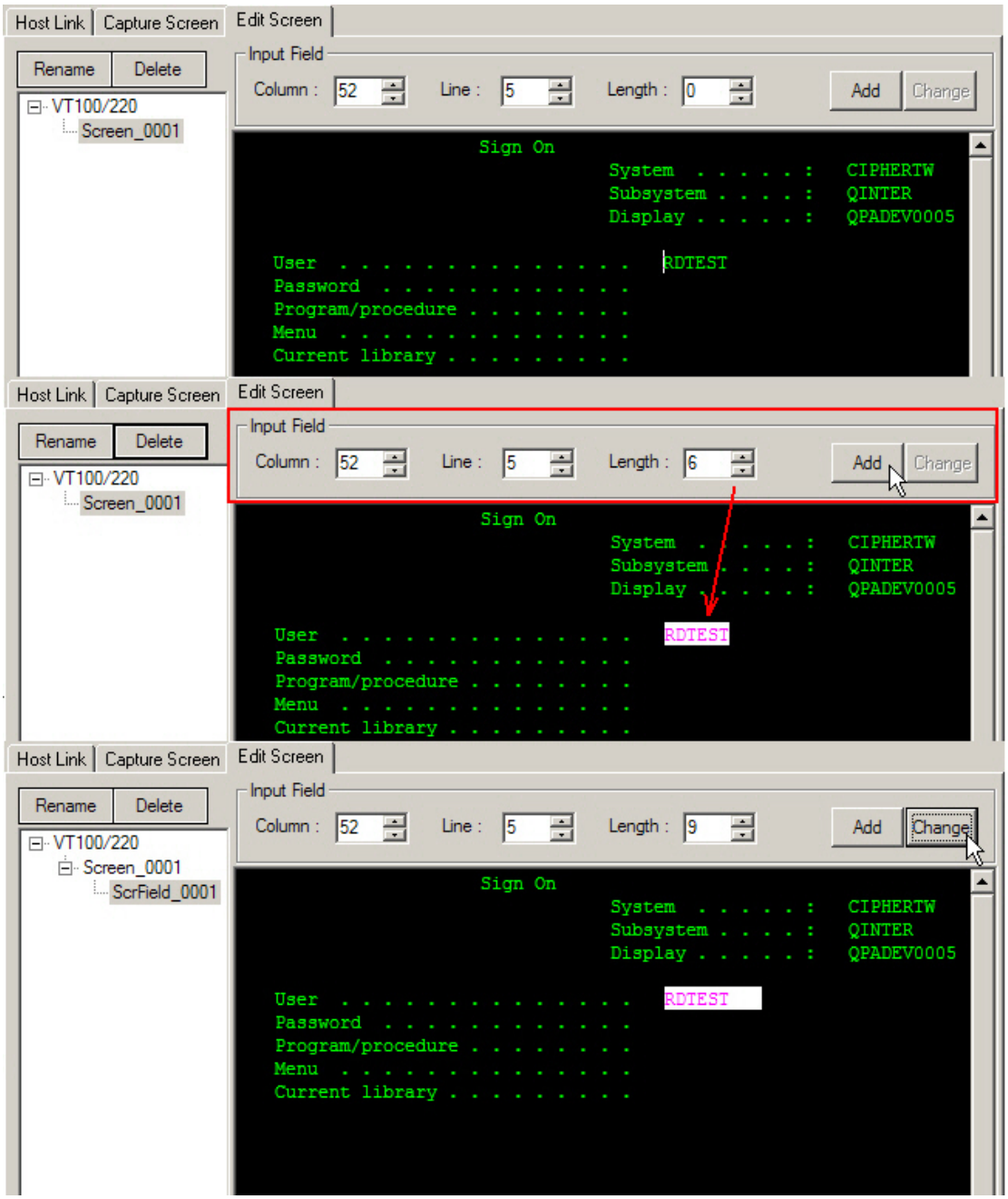
Delete Delete a captured screen.

Input Field Click on a captured screen and the current cursor position will be displayed. The field length will be 0. You may click and drag to define an input field, and the field length will be calculated automatically.

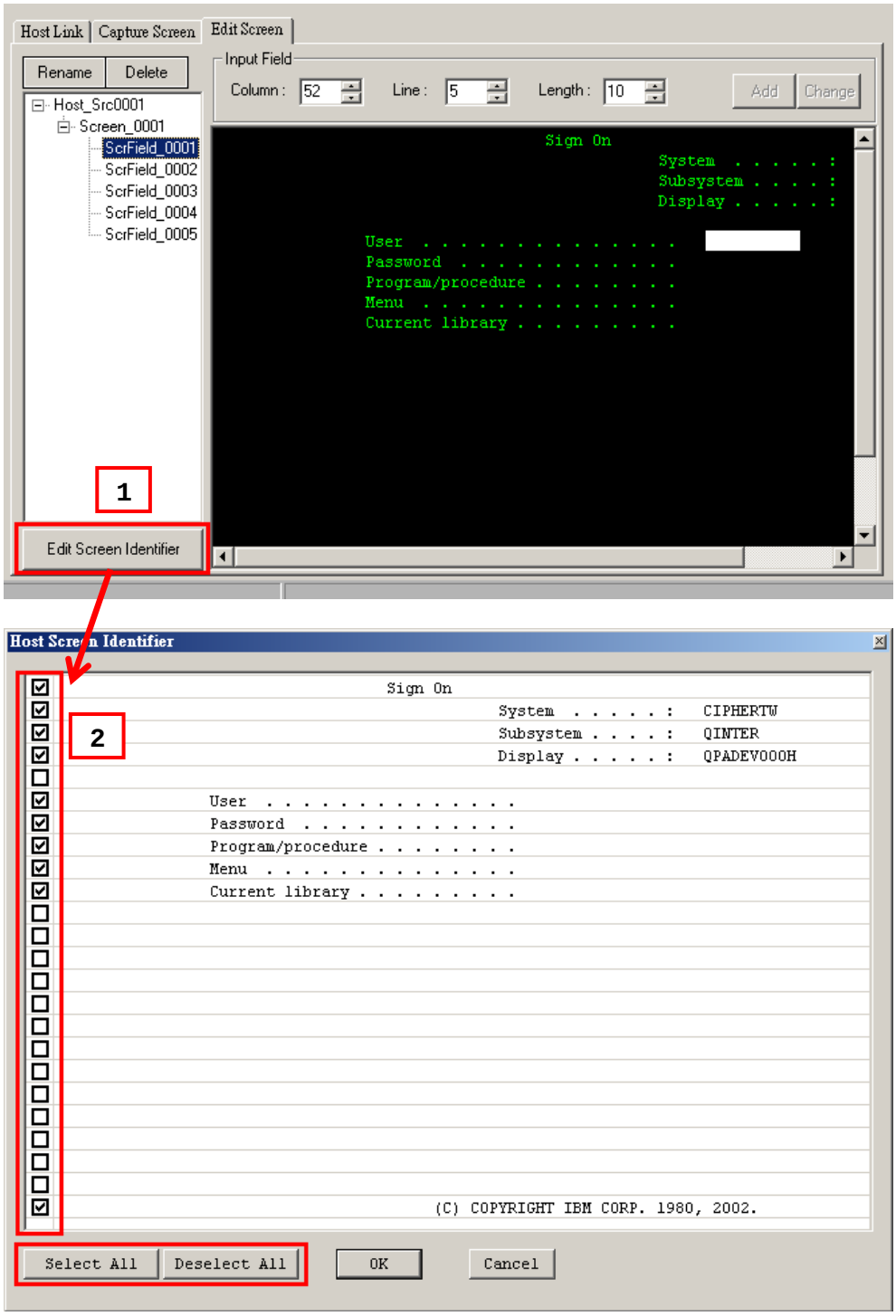
- Click the [Add] button to add a source field as specified.
- Click the [Change] button to change the source field as specified.

See screenshots below for an example.

Edit Screen Identifier Edit the screen identification for Host screen reformatting.



Note: Refer to 1.3.2 Emulation Application Template – Reformat Screen to deal with the screens edited.



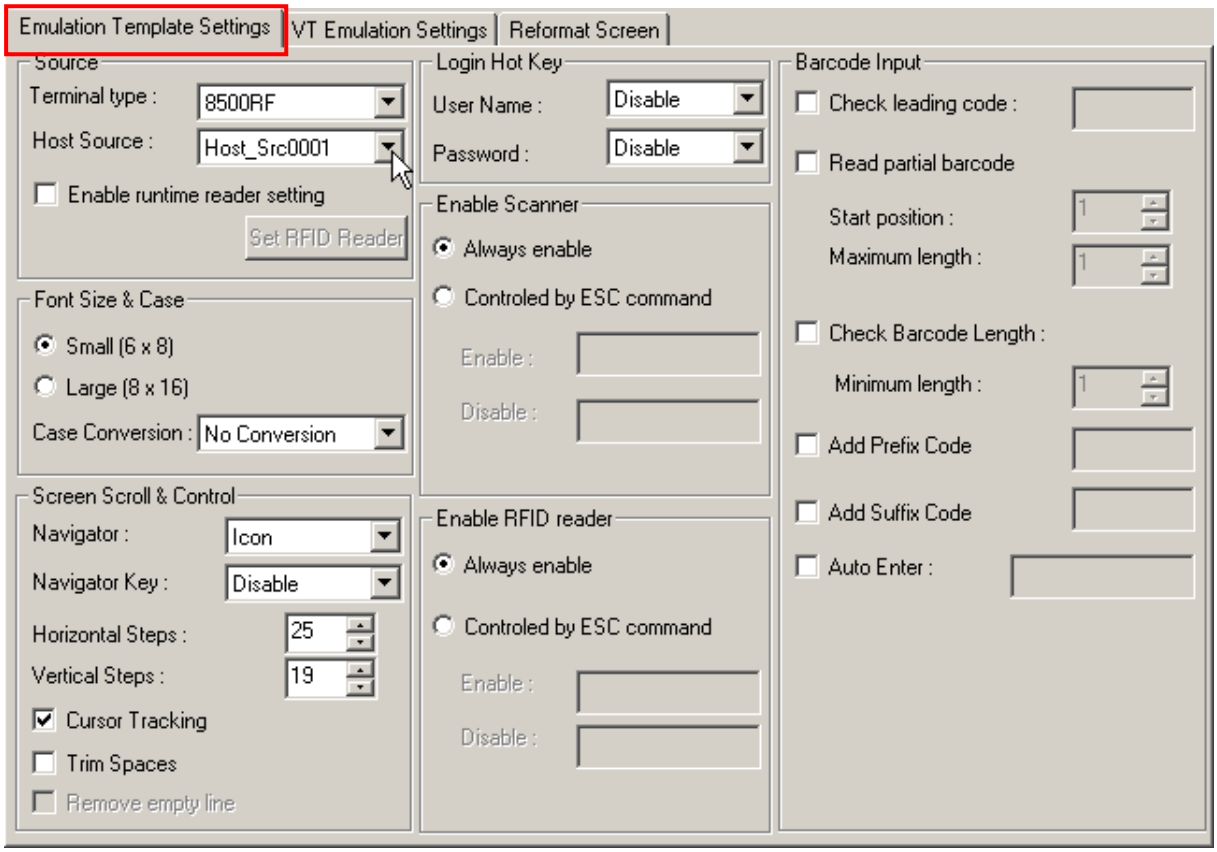
Manually check your desired options line by line or click the “Select All” or “Deselect All” buttons to determine which the screen identifier lines should be when reformatting the Host screen.

Select All: Click to select all the lines and every line will be the screen identifier.

Deselect All: Deselect all the lines and the screen will not be compared. The original screen will be shown on the terminal.

1.3.2 EMULATION APPLICATION TEMPLATE

EMULATION TEMPLATE SETTINGS



Source

Terminal Type	Select your terminal type.
Host Source	Select a host source associated with the above terminal type. ▸ If your source supports ANSI/VT, proceed to configure VT Emulation Settings. ▸ If your source supports 5250, proceed to configure TN Emulation Settings.
Enable runtime barcode setting / Set RFID Reader	▸ Select whether to enable runtime barcode setting as well as RFID setting.

Font Size & Case

Small / Large *OR* *Local Setting / Fixed Size*	The mobile computer screen size varies. Display capability, as shown in the table below, depends on the screen size as well as the font you use. The font size setting affects the default horizontal/vertical steps the cursor move at one time on the host screen. ▸ By default, small font (6x8) is applied. Data coming in from the host will be displayed accordingly. You may select to use large font (8x16). ▸ For 9400/9500 Series, select “Fixed Size” or leave it to “Local Setting” to

apply the current setting of the mobile computer.

Mobile Computer	Small (Font 6x8)	Large (Font 8x16)
8000 Series	16 characters by 8 lines	12 characters by 4 lines
8300 Series	20 characters by 8 lines	15 characters by 4 lines
8400 Series	26 characters by 19 lines	20 characters by 9 lines
8500 Series	26 characters by 19 lines	20 characters by 9 lines

Case Conversion

By default, there is no case conversion. Data being sent to the host will be in letter case matching to the original.

- Options include "convert to lower/upper case". For example, if you select "to lower case", data being sent to the host will be converted to lower case; and vice versa.

Screen Scroll & Control

Navigator

- A navigator can be a graphic icon or miniature window on the mobile computer screen, indicating the relationship between the mobile computer screen and the host screen. A miniature cursor is blinking to indicate the input position. Such navigator will be displayed on the bottom line on the 8500 Series mobile computer.
- By default, a graphic icon is used for navigation.
- Instead of the small icon, you may select "20*15" or "32*24" for a larger icon.
- To disable this feature, select "None".

Navigator Key

- The navigator key works as the toggle of navigator. When you press the navigator key on the mobile computer, it will disable/enable the navigator by turns.
- By default, the navigator key is disabled. Select the navigator key (FN+0 ~ FN+9). The selected combination will become unavailable on the Function Key Mapping list on the VT/TN Emulation Settings tab. For example, if you select FN+6, you will find it mapped to "Navigator Key".

Horizontal Steps

- Specify how may horizontal steps (characters) the cursor will move at a time on the host screen when you press the [FN] + [Left] or [FN] + [Right] keys.
- By default, the setting will move the cursor one screenful horizontally. This feature is associated with the font size.
- This is not supported on the 8000 Series mobile computers for lack of the [Left Arrow] and [Right Arrow] keys.

Vertical Steps

- Specify how many vertical steps (characters) the cursor will move at a time on the host screen when you press the [FN] + [Up] or [FN] + [Down] key.
- By default, the setting will move the cursor one screenful vertically. This feature is associated with the font size.

Cursor Tracking

- By default, the cursor tracking is enabled. The mobile computer screen will automatically adjust itself so that the cursor will always be visible on the screen. Cancel the check box if this feature is not desired.

Note: The Cursor Tracking only works when a screen refresh incident occurs on the host. However, when the Lock Screen feature is enabled, the Cursor Tracking feature will be disabled automatically; and vice versa.

Trim Spaces

To make the most use of the mobile computer screen, unnecessary spaces may be discarded. Select the check box to enable this feature.

- Note that spaces between characters will not be discarded.

  Original line: -> 1. Set up<-

  Trimmed: ->1. Set up<-

Remove Empty Line (for 5250 only)

- Select the check box to automatically ignore empty lines on the host screen.
- Note that this feature can only be enabled when there is no contradiction with 5250's field definition

Login Hot Key

User Name

Password

- By default, the shortcut keys are disabled. That is, you need to enter username/password manually.
- Select the shortcut keys (FN+0 ~ FN+9) so that you can enter the text string for Username/Password by two strokes. The selected key combinations will become unavailable on the Function Key Mapping list. For example, if you select FN+0 for “Username” and FN+1 for “Password”, you will find them mapped to “Name Key” and “Password Key” individually in the Function Key Mapping of the Emulation tab.

Enable Scanner

Always enable

By default, the barcode reader is enabled. However, you may send an escape sequence to control it.

Controlled by ESC (or 5250) commands

- If selected, the barcode reader is disabled after login. It will not work until you send the specific ESC or 5250 command to enable it.

VT Emulation	
Enable	You may specify an ESC command other than the default “ESC[2;1]”.
Disable	You may specify an ESC command other than the default “ESC[2;0]”.

Enable RFID Reader

Always enable

By default, the RFID reader is enabled.

- The RFID reader co-exists with the barcode reader, which is also called "dual mode" because both readers can work at the same time.

Controlled by ESC (or 5250) commands

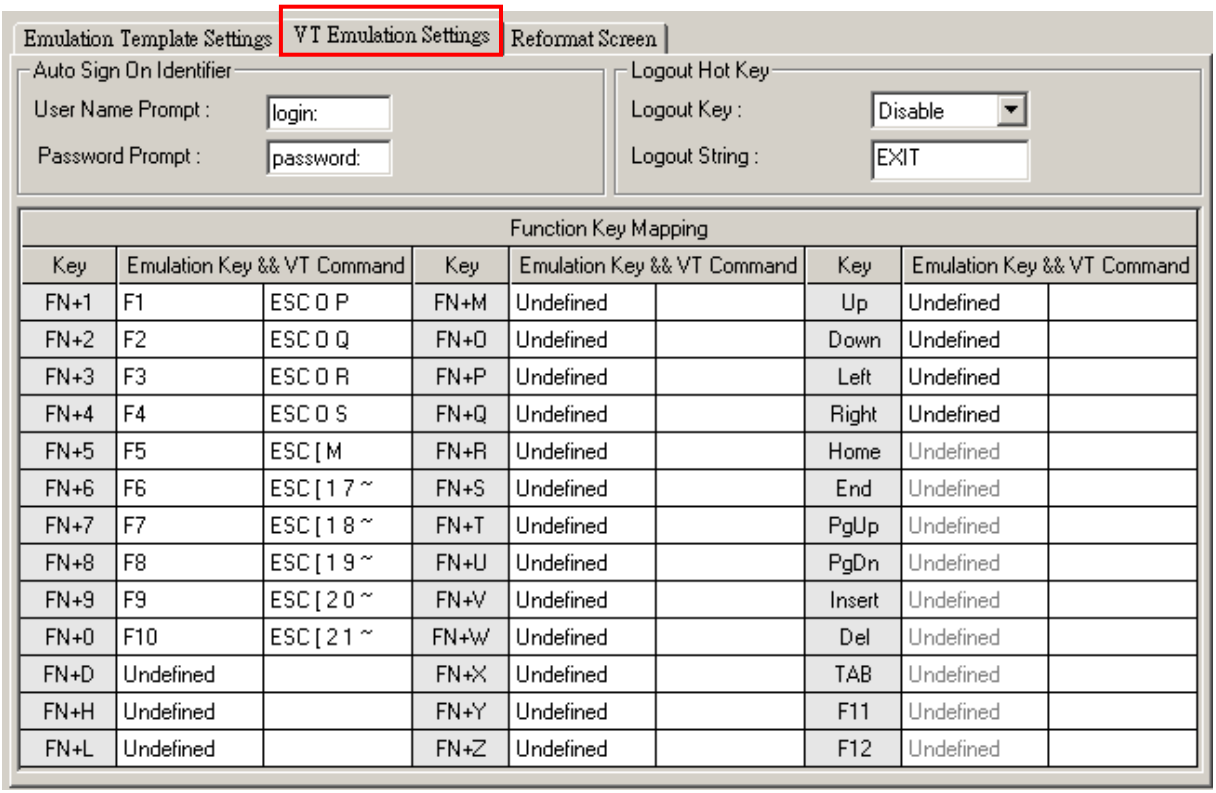
If selected, the RFID reader is disabled after login. It will not work until you send the specific ESC or 5250 command to enable it.

VT Emulation	
Enable	You may specify an ESC command other than the default “ESC[3;1]”.
Disable	You may specify an ESC command other than the default “ESC[3;0]”.

Barcode Input

Check leading code	The leading code refers to the digit in the start position of a barcode. (It could be a string of maximum 10 characters! This needs to be verified!) Select the check box to verify the barcode input. When the leading code is not matching, the barcode will be rejected.
Read partial barcode	By default, the system will return the whole barcode that has been decoded. Select the check box so that the system will return partial barcode according to the settings of the start position and maximum length.
Check barcode length	Select the check box so that the system will perform a length check on the barcode according to the length setting. When the barcode is found shorter than the specified length, it will be rejected. ▸ For 5250 emulation, refer to “Field Length if Exceed”.
Add prefix code	Select the check box to prefix a code to the input data. Specify one or more characters in the editing box next to it. For example, a dollar sign ("$") can be added to the front of the data input for price.
Add suffix code	Select the check box to suffix a code to the input data. Specify one or more characters in the editing box next to it. ▸ You may use prefix and suffix code(s) to wrap the input data.
Auto ENTER	By default, a carriage return will be automatically added to the end of the barcode input (= Scan+ENTER). It can then directly proceed to next task upon completion of data input without requiring you to press the [Enter] key on the mobile computer. For barcode scanning, it proves to be timesaving.

VT EMULATION SETTINGS



Function Key Mapping

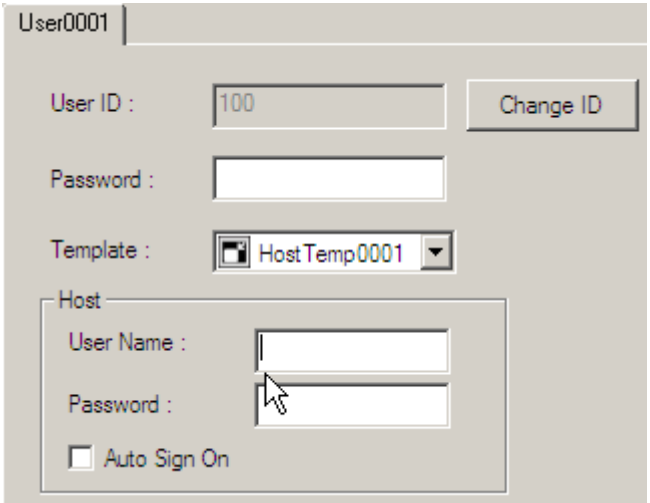
Key	Emulation Key && VT Command		Key	Emulation Key && VT Command		Key	Emulation Key && VT Command	
FN+1	F1	ESC O P	FN+M	Undefined		Up	Undefined	
FN+2	F2	ESC O Q	FN+O	Undefined		Down	Undefined	
FN+3	F3	ESC O R	FN+P	Undefined		Left	Undefined	
FN+4	F4	ESC O S	FN+Q	Undefined		Right	Undefined	
FN+5	F5	ESC [M	FN+R	Undefined		Home	Undefined	
FN+6	F6	ESC [1 7 ~	FN+S	Undefined		End	Undefined	
FN+7	F7	ESC [1 8 ~	FN+T	Undefined		PgUp	Undefined	
FN+8	F8	ESC [1 9 ~	FN+U	Undefined		PgDn	Undefined	
FN+9	F9	ESC [2 0 ~	FN+V	Undefined		Insert	Undefined	
FN+0	F10	ESC [2 1 ~	FN+W	Undefined		Del	Undefined	
FN+D	Undefined		FN+X	Undefined		TAB	Undefined	
FN+H	Undefined		FN+Y	Undefined		F11	Undefined	
FN+L	Undefined		FN+Z	Undefined		F12	Undefined	

Auto Sign On Identifier

User Name Prompt, *Password Prompt*

Specify the prompt strings that request you to enter username/password. They must be exactly the same as received from the host.

- If the Auto Sign On is disabled, the host will request username and password every time the mobile computer attempts to log on.
- For "Auto Sign On" to work properly, User Name/Password and each prompt string here must be specified correctly. Refer to section 1.4 Users.



Logout Hot Key

Logout Key

- By default, no logout key is specified. To exit the host applications, you are required to send the specific command.
- Select the shortcut keys (FN+0 ~ FN+9). The selected combination will become unavailable on the Function Key Mapping list. For example, if you select FN+2, you will find it mapped to "Exit Key" in the Function Key Mapping of the Emulation tab.

Logout String

- The logout command depends on the host applications. For this feature to work properly, the logout string must be specified correctly.

Function Key Mapping

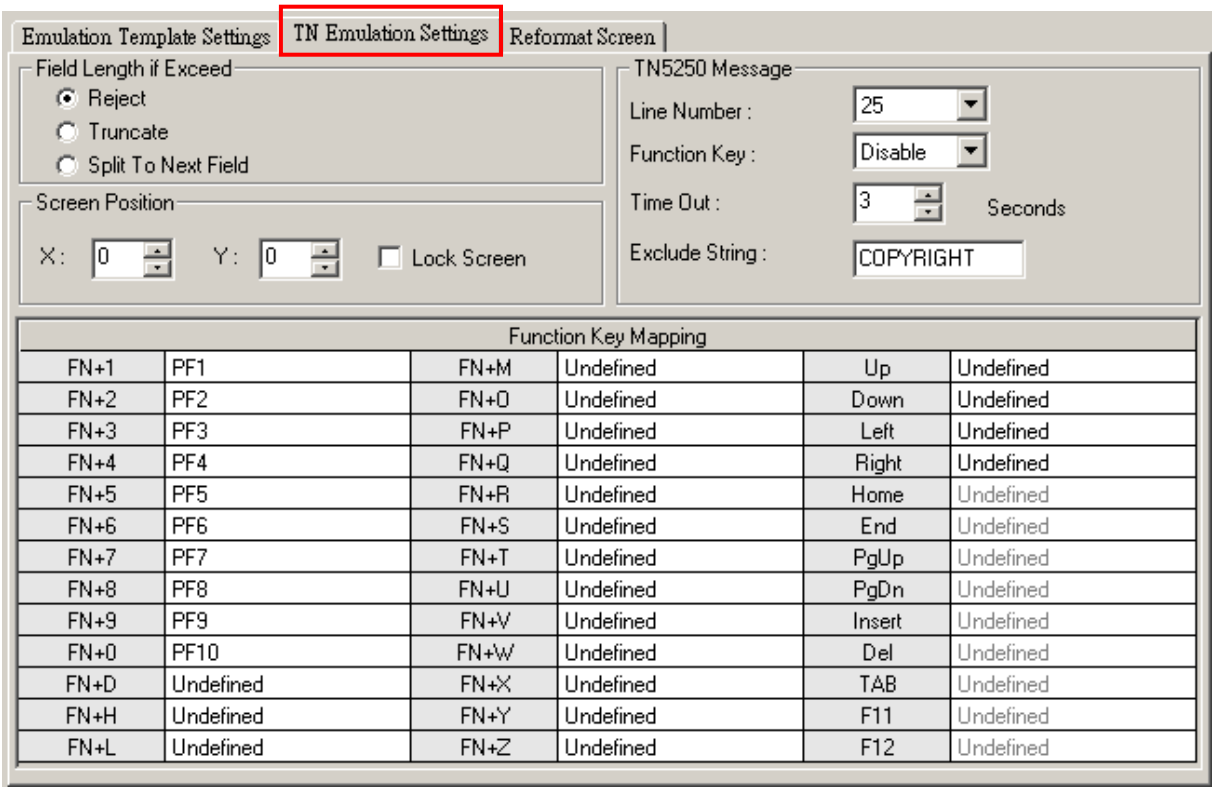
By default, FN+1 ~ FN+9 are mapped to F1~F9.

The function keys are special keys on the mobile computer keypad that transmit control codes. Control codes do not produce displayable characters but are codes for functions. If these codes are received by the mobile computer, it will perform the associated function as defined on the list.

- Click an available function key. You may change its key combination or re-define key code to meet a specific need.

Note: The function key mapping list varies based on the availability of physical keys on your mobile computer.

TN EMULATION SETTINGS



Function Key Mapping					
FN+1	PF1	FN+M	Undefined	Up	Undefined
FN+2	PF2	FN+O	Undefined	Down	Undefined
FN+3	PF3	FN+P	Undefined	Left	Undefined
FN+4	PF4	FN+Q	Undefined	Right	Undefined
FN+5	PF5	FN+R	Undefined	Home	Undefined
FN+6	PF6	FN+S	Undefined	End	Undefined
FN+7	PF7	FN+T	Undefined	PgUp	Undefined
FN+8	PF8	FN+U	Undefined	PgDn	Undefined
FN+9	PF9	FN+V	Undefined	Insert	Undefined
FN+0	PF10	FN+W	Undefined	Del	Undefined
FN+D	Undefined	FN+X	Undefined	TAB	Undefined
FN+H	Undefined	FN+Y	Undefined	F11	Undefined
FN+L	Undefined	FN+Z	Undefined	F12	Undefined

Field Length if Exceed

Reject, Truncate, Split to Next Field

In 5250's field definition, the length of data field is pre-defined. If the input data is longer than the specified field length, you may decide how to deal with it by selecting one of the options.

Options	To Do...
Reject	Simply reject the input data. *(default)*
Truncate	Discard the part that exceeds the field length. The rest of data is accepted.
Split to Next Field	The whole data is accepted. The part that exceeds the field length will be displayed in next field.

Screen Position

Lock Screen

- The relationship between the mobile computer screen (small) and the host screen (large) is based on the upper-left point of the screens. The coordinates (0,0) on the mobile computer screen are related to (X,Y) on the host screen. Thus, every screen received from the host will be first displayed starting from (X,Y) regardless of the cursor. For example, when the cursor is outside of the mobile computer screen, in order to locate the cursor or view the hidden information, you need to adjust the mobile computer screen or move the cursor manually.
- By default, the upper-left point of the mobile computer screen is not locked when the Cursor Tracking feature is enabled. That is, the mobile computer screen will automatically adjust itself so that the cursor will always be visible

on the screen.

- Select the check box if the Lock Screen feature is desired. Then proceed to specify the relative coordinates for the upper-left point of the mobile computer screen when being mapped on the host screen.

Adjust Mobile computer Screen

To view the hidden information or locate the cursor, you need to adjust the mobile computer screen manually. Press one set of the following keys simultaneously to move one screenful at a time (depending on the setting of Horizontal/Vertical Steps):

[FN] + [Left] [FN] + [Right] [FN] + [Up] [FN] + [Down]	On the 8500 Series mobile computers, these function keys are originally used to adjust LCD contrast ([FN] + [Up]/[Down]) and backlight intensity ([FN] + [Left]/[Right]). After logging on to a host, these keys will be used to adjust the mobile computer screen instead. That is, you cannot use them to adjust LCD contrast and backlight intensity until you log out.

Move Cursor

- To move the cursor to a desired input field, press the function key that is mapped to “Tab”.
- To move the cursor to a desired input point, press the arrow keys [Up], [Down], [Left], and [Right].

- When the Cursor Tracking feature is enabled, there will be a warning beep to indicate that the mobile computer screen has reached the boundaries of the host screen.
- When the Lock Screen feature is enabled, there will be a warning beep to indicate that for the first time the mobile computer screen has reached the boundaries of the host screen. If you persist, the mobile computer screen will be re-positioned to (X,Y).

Note: When the Lock Screen feature is enabled, the Cursor Tracking feature will be disabled automatically; and vice versa.

TN5250 Message

Line Number On an IBM 5250 terminal, a message line is reserved to display messages from the host. Now we provide a more flexible way to do this: take down the message from the specified line and display it in a dialog box on your mobile computer. Manipulating the dialog box by its display duration or recalling it by pressing the associated function key, you will be able to follow the messages more closely.

- Specify which line on the host screen is the message line so that the mobile computer can grab a message to a dialog box. The default is line 25.

Function Key This function key is used to recall the most recent dialog box after it has been closed due to a specified time-out.

- By default, the message key is disabled.
- Select the message key (FN+0 ~ FN+9). The selected combination will become unavailable on the Function Key Mapping list. For example, if you select FN+7, you will find it mapped to “Message Key”.

Time Out Specify a period of time before the dialog box is closed, in units of second.

- Note that the message dialog box appears on the mobile computer automatically whenever a message from the host is detected.

Exclude String — To skip unnecessary messages, you may specify a text string so that any message containing this string will be ignored. That is, no dialog box will appear to display such message.

Function Key Mapping

By default, FN+1 ~ FN+9 are mapped to PF1~PF9.

The function keys are special keys on the mobile computer keypad that transmit control codes. Control codes do not produce displayable characters but are codes for functions. If these codes are received by the mobile computer, it will perform the associated function as defined on the list.

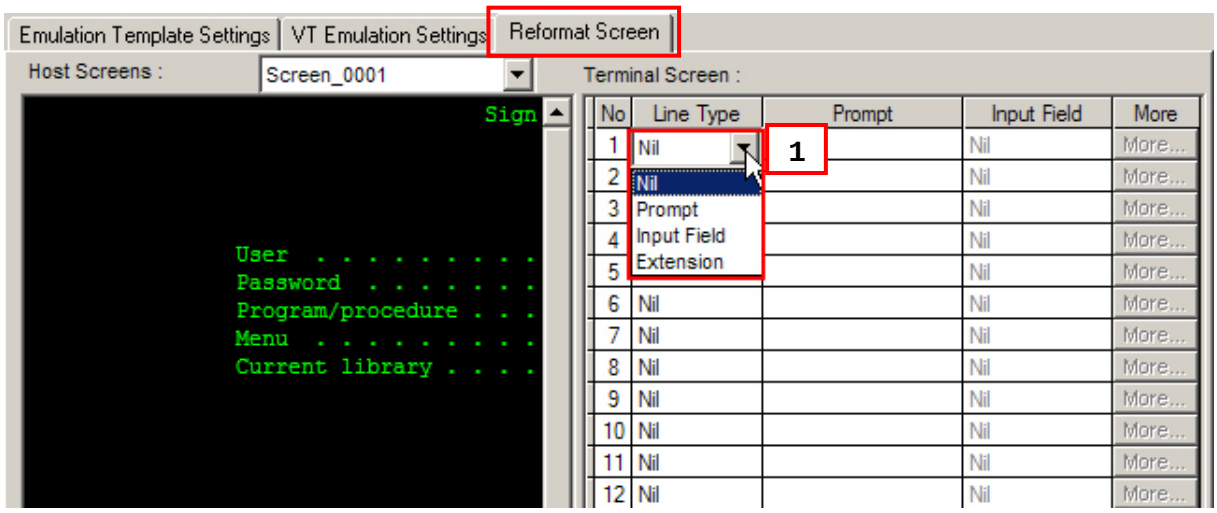
- Click an available function key. You may change its key combination or re-define key code to meet a specific need.
- PF1~PF9 – Program Function keys

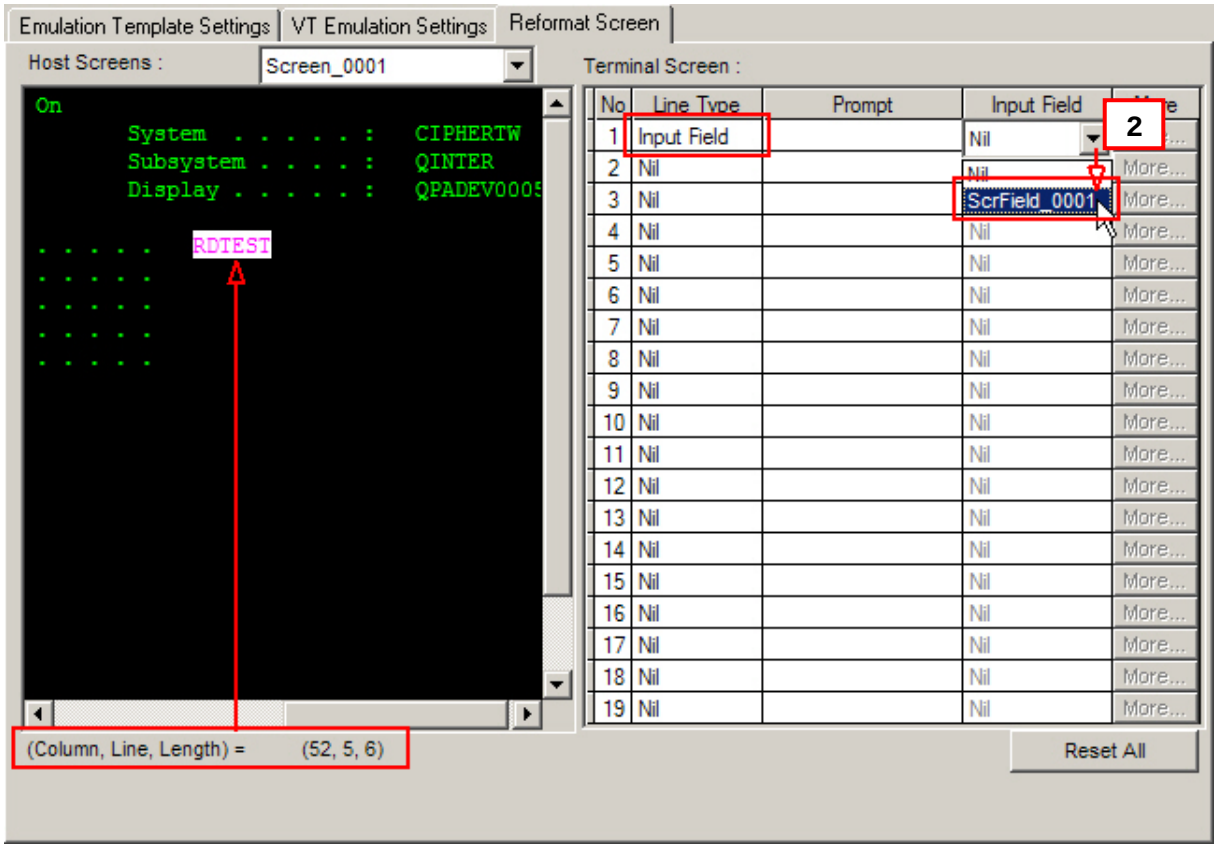
Note: The function key mapping list varies based on the availability of physical keys on your mobile computer.

REFORMAT SCREEN

If you have edited screens and defined source fields, you will have to reformat the screens to suit your needs here. For example, select “Input Field” for line 1 on the mobile computer screen and map it to the source field 1 of the host screen you captured.

Note: Refer to 1.3.1 Host/Server Source for editing screens.

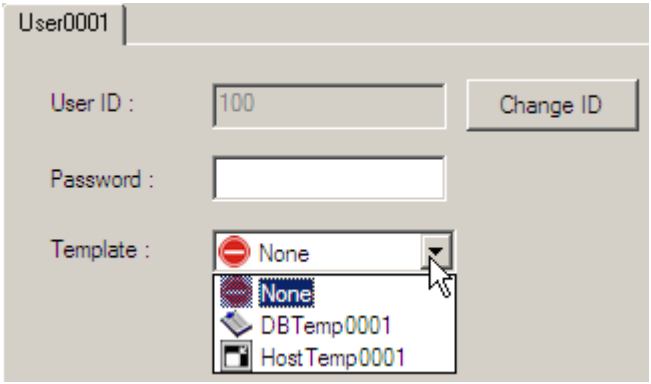




1.4 USERS

Go to **File Menu > New > Users** and establish a relationship between a user and an application template. You may easily switch the application template accessible to one user, or have the same application template accessible to different users.

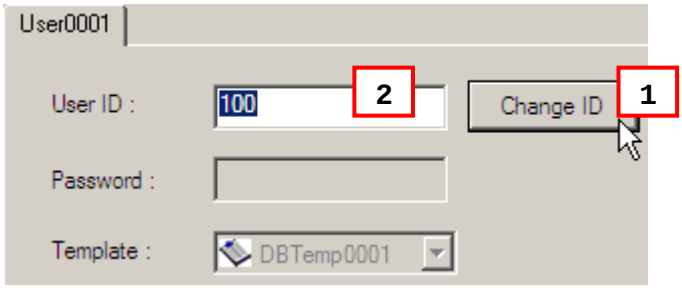
Users must identify themselves for the purposes of security, logging and resource management. A user account allows one to authenticate to system database.



1.4.1 USER ID

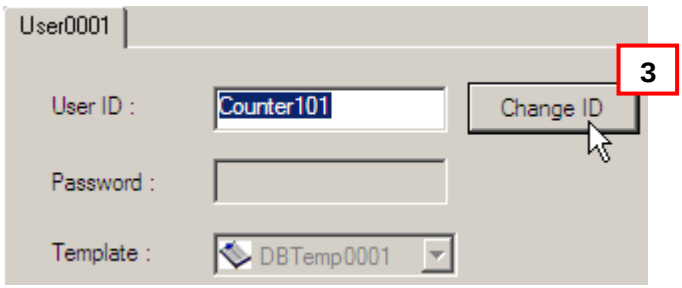
A user ID is required for a legal user account. By default, a sequential number starting from 100 is assigned automatically.

1) Click [Change ID] if you want to change the ID.



2) Enter a unique alphanumeric string, 1~30 characters long and case-sensitive.

3) Click [Change ID] again to apply the new user ID.



1.4.2 PASSWORD

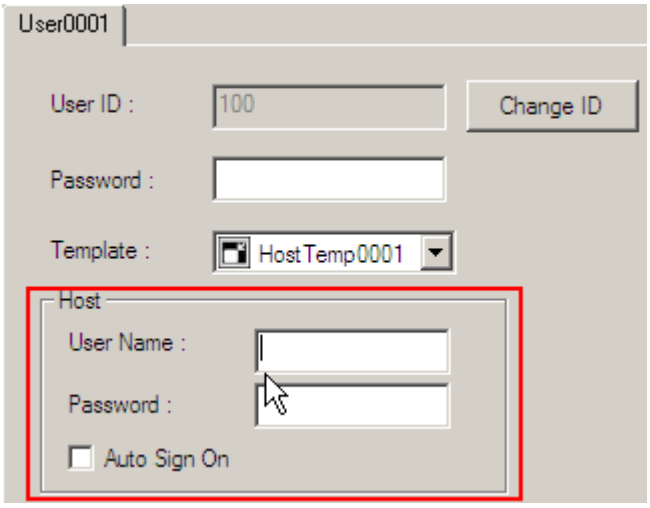
No password is required by default. If you have security concerns, enter a unique alphanumeric string, 1~30 characters long and case-sensitive.

1.4.3 TEMPLATE

A specific template is required for a valid user account. Select an application template associated with this user account.

1.4.4 SIGN-ON TO HOST/TELNET SERVER

For Emulation Application, User Name and Password are required if “Auto Sign On” or “Login Hot Key” is enabled.



Warning: You must at least have a valid user account for logging in!

1.5 DEVICE SETTINGS

Go to **File Menu > New > Terminal Setting** and create a new configuration record for a specific mobile computer.

After downloading the run-time program (.SHX) or client application (.EXE and .DLL) to the mobile computer, you will need to configure and download the device settings for starting a Telnet session.

- 8000/8300/8400/8500 Series

  Go to **Tools Menu > Download Terminal Setting** to download the configuration record to the mobile computer via **Main Menu > 2. Utilities > 7. Download** on the mobile computer.

- 9400/9500 Series

  Go to **File Menu > Export 9 Series Terminal Setting As** and export the configuration record to a .W94 or .W95 file. Copy or move the file to the mobile computer via ActiveSync.

  Run the client application (WS9400_CE.exe or WS9500_CE.exe) and import the configuration file via **Options Menu > Utilities > Load Setting**.

For 8000/8300/8400/8500 Series, if you have configured the TCP/IP settings correctly on the Wireless LAN tab, you will be able to start a Telnet session successfully on the mobile computer via **Main Menu > 1. Telnet**.

Saving you from having to download the device settings to the mobile computer, you can directly configure a number of settings on the mobile computer:

- 8000/8300/8400/8500 Series run-time - **Main Menu > 2. Utilities**

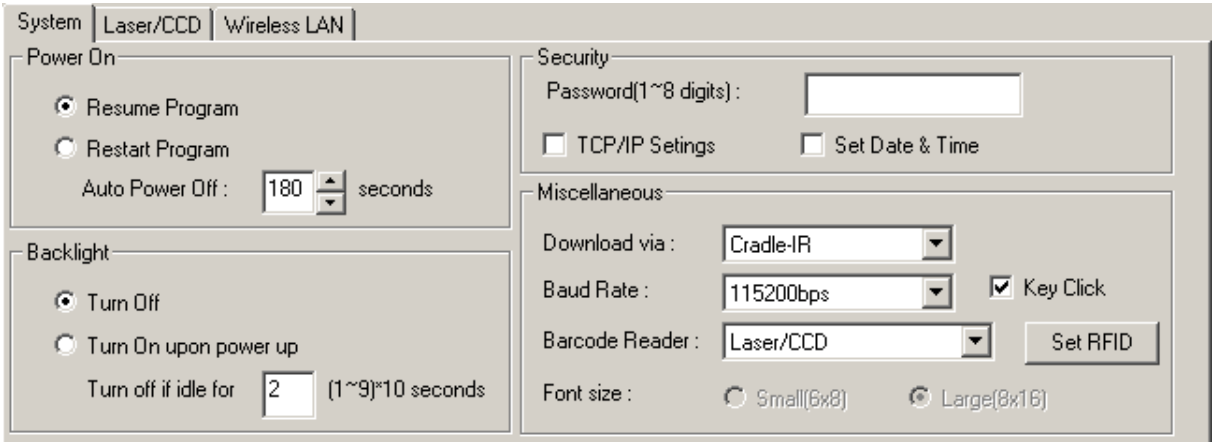
  1. TCP/IP Settings
  3. Backlight
  5. Set Date & Time
  6. Baud Rate
  7. Download

- 9400/9500 Series client application - **Options Menu > Configure > Server & Screen tabs**

Note: For temporary change on the reader settings, you can select [Enable run-time barcode setting] in the application template settings.

1.5.1 SYSTEM

For system settings on 9400/9500 Series, refer to section 5.6 Operation on the Mobile Computer demonstrating the client application (**Options Menu > Configure > Server & Screen tabs**).



POWER ON (8000/8300/8400/8500)

Options	Description
Resume Program	Start from the last session of program before the mobile computer is turned off.
Restart Program	Fresh start from the first session of the program.
Auto Power Off	The mobile computer will be turned off automatically when no operation is taking place during a specified period of time. ▸ Enter a value between 0 and 999. ▸ To disable this function, enter 0.

BACKLIGHT (8000/8300/8400/8500)

Options	Description
Turn Off	By default, the backlight for the LCD and the keypad of the mobile computer is turned off.
Turn On upon power up	When the backlight is set to be turned on automatically, you may specify a period of idle time so that it can be automatically turned off. Such time-out is specified in the range of 1~9, in units of 10 seconds. ▸ The default time-out is 20 seconds.

SECURITY (8000/8300/8400/8500)

For security concerns, you may specify a password and select the check box of one or more tasks that need security checking.

- By default, no password is required for configuring the device settings.

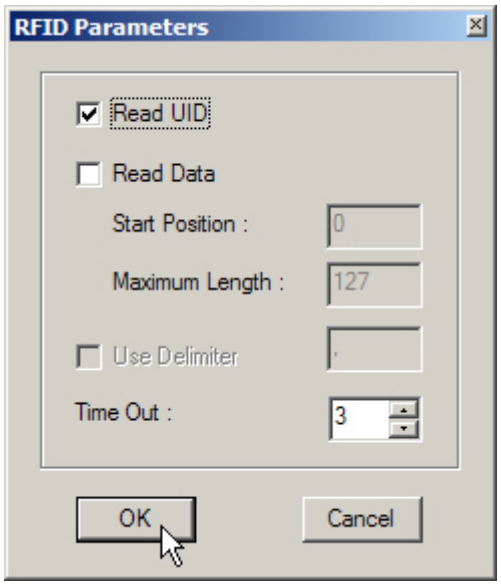
- A password can be up to 8 alphanumeric characters.

Note: The password is case-sensitive.

If a task is selected and provided with a password, you will not be allowed to enter a submenu without the password.

- TCP/IP Settings: Main Menu > 2. Utilities > 1. TCP/IP Settings
- Set Date & Time: Main Menu > 2. Utilities > 5. Set Date & Time

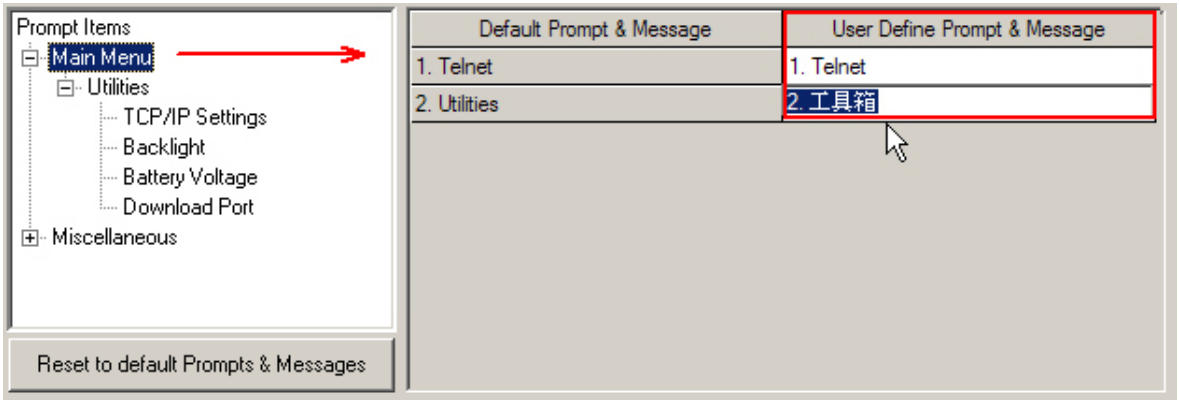
MISCELLANEOUS (8000/8300/8400/8500)

Options	Description
Download via	• Cradle-IR • IrDA • RF
Baud Rate	• 115200 bps • 57600 bps • 38400 bps • 9600 bps
Key Click	By default, the key click is enabled. Cancel the check box if a tone is not desired when you press a key on the mobile computer.
Barcode Reader	• 1D CCD/Laser • 1D (Extra) Long Range Laser • 2D Reader
Set RFID	Click the button to configure the RFID reader. Advanced settings are provided as shown below. 

	▸ Read UID: By default, the RFID reader is set to read UID (Unique Identification) of the tag. ▸ Read Data: Select the check box so that the data part of the RFID tag can be read. If only partial data is required, specify the start position and maximum length. ▸ Use Delimiter: Select the check box and specify a delimiter to separate UID from data. ▸ Time Out: 1~255, in units of second. The default time-out is three seconds.
Font Size	▸ Small font (6 * 8) ▸ Large font (8 * 16) On the 8000/8300 Series mobile computers, the Main Menu and its submenu 2. Utilities can be displayed in large font or small font. Large font (8x16) must be applied for double-byte languages, such as Chinese, Japanese, etc. On the Form and Menu property pages, font size can be changed as well.

PROMPTS & MESSAGES

For non-English environment, all the screen prompts and messages on the mobile computer can be re-defined in your local language. Change the prompts and messages one by one here.



Instead of changing the prompts and messages one by one here, you can create a *.lng file and store it in the Language folder (C:\CipherLab\Stream\Language\).

1) Go to **File Menu > New > Terminal Setting** and create a new configuration record for a specific mobile computer.
2) Go to **System Menu > Language** and select your language. For example, select Japanese.lng instead of the original English.lng.
3) Click [Reset to default Prompts & Messages] to update the prompts and messages in the system database accordingly. Now the prompts and messages will be all Japanese, depending on the contents of the Japanese.lng file.

Note: The default prompts and messages refer to those defined in the language file (.lng) currently in use when working on a configuration record.

The maximum length of the prompts and messages depends on the font size and the size of the mobile computer screen. If your prompt or message exceeds the limit, it will be truncated automatically on the mobile computer.

8000/8300/8400/8500 Series

Mobile Computer	Small (Font 6x8)	Large (Font 8x16)
8000 Series	16 characters by 8 lines	12 characters by 4 lines
8300 Series	20 characters by 8 lines	15 characters by 4 lines
8400 Series	26 characters by 19 lines	20 characters by 9 lines
8500 Series	26 characters by 19 lines	20 characters by 9 lines

- Font file: The appropriate font file has to be downloaded to the mobile computer so that it can correctly display the system prompts and messages as well as Forms and Menus (user menus).
- Font size: For double-byte languages, such as Chinese and Japanese, large font (8x16) must be applied in Forms and Menus of the application template.

9400/9500 Series

Screen scrolling is supported, allowing 50 characters by 80 lines.

1.5.2 BARCODE

The Barcode Reader Settings tab varies by the reader type you selected on the **System tab > Miscellaneous > Barcode Reader**. Configure the associated reader settings and symbologies. For details on each barcode reader, please refer to each appendix separately.

- Appendix I - Scan Engine Settings lists the symbologies and RFID tags supported.
- Appendix II - CCD/Laser Scan Engine provides information on the reader settings as well as symbology settings for the CCD or Laser scan engine.
- Appendix III - LR/ELR Laser Scan Engine provides information on the reader settings as well as symbology settings for the Long Range Laser or Extra Long Range Laser scan engine.
- Appendix IV - 2D Scan Engine provides information on the reader settings as well as symbology settings for the 2D scan engine.

1.5.3 WIRELESS LAN (8000/8300/8400/8500)

For IP and security settings on 9400/9500 Series, turn on the power to the 802.11b/g module through the **Wireless Power Manager**, and then, go to **Start > Settings > (Control Panel) > Network and Dial-up Connections > WLAN1**.

IP SETTINGS

Normally, DHCP is enabled and most of the settings can be obtained form the DHCP server.

- Local Name: Enter a friendly name for identifying the mobile computer.
- SSID: Enter the network name (Service Set ID). Usually, it is the SSID given to an access point.

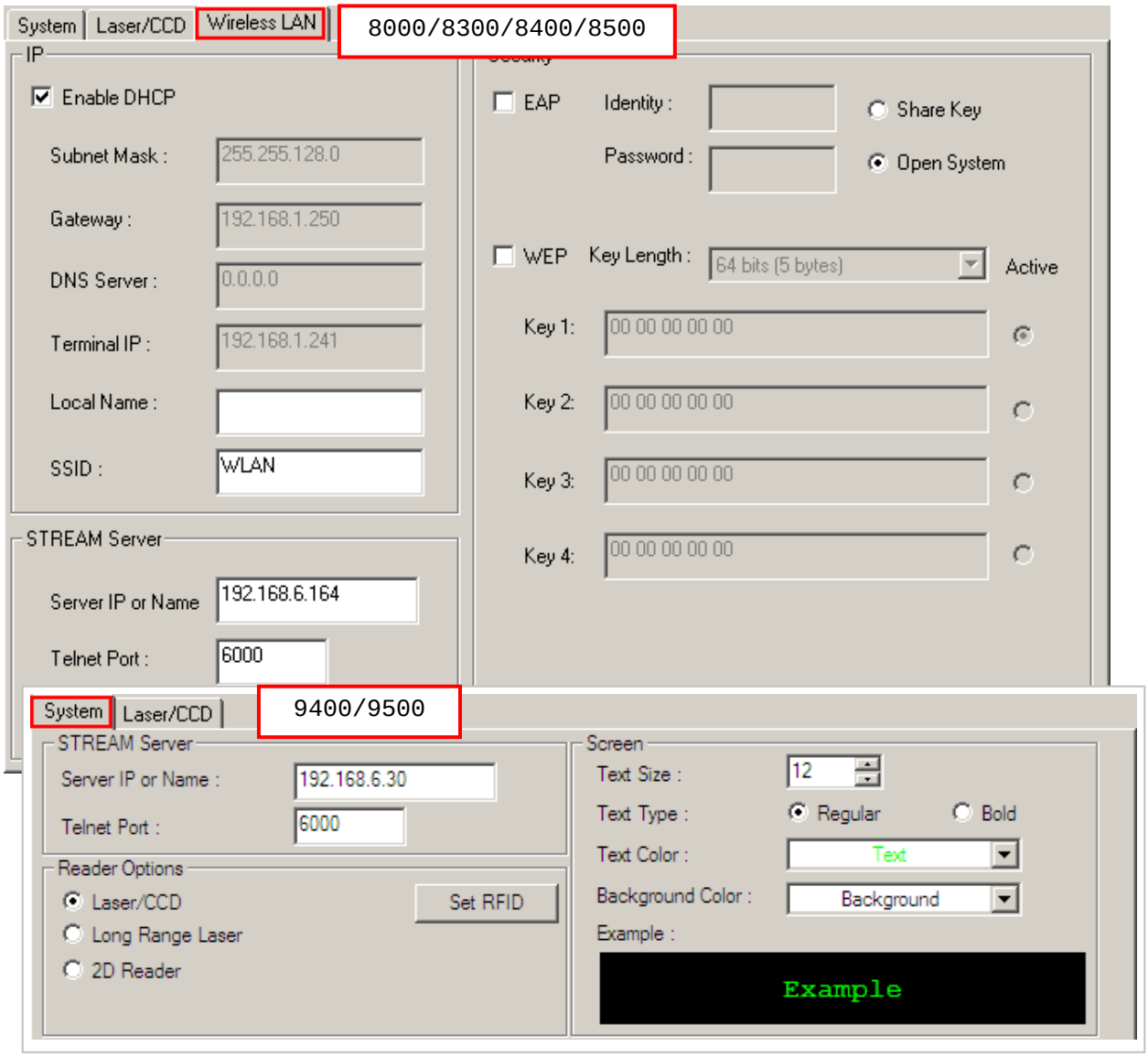
SECURITY

Usually, open system is selected for authentication.

- Authentication: Share Key required implementing WEP key.
- WEP (Wired Equivalent Privacy): Enter WEP Keys 1 ~ 4 using hexadecimal digits.
- EAP (Extensible Authentication Protocol): Enter a user name and password (up to 32 characters) for the mobile computer to logon to a wireless network via an access point.

STREAM SERVER

- You may need to update the associated information about the *STREAM Server*. For 9400/9500 Series, refer to the **System** tab.
- By default, the current IP of your computer will be displayed as Server IP. It will also be displayed on the title bar of the *STREAM Server*. When it becomes out-of-date, you may modify it here.
- By default, the Telnet port is "6000" as specified in System Menu > Set STREAM Server. When it becomes out-of-date, you may modify it here.



Chapter 2

STREAM WIRELESS STUDIO - SERVER

Double-click the shortcut on the desktop to launch the *STREAM Server* or run it directly from inside the *STREAM Designer*. While running, it will listen to connection requests from mobile computers and authenticate one to system database. It also allows for managing connections and transaction.

Run the Simulator or a real mobile computer to connect to your computer through the *STREAM Server*.

- Simulator - Go to **Tools Menu > Launch Simulator** in the *STREAM Designer*. You can use a corresponding simulator to verify whether a mobile computer will behave correctly in most aspects.
- 8000/8300/8400/8500 Series - Make sure (1) the corresponding run-time program (.SHX) has been downloaded to the mobile computer and (2) the TCP/IP settings are configured correctly.
- 9400/9500 Series - Make sure (1) the corresponding client application package (.EXE and .DLL) has been installed to the mobile computer and (2) the server IP/port settings are configured correctly.

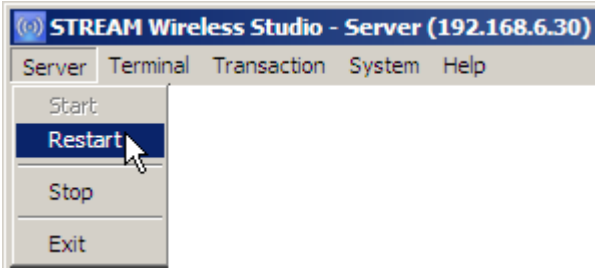
Warning: User accounts must be created for a user to log in and use an application service. Otherwise, the connection attempt will fail.

IN THIS CHAPTER

2.1 USER INTERFACE

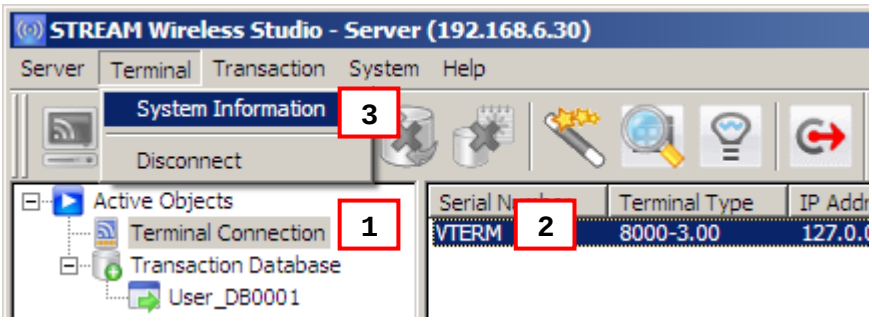
2.1.1 MENU BAR

SERVER MENU



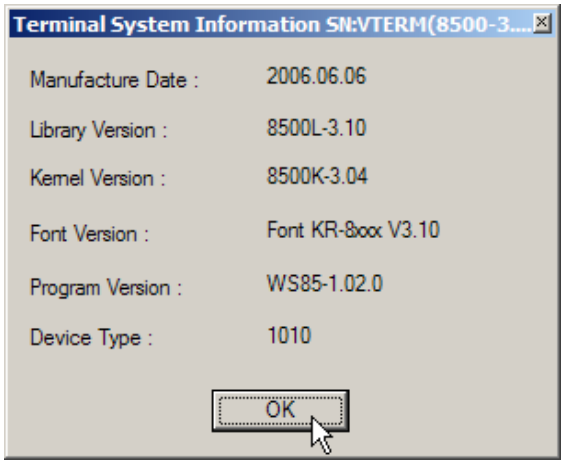
Commands	Description
Start	Start the STREAM Server.
Restart	Re-start the STREAM Server.
Stop	Stop the STREAM Server.
Exit	Exit the STREAM Server.

TERMINAL MENU



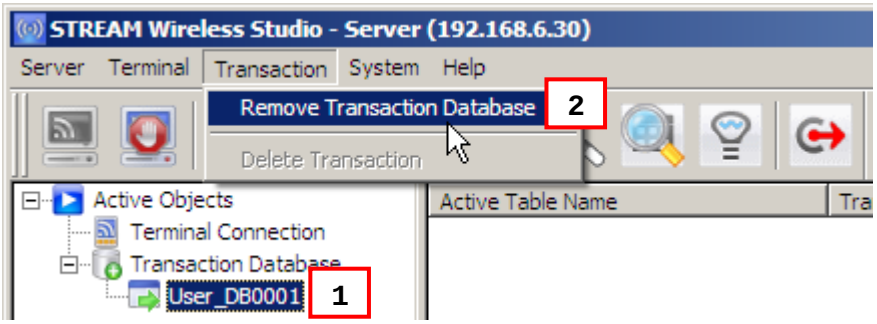
commands	Description
System Information	Get information about a specific mobile computer.
Disconnect	Disconnect a specific mobile computer.

1) In the work area, click **Active Objects > Terminal Connection** on the left pane.
2) Select one entry from the Terminal Connection list on the right pane.
3) Go to **Terminal Menu > System Information**.
4) More information on your mobile computer will be displayed.



For 8000/8300/8400/8500, the information is the same as you obtained via the following operation on your mobile computer – **System Menu > 1. Information** and **System Menu > 2. Settings > 7. Font**.

TRANSACTION MENU



Commands	Description
Remove Transaction Database	Remove a specific transaction database.
Delete Transaction	Delete a specific transaction record.

1) In the work area, click **Active Objects > Transaction Database > Source_SampleDB (Your Database Source) > (Active Table)** on the left pane. The active table name and transaction count is displayed on the right pane.

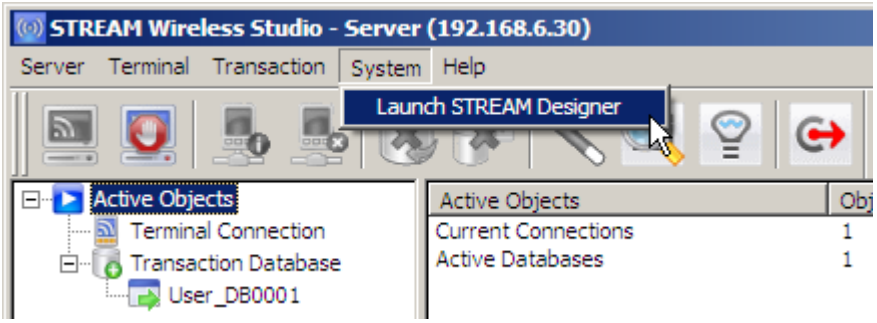
Note: A transaction database is maintained by the STREAM Server and allows for accessing the back-end database. It lists the transaction record(s) received from a connected mobile computer in a real-time way, and periodically gets updates from the back-end database. There are times when a specific transaction database is found no longer desired, such as when no mobile computers are connected to the database, the list of transaction records is getting too long and needs to be re-arranged, and so on.

2) To remove the temporary transaction database, go to **Transaction Menu > Remove Transaction Database**.

   To delete a transaction record, select one entry from the Active Table, and then, go to **Transaction Menu > Delete Transaction**.

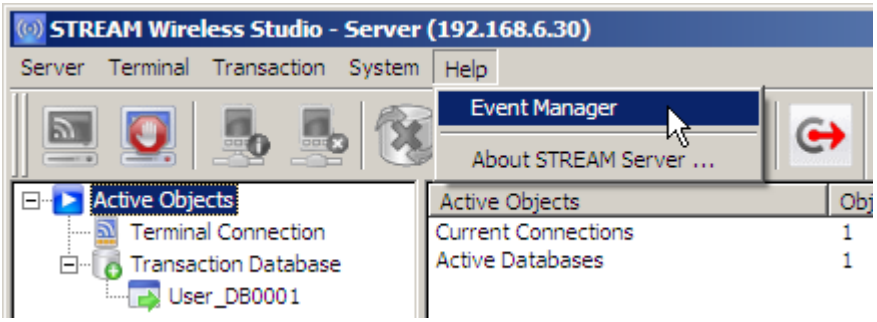
Warning: The transaction record will be removed from the temporary transaction database as well as the back-end database.

SYSTEM MENU



Commands	Description
Launch STREAM Designer	If you want to modify an application template in a real time way, launch the STREAM Designer.

HELP MENU



Commands	Description
Event Manager	Open the Event Manager, which lists the activities or events occurred in the STREAM Designer or the STREAM Server. Refer to section 4. Event Management for details.
About STREAM Server	View information about the STREAM Server program.

2.1.2 TOOLBAR

Icons	Description
	To start the STREAM Server. ▸ It does the same as menu command - Server > Start
	To stop the STREAM Server. ▸ It does the same as menu command - Server > Stop
	To get information about a specific mobile computer. ▸ It does the same as menu command - Terminal > System Information
	To disconnect a specific mobile computer from the server. ▸ It does the same as menu command - Terminal > Disconnect
	To remove a specific transaction database. ▸ It does the same as menu command - Transaction > Remove Transaction Database
	To delete a specific transaction record. ▸ It does the same as menu command – Transaction > Delete Transaction
	To launch the STREAM Designer. ▸ It does the same as menu command – System > Launch STREAM Designer
	To open the Event Manager. ▸ It does the same as menu command – Help > Event Manager
	To view information about the STREAM Server. ▸ It does the same as menu command – Help > About STREAM Server
	To exit the STREAM Server. ▸ It does the same as menu command – Server > Exit

2.1.3 MENU TREE

In the work area, a menu tree is displayed on the left pane for navigation.

- Click "+" to expand the tree or "-" to collapse it.
- Click an existing item from the tree list. Its contents will be displayed on the right pane.

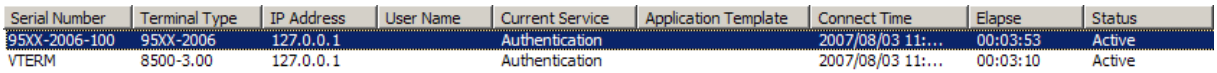
The *STREAM Server* allows you to monitor two things: Terminal Connection and Transaction Database.

In the Active Objects list below, you can tell that

- Current Connections: One mobile computer is connected to the server.
- Active Databases: Two databases are ready. It implies that two mobile computers were connected before, and now only one remains connected.

TERMINAL CONNECTION

It lists information of all mobile computer connections. Click one entry on the list, and go to **Terminal Menu > System Information** for more information on your mobile computer.



Serial Number	Terminal Type	IP Address	User Name	Current Service	Application Template	Connect Time	Elapse	Status
95XX-2006-100	95XX-2006	127.0.0.1		Authentication		2007/08/03 11:...	00:03:53	Active
VTERM	8500-3.00	127.0.0.1		Authentication		2007/08/03 11:...	00:03:10	Active

Information	Description
Serial Number	A serial number assigned to the mobile computer for identification. Same as the following operation on your mobile computer - System Menu > 1. Information > S/N ▸ If you are using the Simulator, it will be VTERM.
Terminal Type	Hardware version for PCB. Same as the following operation on your mobile computer - System Menu > 1. Information > H/W
IP Address	IP address of the mobile computer.
User Name	User account used for login.
Current Service	Application service applied through the template. ▸ Database Application ▸ Emulation Application
Application Template	Application template in use.
Connect Time	The time when the mobile computer is connected to the STREAM Server.
Elapse	The elapsed time since the mobile computer has been connected to the STREAM Server.
Status	The status of current connection: ▸ Active

- Not active (=disconnected) -

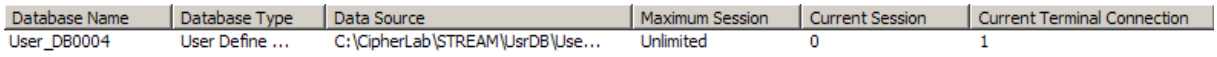
  If you have [Automatically disconnect after exceeding retrial times...] enabled, the Terminal Connection list will leave out the disconnected mobile computers.

  If you have the option disabled, the list will keep the disconnected mobile computers as "Not active".

Refer to section 2.2.1 Settings.

TRANSACTION DATABASE

It lists information of all transaction databases that have been accessed. If a listed database is not desired any more, select it and go to **Transaction Menu > Remove Transaction Database** to remove it from the list.



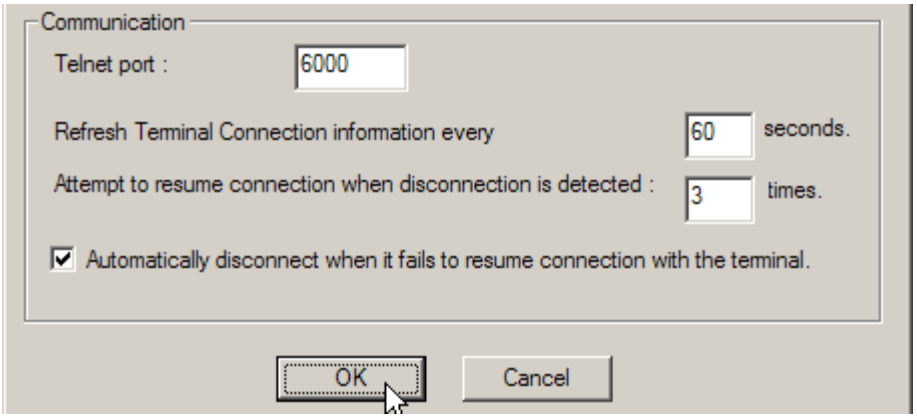
Database Name	Database Type	Data Source	Maximum Session	Current Session	Current Terminal Connection
User_DB0004	User Define ...	C:\CipherLab\STREAM\UsrDB\Use...	Unlimited	0	1

Information	Description
Database Name	The name given to your database link.
Database Type	The type of your database link - - ODBC - User-Defined Database
Data Source	The database source specified. - If the database type is ODBC, the System DSN will be displayed. - If the database type is User-Defined Database, the file path to the database will be displayed.
Maximum Session	The maximum session number allowed accessing the database. - If the database type is ODBC, it will be "Unlimited" when you entered 0 for the number of connections allowed. - If the database type is User-Defined Database, it will be "Unlimited".
Current Session	The current number of sessions that is accessing the database.
Current Terminal Connection	The current number of mobile computers that are connected to the STREAM Server. (Terminal Connection status is "Active").

2.2 LOGIN/LOGOUT

2.2.1 SETTINGS

Go to System Menu > Set STREAM Server. The communication settings and login prompt can only be changed in the *STREAM Designer* as shown below.



- The default Telnet port is 6000. Make sure you use the same port number on the mobile computer. Refer to section 1.5.3 Wireless LAN.
- The new settings will take effect after restarting the *STREAM Server*.

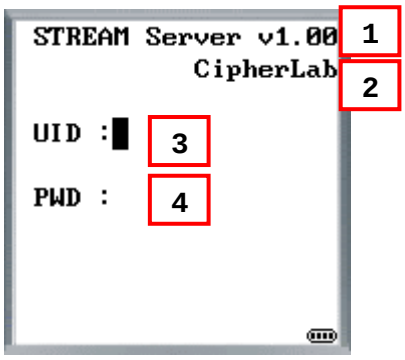
Warning: The server IP address and Telnet port number can be modified on the mobile computer directly.

2.2.2 LOG IN

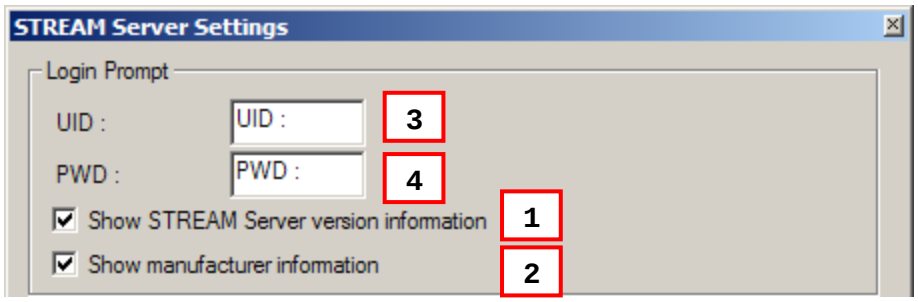
8000/8300/8400/8500 SERIES

1) When you turn on the mobile computer (or click the [Power] key on the Simulator), the Main Menu will be displayed.

2) Select [1. Telnet] to start a telnet session. The login screen is displayed as shown below.



The screen prompts are defined in the *STREAM Designer* as shown below. Go to System Menu > Set STREAM Server.



3) Enter your user ID and password, which are defined in the user accounts in the *STREAM Designer*.

4) After logging in, the screen you see depends on the application template applied.

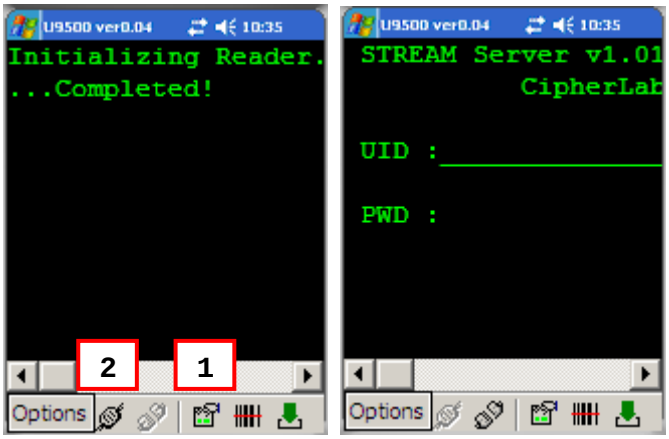
9400/9500 SERIES

- The 9400 Simulator is for 9400.
- The 9500 Simulator is for 9500CE.

Toolbar	Option Menu	Description
	Options > *Connect*	Connect to the STREAM Server.
	Options > *Disconnect*	Disconnect from the STREAM Server.
	Options > *Configure*	Configure server and screen settings.
	Options > *Utilities* > *Reader Test*	Perform reader test.
	Options > *Utilities* > *Load Setting*	Load device settings (.W94 or .W95)
	Options > *Exit*	Close the client application.

1) Tap from the toolbar to check whether the server IP and port settings are configured correctly.

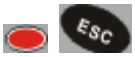
2) Tap to establish a connection with the remote host.



2.2.3 LOG OUT

8000/8300/8400/8500 SERIES

To log out or exit the Telnet session on the 8000/8300/8400/8500 Series mobile computer, you must press the following key combination:

Mobile Computer	Key Combination to Log Out:	
8000 Series	Hold [FN] and then press [ESC].	
8300 Series	Hold [FN] and then press [ESC].	
8400 Series	Hold [FN] and then press [ESC].	
8500 Series	Hold [FN] and then press [ESC].	

Note: If [ESC] is used to return to the Main Menu in the application template, it will automatically exit the Telnet session after clicking [ESC] (= logging out).

9400/9500 SERIES

On the 9400/9500 Series mobile computer, tap  from the toolbar to disconnect from the remote host, and then tap  to exit the client application.

2.3 ERROR MESSAGES

2.3.1 CONNECTION ERROR

You can launch the Simulator to foresee a possible connection error and correct it. However, a TCP/IP connection error can only be reflected when you use a real mobile computer.

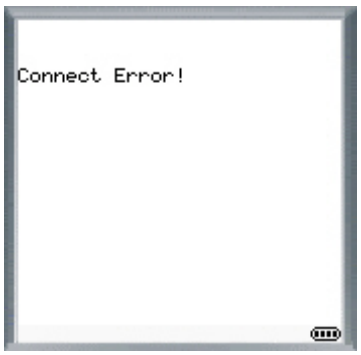
1) When you turn on the mobile computer (or click the [Power] key on the Simulator), the main screen is displayed (left below).
2) Select [1. Telnet] to start a telnet session.

3) The mobile computer will initialize a TCP/IP connection with the server.

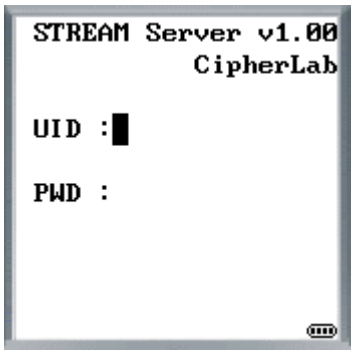
4) When it succeeds, the mobile computer will proceed to connect to the *STREAM Server*.

   If it fails to establish a TCP/IP connection, the mobile computer will display an error message.

5) If the *STREAM Server* has not been launched, it will display an error message.



When it succeeds, the mobile computer will display the login screen.



2.3.2 LOGIN ERROR

When the mobile computer has been connected to the *STREAM Server* successfully, the login screen will be displayed.

Possible login errors are listed here for your reference.

- If you enter an invalid user ID or wrong password, the mobile computer will display an error message - "Wrong UID/PWD!"

- Even though you have entered the user ID and password correctly, you may still encounter another problem - the mobile computer you use does not match the terminal type specified in the corresponding application template.

For example, you are using one of the 8500 Series mobile computers to log in and apply a template which is designed for the 8300 Series mobile computer. The mobile computer will display an error message - "TM mismatch!" or "Terminal mismatch!"

2.3.3 TEMPLATE SETTING ERROR

Error Message	Description
No key field!	▸ You did not select any key field(s). Refer to the Edit Table Schema tab of your ODBC database or the Define Field tab of your own database. ▸ You did not associate one or more fields in the Form setting of your application template to the key field(s) defined in your database.
Incomplete Setting! *Wrong Setting!* *Setting Err!*	▸ You did not associate one form to a table of your database in the Form setting of your application template. ▸ You did not define field(s) in the Form setting of your application template completely.

Chapter 3

PROGRAM SIMULATION

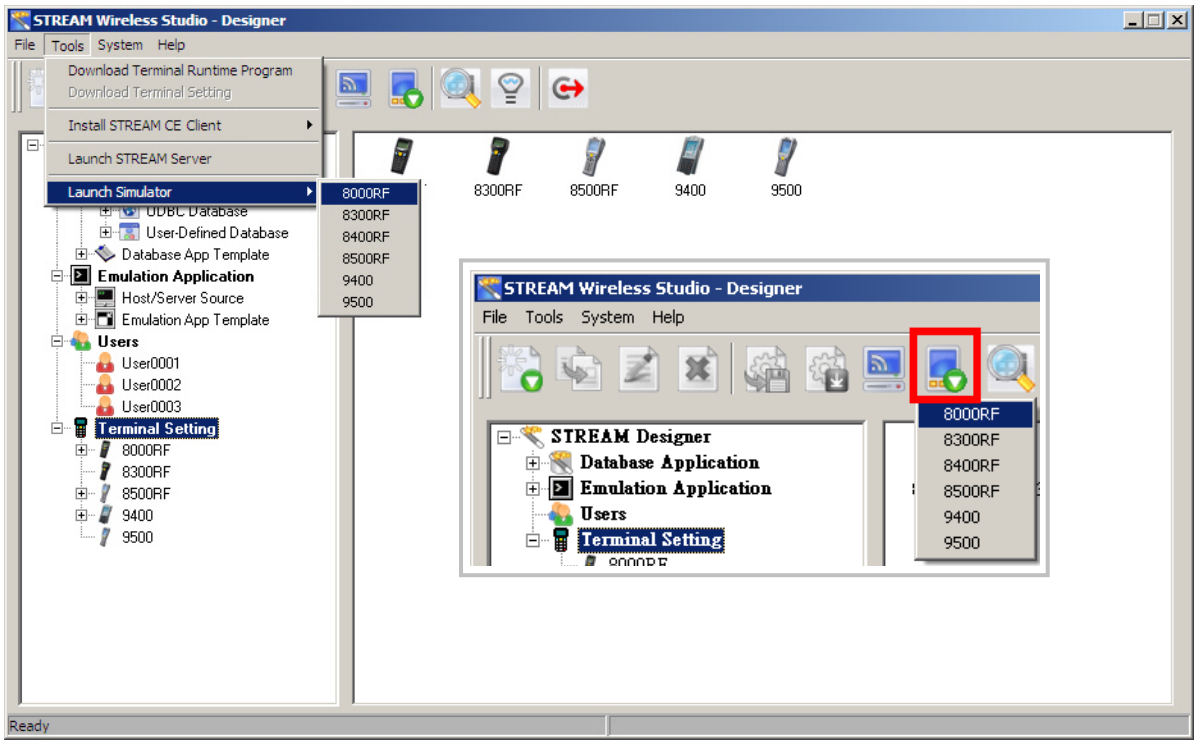
From the miniature mobile computer image on the computer, the Simulator can produce instant feedback to the actions that have been taken with the application template. It simulates the running sequences of the applications on a real mobile computer, even the scanning job.

Warning: Database may be updated or changed during simulation.

IN THIS CHAPTER

3.1 LAUNCH THE SIMULATOR

After launching the *STREAM Server*, run the corresponding Simulator from inside the *STREAM Designer*.



3.1.1 8000/8300/8400/8500 SERIES

POWER ON

Click the [Power] key on the mobile computer image and it will start simulating program sequences on a real mobile computer (left below).

Then, the Main Menu will be displayed on the screen (right below).

START A TELNET SESSION

"1. Telnet" is highlighted on the Main Menu as shown below. To start a Telnet session, simply click one of the [Enter] keys.

LOG IN

The login screen is displayed as shown below. Enter your user ID and password, which are defined in the user accounts in the *STREAM Designer*.

After logging in, the screen you see depends on the application template applied.

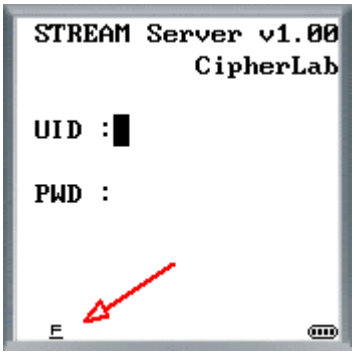
LOG OUT

To log out or exit the Telnet session, you must press the [FN]+[ESC] key combination on the 8000/8300/8400/8500 Series mobile computers. Refer to section 2.2.3 Log Out. However, it works a little differently in the Simulator.

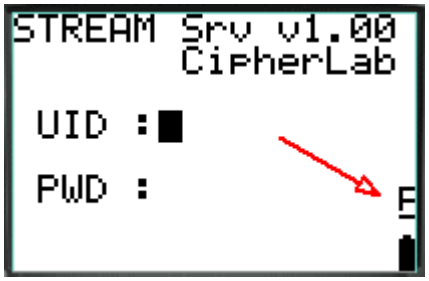
1) In the Simulator, click the [FN] key first.

2) The screen will display an "F".

   See the screenshot for the 8300 Series mobile computers (left below), and the one for the 8500 Series mobile computers (right below).



   In the Simulator for the 8000 Series mobile computers (8000RF), you need to click the [FN/ALPHA] key three times (A->a->F):



3) Click the [ESC] key.

Note: If [ESC] is used to return to the Main Menu in the application template, it will automatically exit the Telnet session after clicking [ESC] (= logging out).

3.1.2 9400/9500 SERIES

The 9400 Simulator is for 9400 and the 9500 Simulator is for 9500CE.

The simulator works exactly the same as the real mobile computer. Refer to section 2.2 Login/Logout for details.

3.2 EXIT THE SIMULATOR

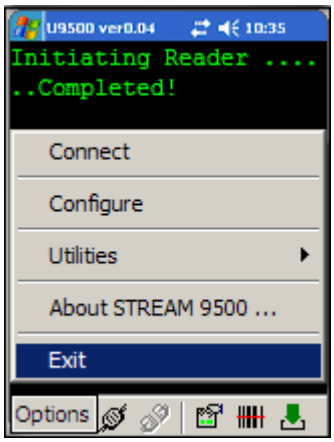
3.2.1 8000/8300/8400/8500 SERIES

1) To exit the Simulator, right-click anywhere on the mobile computer image.
2) The command menu will be displayed as shown below. Click [Exit].

Note: Please ignore "Setting" and "Dump files" in the command menu since they are for debugging in Visual C++ environment.

3.2.2 9400/9500 SERIES

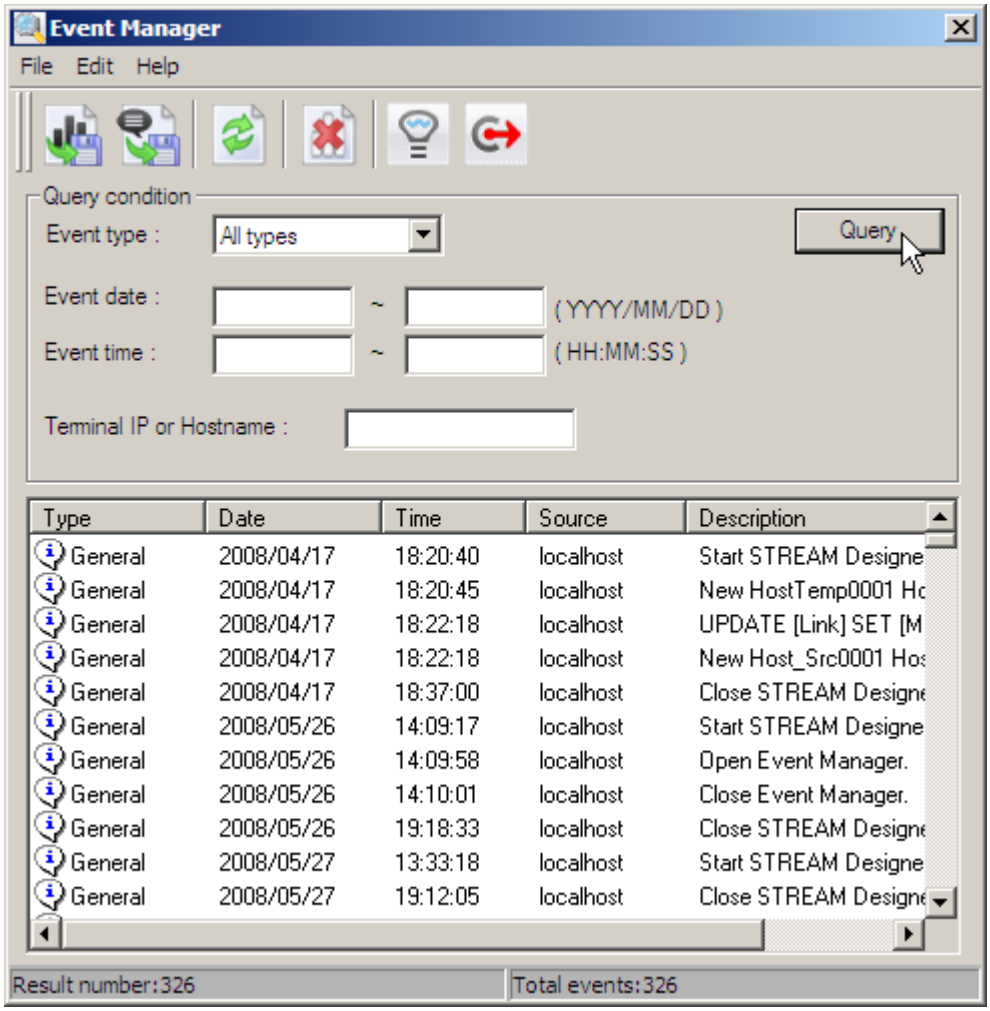
- 9400 Simulator – Tap **Options > Exit** or tap  from the toolbar.
- 9500 Simulator – Tap **Options > Exit**. (below)



Chapter 4

EVENT MANAGEMENT

The Event Manager keeps a record of the activities or events occurred in the *STREAM Designer* or the *STREAM Server*. The system log file is named WS_App.log and stored in C:\CipherLab\Stream\ by default. It will be over-written every time you re-start the *STREAM Designer* or the *STREAM Server*.



Menu Bar	Description
File > Save log as... 	Save the log file to a different file path as a backup file. ▸ By default, the log will always be saved to WS_App.log in C:\CipherLab\Stream\
File > Save query result as... 	Save the query result alone.

File > Exit		Close the Event Manager.
Edit > Clear all events		Clear all the events in the query list manually.
Edit > Refresh		Re-arrange and update the query list by log time.
Help > About Event Manager		View information about the Event Manager.

4.1 OPEN

You can access the Event Manager from inside the *STREAM Designer* itself or the *STREAM Server*.

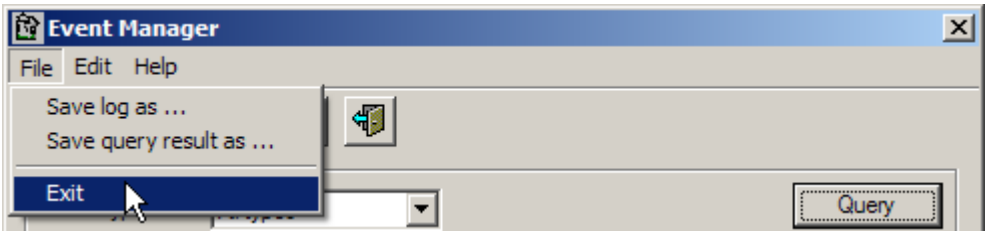
4.2 QUERY

You can request for information based on a number of criteria that describe the event conditions. Set your criteria and click the [Query] button.

Criteria	Description
Event Type	Request based on event type: ▸ All types (default) ▸ General ▸ Error
Event Date	Request based on date, in the format of YYYY/MM/DD.
Event Time	Request based on time, in the format of HH:MM:SS.
Terminal IP or Hostname	Request based on IP address or hostname of the mobile computer.

4.3 EXIT

To close the Event Manager, simply go to **File Menu > Exit** or click the [Exit] button fro the toolbar.



Chapter 5

USING STREAM WIRELESS STUDIO

IN THIS CHAPTER

5.1 SYSTEM MANAGEMENT

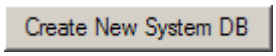
5.1.1 CHANGE SYSTEM LANGUAGE

1) Locate the language file “English.lng” in C:\CipherLab\Stream\Language.
2) Open it in a text editor and edit it in your own language.
3) Save it to a new file and store the file in the same language folder.
4) In the *STREAM Designer*, go to **System Menu > Language**.

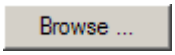
   Multi-language options will be available now. Refer to section 5.3.2 Localization.

5.1.2 CHANGE SYSTEM DATABASE

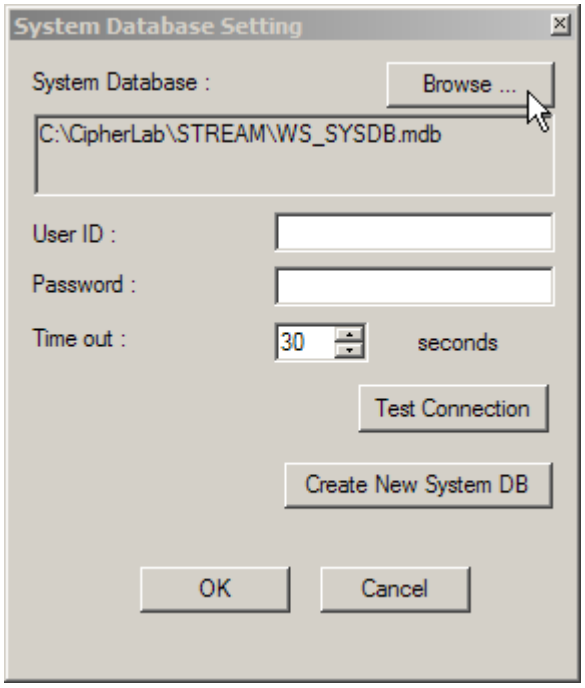
The default system database is WS_SysDB.mdb, which stores back-end resource information, application templates, user accounts and device settings. All the work you do in the *STREAM Designer* can only be accessed and maintained when the same system database is loaded.

1) In the *STREAM Designer*, go to **System Menu > Set System Database**.
2) Click 

to create a new system database.

   To apply a new database or change to an existing database, click 

to select it.
3) Close all the connections and exit the *STREAM Server*.
4) Click [OK] to confirm the change of system database and close the System Database Setting dialog box.
5) Another dialog box will appear to remind you that it will re-start the *STREAM Server*. Click [OK] to close the dialog box.



5.1.3 CONFIGURE THE STREAM SERVER

1) In the *STREAM Designer*, go to **System Menu > Set STREAM Server**.
2) Configure the login prompt and communication settings.
3) The new settings will take effect after restarting the *STREAM Server*.

Warning: The default Telnet port is 6000. Make sure you use the same port number on your mobile computer.

5.1.4 ANALYZE ACTIVITIES

The Event Manager keeps a record of the activities or events occurred in the *STREAM Designer* or the *STREAM Server*.

1) Open the Event Manager from inside the *STREAM Designer* or the *STREAM Server*.
2) Set your criteria and click the [Query] button.
3) Save the current log or query result to a new file.

Note: The system log file will be over-written every time you re-start the STREAM Designer or the STREAM Server.

5.2 USER ACCOUNT

Create a user account for authentication.

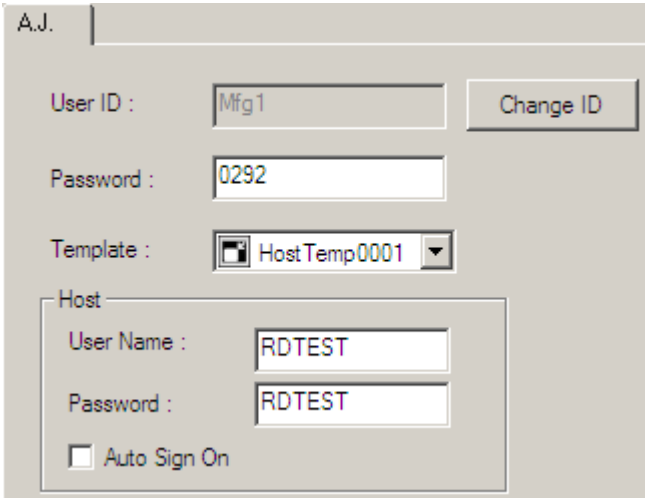
1) In the *STREAM Designer*, go to **File Menu > New > Users** to create a user account. Rename it if necessary.
2) Click the [Change ID] button if you want to change the default ID.
   Enter a unique alphanumeric string, 1~30 characters long and case-sensitive.
   Click the [Change ID] button again to apply the new user ID.
3) Use a password if you have security concerns.
   Enter a unique alphanumeric string, 1~30 characters long and case-sensitive.
4) Associate a specific application template with the user account.

5.2.1 SIGN-ON TO HOST/TELNET SERVER

For Emulation Application, user name and password are required if “Auto Sign On” or “Login Hot Key” is enabled.

5.2.2 EXAMPLE

The user ID and password input here is for A.J. to log in and use a specific template, HostTemp0002.



5.3 DEVICE SETTINGS

A number of important device settings must be configured, such as the barcode/RFID settings, WLAN communications, etc. Create a configuration record to store your device settings.

5.3.1 DOWNLOAD OR IMPORT CONFIGURATION

8000/8300/8400/8500 SERIES

1) In the *STREAM Designer*, go to **File Menu > New > Terminal Setting** to create a configuration record for a specific mobile computer. Rename it if necessary.
2) On the System tab, configure important system settings on the mobile computer. For example, you can change the screen prompts and messages to your own language.
3) On the barcode reader tab, configure barcode settings to meet your needs in collecting data via the barcode reader - 1D CCD/Laser, 1D (Extra) Long Range Laser or 2D reader.

   You can configure the RFID reader settings on the System tab > Miscellaneous > Set RFID.
4) On the Wireless LAN tab, configure WLAN settings for the mobile computer to connect to your computer via a wireless network.
5) Go to **Tools Menu > Download Terminal Setting** to download the configuration record to the mobile computer while selecting **Main Menu > 2. Utilities > 7. Download** on the mobile computer.

Note: For temporary change on the reader settings, you can select [Enable run-time barcode setting] in the application template settings.

9400/9500 SERIES

1) In the *STREAM Designer*, go to **File Menu > New > Terminal Setting** to create a configuration record for a specific mobile computer. Rename it if necessary.
2) On the System tab, configure important system settings on the mobile computer.

   For example, you can change the screen prompts and messages to your own language.
3) On the barcode reader tab, configure barcode settings to meet your needs in collecting data via the barcode reader - 1D CCD/Laser, 1D (Extra) Long Range Laser or 2D reader.

   You can configure the RFID reader settings on the System tab > Barcode Reader > RFID and the [Set RFID] button.
4) For the mobile computer to connect to your computer via a wireless network, you must turn on the power to the 802.11b/g module through the **Wireless Power Manager** and configure the WLAN settings via **Start > Settings > (Control Panel) > Network and Dial-up Connections** on the mobile computer.

5) In the *STREAM Designer*, go to **File Menu > Export 9 Series Terminal Setting As** to export the configuration record to a .W94 or .W95 file.

6) Copy or move the configuration file to the mobile computer via ActiveSync.

7) Run the application program on the mobile computer. (Copy or move the client application package WS9400_CE.exe or WS9500_CE.exe along with the DLL file to the mobile computer via ActiveSync.)

8) Import the device settings via **Options Menu > Utilities > Load Setting** on the mobile computer.

Note: For temporary change on the reader settings, you can select [Enable run-time barcode setting] in the application template settings.

5.3.2 LOCALIZATION (8000/8300/8400/8500)

1) Create a *.lng file and store it in the Language folder (C:\CipherLab\Stream\Language\).

2) Go to **System Menu > Language** and select your language.

3) In the device settings for a specific 8000/8300/8400/8500 Series mobile computer, click [Reset to default Prompts & Messages] on the System tab to change the prompts and messages accordingly.

4) In the associated application template, large font (8x16) must be applied in Forms and Menus for double-byte languages.

5) Download the run-time program (.shx) and appropriate font file to the mobile computer via **System Menu > 6. Load Program** by pressing the 7+9+Power keys.

6) Download the configuration record to the mobile computer via **Main Menu > 2. Utilities > 7. Download** on the mobile computer.

Note: Localization is not applicable to the application programs for 9400/9500 Series because Unicode is not supported.

5.4 DATABASE APPLICATION

You have to define and associate a template with your database source, either an ODBC database or a local database created from scratch.

5.4.1 CHOOSE DATABASE SOURCE

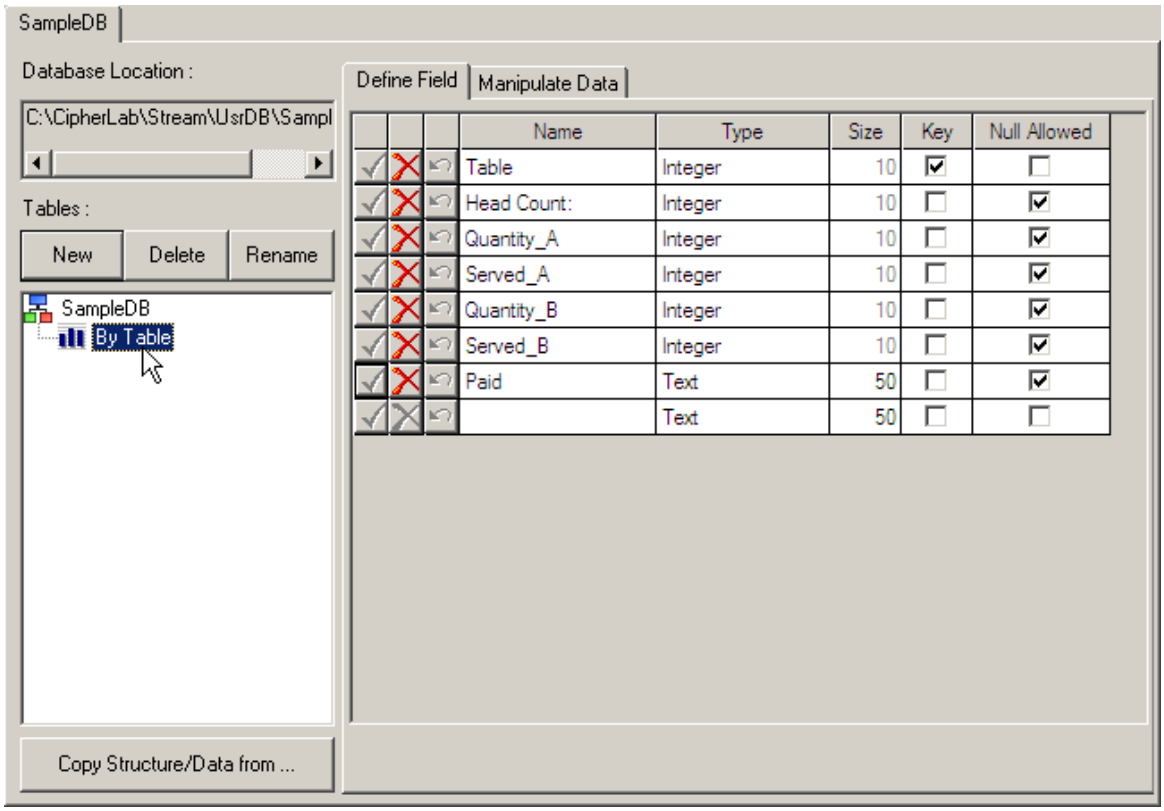
Choose your “Database Source” where data can be accessed and updated.

USE AN ODBC DATABASE

1) In the *STREAM Designer*, go to **File Menu > New > Database Application > ODBC Database** to make use of an ODBC database. Rename it if necessary.
2) On the Database Link tab, describe how to connect to an existing database via ODBC. Click [Test Connection] to verify whether the database is accessible.
3) On the Download Table Schema tab, you can connect to the database and download the tables and fields you need.
4) On the Edit Table Schema tab, you can view and manage the table schema.

CREATE A USER DATABASE

1) In the *STREAM Designer*, go to **File Menu > New > Database Application > User-Defined Database** to create a new database. Rename it if necessary.



2) Click [New] to create an empty table. Rename it if necessary.

   Click [Copy Structure/Data from] to create a table based on the structure and data imported from another database.

3) On the Define Field tab, create the fields one by one. Click  to apply the settings and save them to the table.

4) On the Manipulate Data tab, you can leave the table empty or click [Import Data] to import data from an existing table.

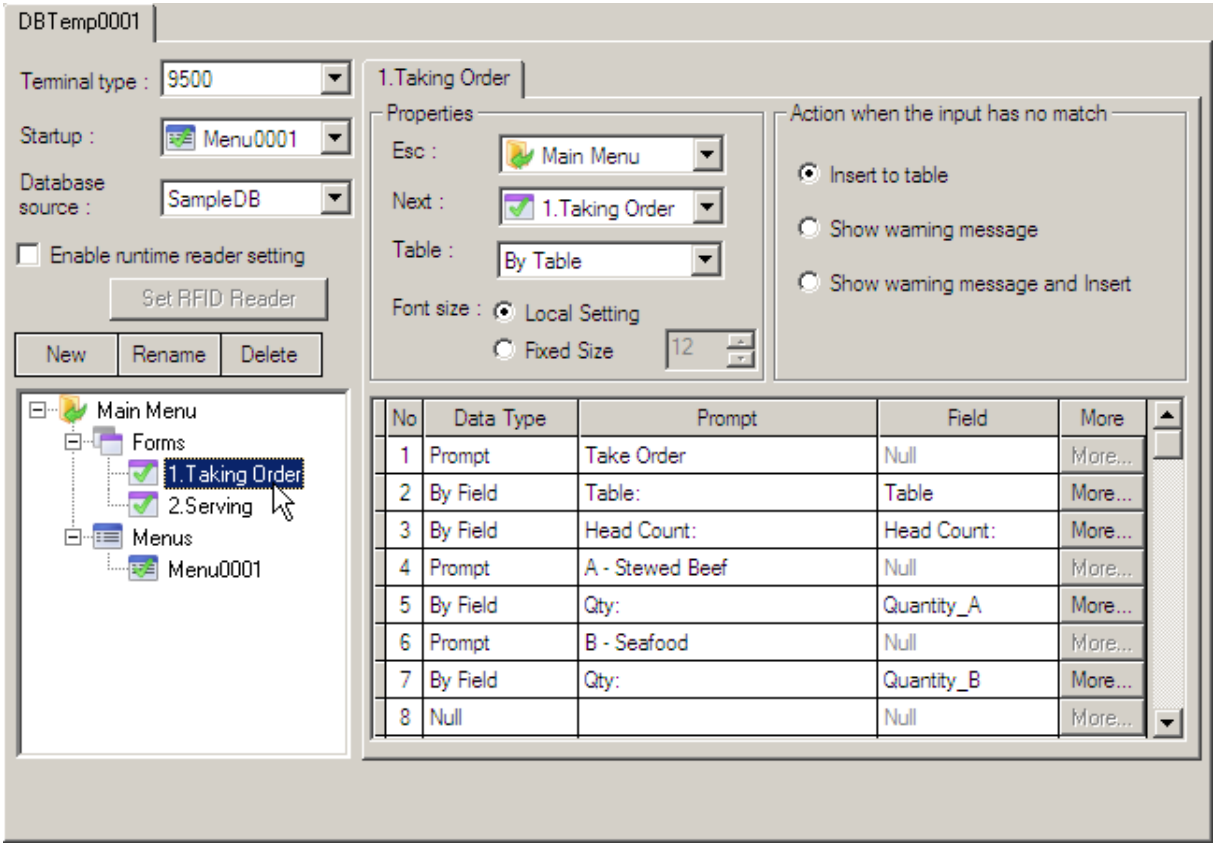
   During data collection, you can update an existing record. If the data collected has no match in the table, it depends on the [Action when the input has no match] setting in the form.

   When the job is done, you can click [Export data] to save the data. If the data is not desired any more, simply click [Delete all data] to clear the table.

Warning: At least one key field is required and must be referred in your form. It will affect the settings of a database application template if you delete a database, table or field that is referred to.

5.4.2 CREATE A TEMPLATE

1) In the *STREAM Designer*, go to **File Menu > New > Database Application > Database App Template** to create a template for database application. Rename it if necessary.



2) Configure the template to meet your needs. The work here is pretty much the same as what you used to do with the Wireless Application Generator - the Form, Menu, and Lookup tabs.

- Choose which mobile computer to use. For example, select 9500 for 9500CE.
- Decide whether or not the barcode/RFID reader settings can be changed during run-time.
- Specify the program sequences on the wireless mobile computer after starting a Telnet session and logging in successfully.
- Create your menus and forms. Associate one form and its fields to one table and its fields in your database.

Note: Select the check box of [Enable run-time barcode setting] so that you can change the behavior of barcode/RFID reader and associated settings on the mobile computer during run-time. When you log out, the reader settings will remain unchanged.

5.5 EMULATION APPLICATION

You have to define and associate a template with a remote host or telnet server that runs VT100/220 or 5250 terminal emulation.

5.5.1 CHOOSE HOST SOURCE

Choose your “Host Source” where data can be accessed and updated.

1) In the *STREAM Designer*, go to **File Menu > New > Emulation Application > Host/Server Source** to give details of a host link. Rename it if necessary.
2) On the Capture Screen tab, capture host screens that need editing.
3) On the Edit Screen tab, define input fields for reformatting use.

5.5.2 CREATE A TEMPLATE

1) In the *STREAM Designer*, go to **File Menu > New > Emulation Application > Emulation App Template** to create a template for emulation application. Rename it if necessary.
2) Configure the template to meet your needs. The work here is pretty much the same as what you used to do with the CipherNet programs.
   - Choose which mobile computer to use.
   - Decide whether or not the barcode/RFID reader settings can be changed during run-time.
   - Map the physical keys to popular host keys.
   - Reformat the host screens if necessary.
   - Configure other terminal emulation settings.

Note: Select the check box of [Enable run-time barcode setting] so that you can change the behavior of barcode/RFID reader and associated settings on the mobile computer during run-time. When you log out, the reader settings will remain unchanged.

5.6 OPERATION ON THE MOBILE COMPUTER

When all is done with the *STREAM Designer*, launch the *STREAM Server*, and then, the corresponding Simulator to debug program sequences step by step - powering ON, starting a Telnet session, logging in, and running the program sequences designed in your template.

If the simulation is found satisfactory, proceed to download the run-time program and device settings to the mobile computer. Go on to start a Telnet session by logging in on the real mobile computer.

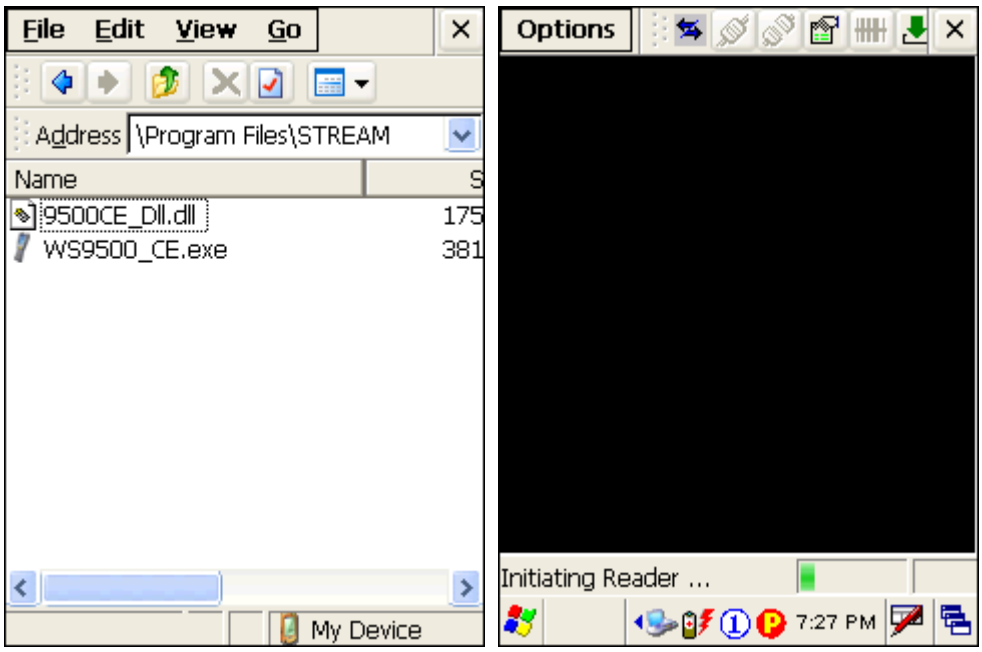
Here we give a demonstration of the 9500CE mobile computer to show how it works.

5.6.1 LOAD PROGRAM & SETTINGS

Before we start with data collection application, you have created a database, an application template, a user account for login, and configure necessary device settings in the *STREAM Designer*.

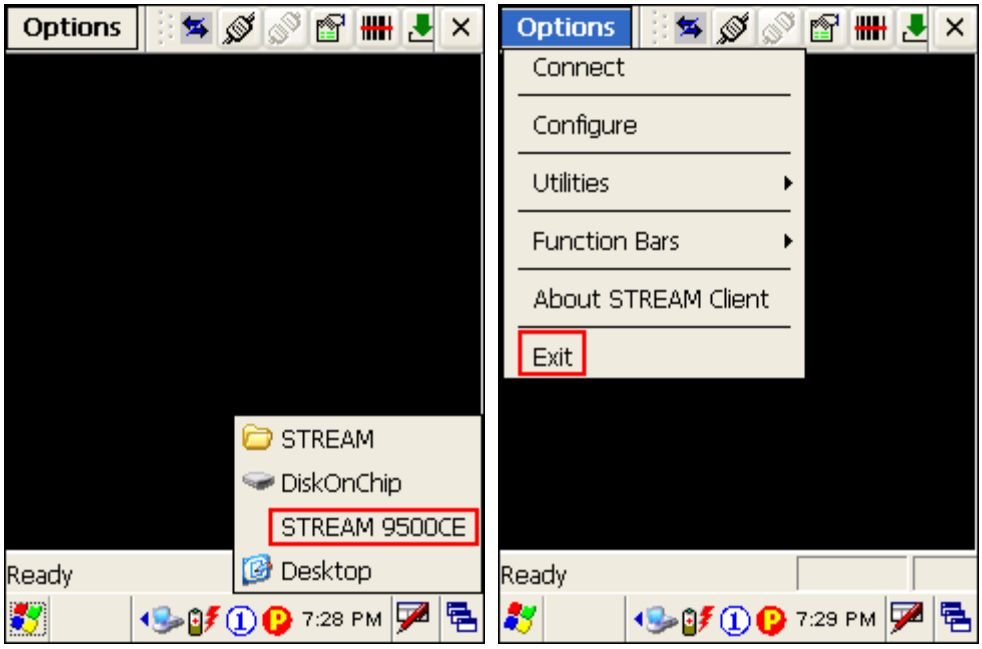
1) First, make sure the client application has been installed to the mobile computer via ActiveSync.

   If so, double-tap the application program (.exe). Otherwise, go to **Tools Menu > Install STREAM CE Client** to install it.

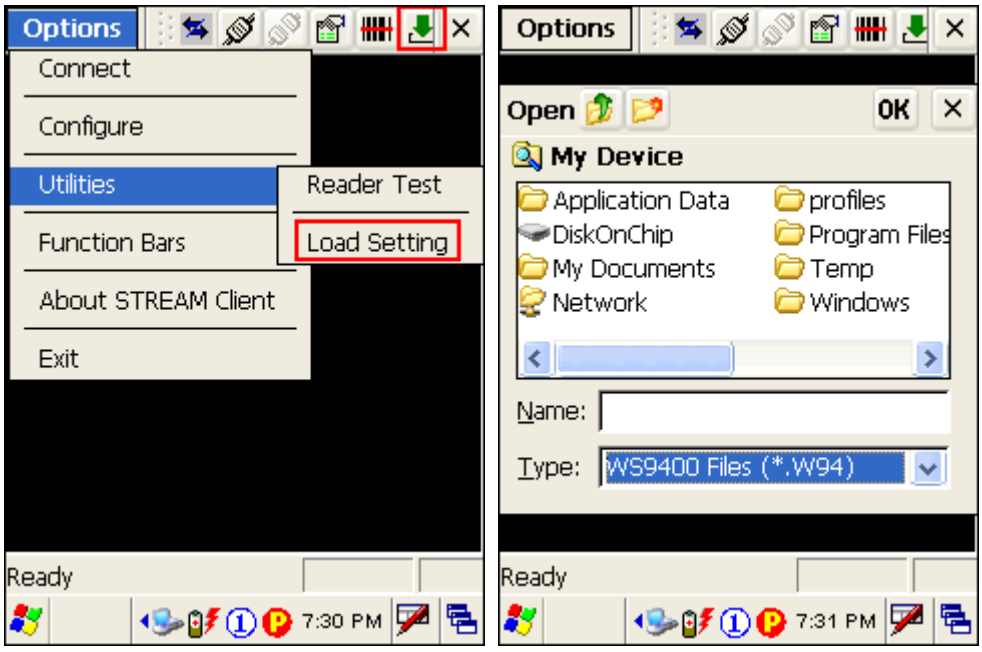


   To restore the minimized window of the application, tap  on the taskbar (left below). Select [STREAM 9500CE] from the pop-up menu.

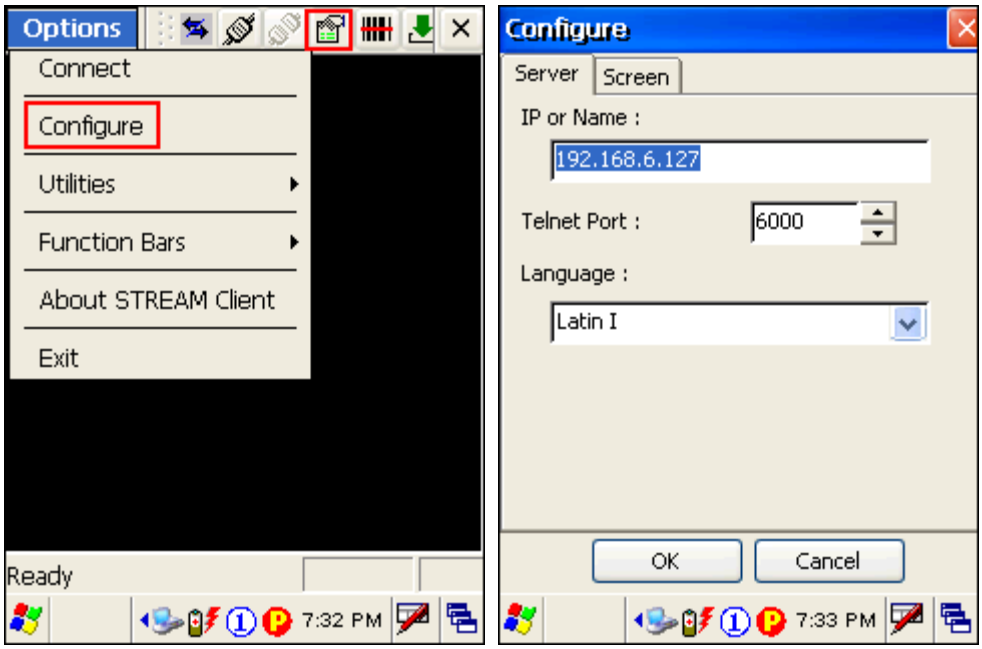
   To exit the application, tap **Options > Exit** or tap  from the toolbar (right below).



2) In the *STREAM Designer*, export the 9500 configuration file to a .W95 file, and copy it to the mobile computer via ActiveSync. Load the new device settings via **Options Menu > Utilities > Load Setting**.



3) If you need to modify the server IP and Telnet port number, tap **Options Menu > Configure > Load Setting**.

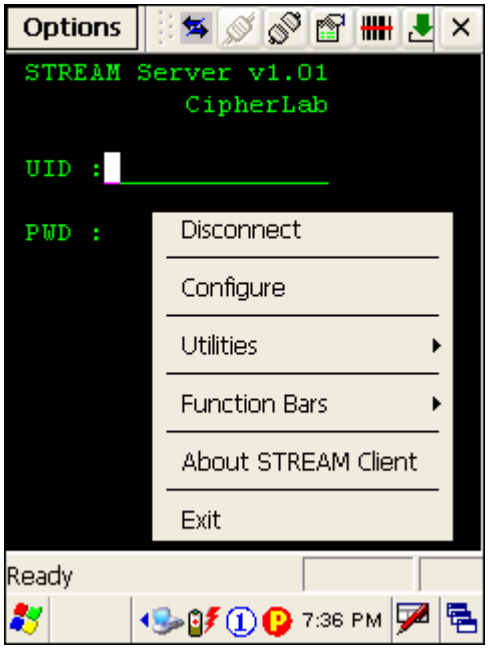


Warning: The server IP address and Telnet port number can be modified on the mobile computer directly.

9400/9500 CLIENT - MENU BAR & TOOLBAR

You may tap  to hide or show the **Options Menu**.

When the **Options Menu** is inaccessible from the menu bar, tap and hold anywhere blank on the screen and the **Options Menu** will pop up as shown below.



Icons from left to right	Description
	To hide or show the Options menu. ▸ Tap and hold it so that you can horizontally drag the toolbar to relocate it.
Options > Connect	To start a Telnet session.
Options > Disconnect	To end a Telnet session.
Options > Configure	To configure server and screen settings.
Options > Utilities > Reader Test	To perform reader test.
Options > Utilities > Load Setting	To load device settings.
Options > Function Bars	To show or hide the function bars – ▸ Menu Bar ▸ Tool Bar ▸ Status Bar
Options > About STREAM Client	To view information about the STREAM Wireless Studio client application.
Options > Exit	To exit the STREAM Wireless Studio client application.

TIPS FOR 8000/8300/8400/8500 SERIES

First, make sure the run-time program and associated device settings have been downloaded to the specific mobile computer.

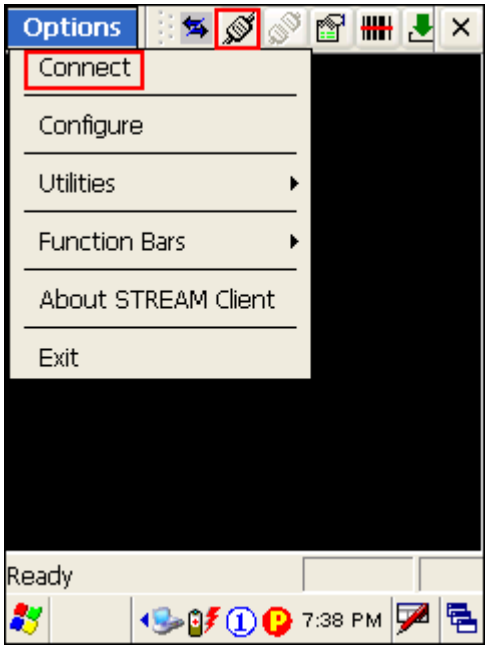
- Operation on the mobile computer to download program - via **System Menu > 6. Load Program** by pressing the 7+9+Power keys
- Operation on the mobile computer to download settings - via **Main Menu > 2. Utilities > 7. Download**.

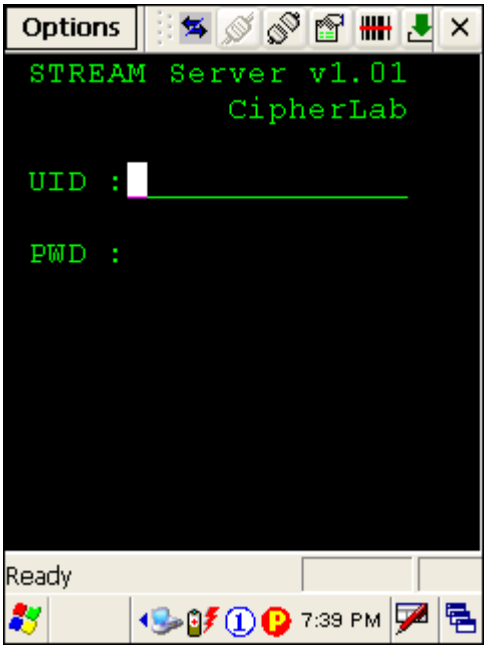
If all is ready, launch the *STREAM Server*. Then, go back to the **Main Menu > 1. Telnet** on the mobile computer and press [ENTER] to start a Telnet session by logging in.

5.6.2 LOGIN TO USE AN TEMPLATE

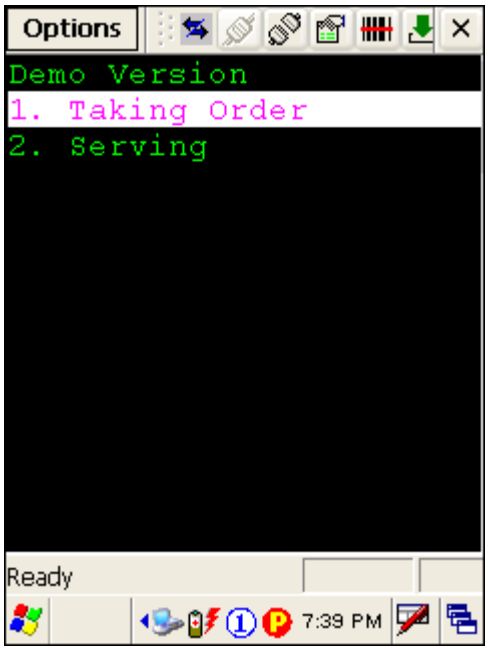
1) Tap **Options Menu > Connect** to start a Telnet session.

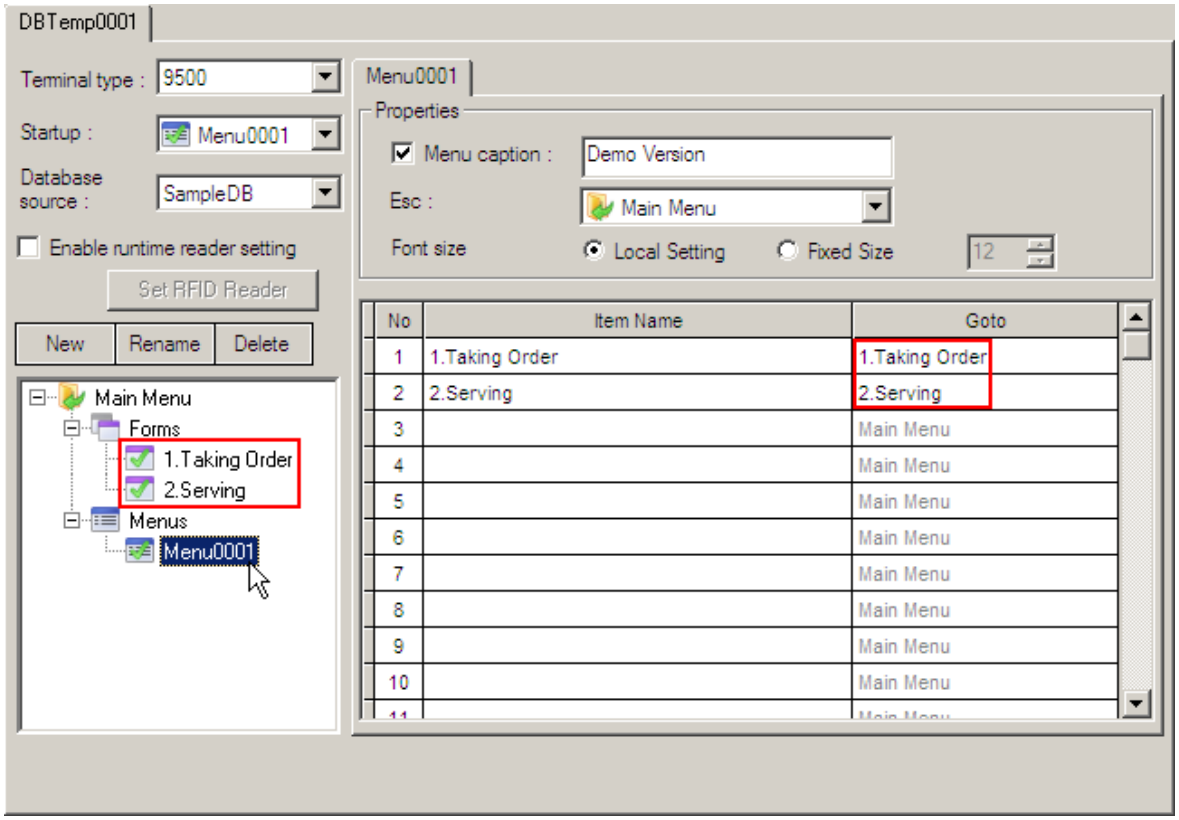
   In the login screen, input the user ID and password to log in and use the application template "DBTemp0001".





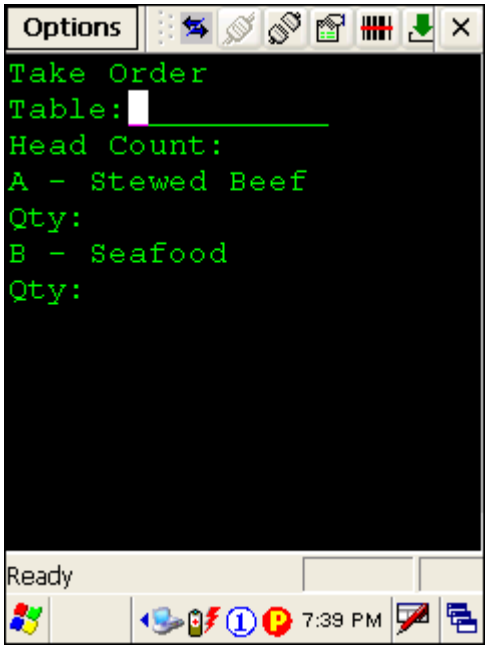
2) Our application template has a user menu as shown below. It leads to two user forms: 1. Taking Order, 2. Serving.



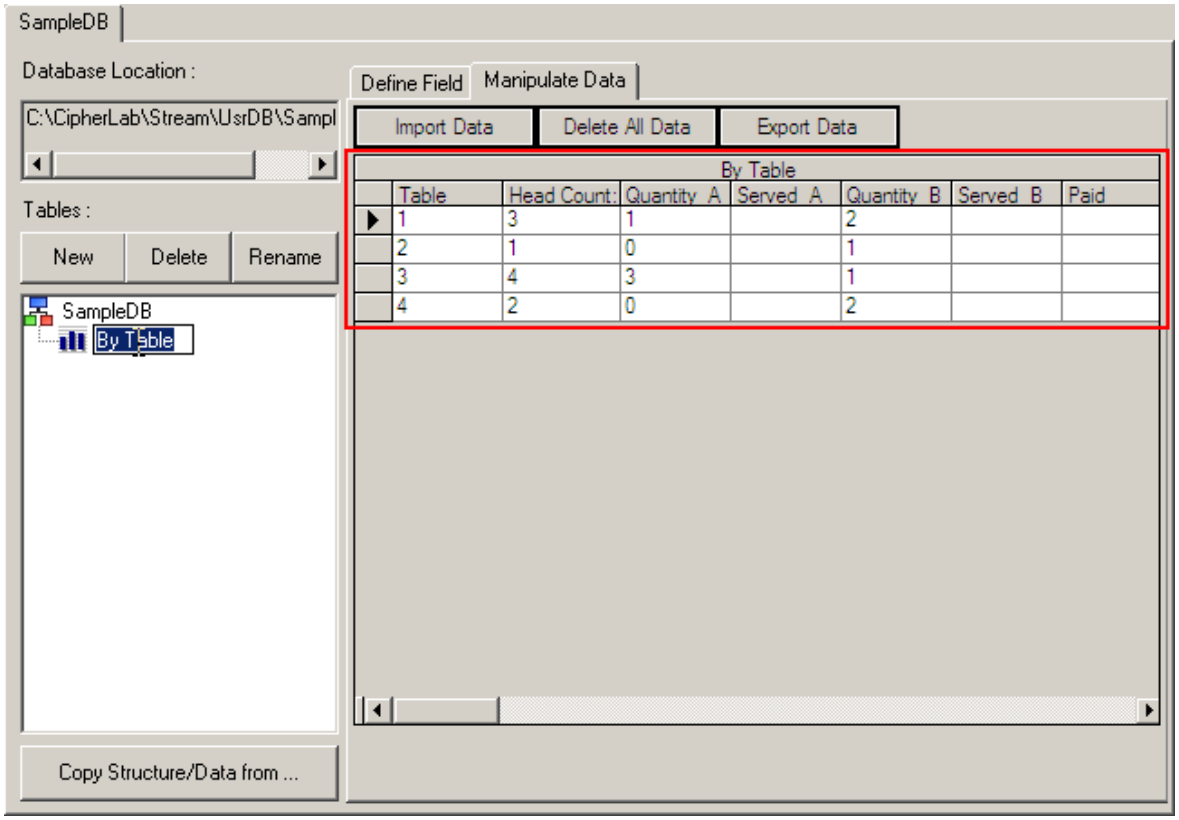

DBTemp0001
Terminal type :
9500
Startup :
Menu0001
Database source :
SampleDB
Enable runtime reader setting
Set RFID Reader
New
Rename
Delete
Main Menu
Forms
1.Taking Order
2.Serving
Menus
Menu0001
Menu0001
Properties
Menu caption :
Demo Version
Esc :
Main Menu
Font size
Local Setting
Fixed Size
12
No
Item Name
Goto
1
1.Taking Order
1.Taking Order
2
2.Serving
2.Serving
3
Main Menu
4
Main Menu
5
Main Menu
6
Main Menu
7
Main Menu
8
Main Menu
9
Main Menu
10
Main Menu

5.6.3 COLLECT DATA

1) Select "1. Taking Order" from the user menu and enter the user form "1. Taking Order" as shown below. The contents on the mobile computer screen are decided by the Form setting in the application template. See section 5.4.2 Create a Template.

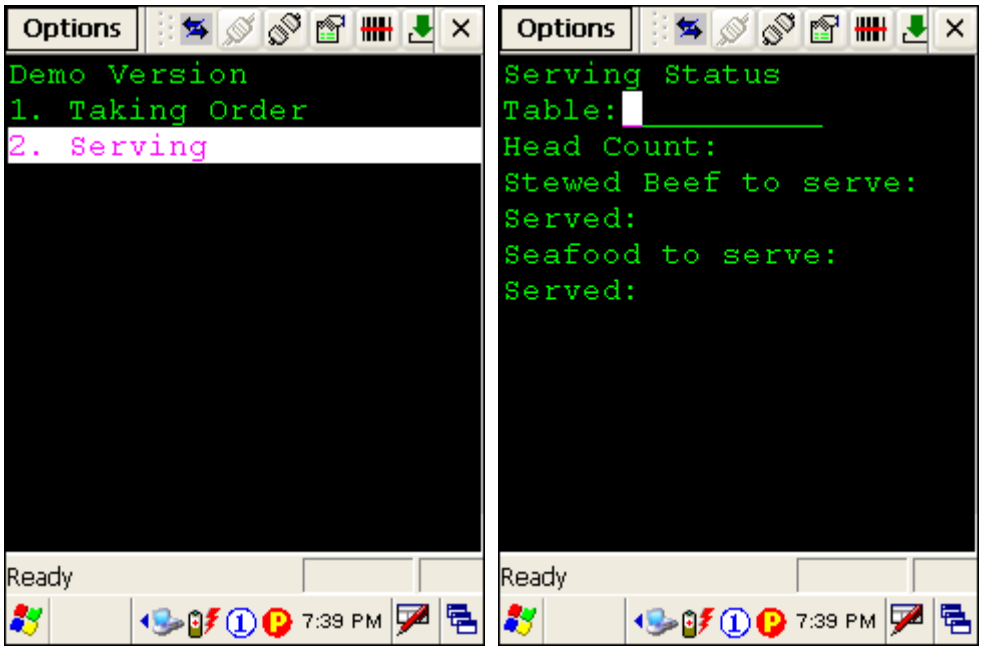


Input a number of records, and you will find the database is updated as well.

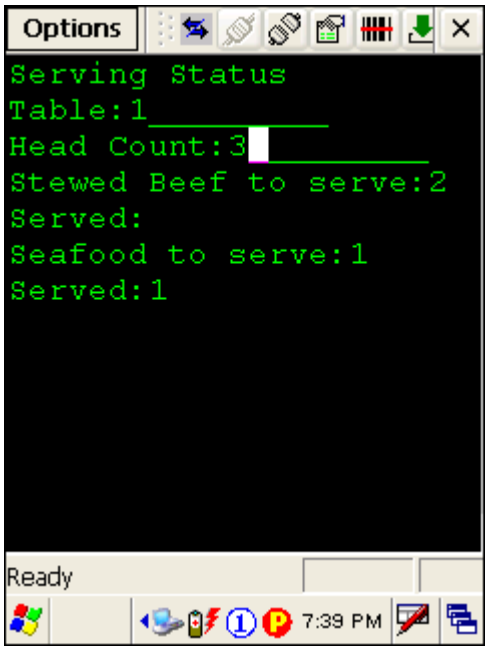


2) Press [ESC] on the mobile computer to return to the user menu.

3) Let's check the serving status of “table 1”. Select "2. Serving" from the user menu and enter the user form "2. Serving".



4) Input 1 in the first field – “Table:___”. The information of “table 1” will be displayed. You can tell that only one of the two meals ordered at table 1 has been served.



5) Press [ESC] on the mobile computer to return to the user menu.

Appendix I

SCAN ENGINE SETTINGS

The **STREAM Wireless Studio** allows configuring the following reader types, depending on the module equipped on your mobile computer:

	8000	8300	8400	8500	9400	9500CE
Barcode Reader						
CCD Scan Engine	✓	✓	✓	✓	✓	✓
Laser Scan Engine	✓	✓	✓	✓	✓	✓
Long Range Laser Scan Engine (LR)	×	✓	×	✓	×	✓
Extra Long Range Laser Scan Engine (ELR)	×	×	×	✓	×	✓
2D Scan Engine	×	×	×	✓	✓	✓
RFID Reader						
ACG_RFID Module v0.9	×	×	×	✓	×	×
ACG_RFID Module v1.0	×	✓	×	✓	×	✓
TI_RFID Module v1.0.A	×	×	×	×	✓	×

Options of different reader combination are allowed, such as 1D+RFID and 2D+RFID. For each combination, both readers can be initialized and ready for scanning at the same time (dual mode operation). For example, if you press the [Scan] button while running the **STREAM Wireless Studio** run-time or client application on the mobile computer, it will read a barcode in position or an RFID tag in proximity depending on which one comes first.

Note: You cannot have 1D+2D scan engines installed on the mobile computer because they are both barcode readers!

SYMBOLOGIES SUPPORTED

Varying by the scan engine installed, the supported symbologies or tag types are listed below. For details on configuring associated settings, please refer to each Appendix separately.

	CCD, Laser	LR, ELR	2D
Codabar	✓	✓	✓
Code 11	×	×	✓
Code 93	✓	✓	✓
Composite Code	×	×	✓

MSI		✓	✓	✓
Plessey		✓	×	×
Postal Codes		×	×	✓
Telepen		✓	×	×
Code 128	Code 128	✓	✓	✓
	GS1-128	✓	✓	✓
	ISBT-128	×	✓	✓
Code 2 of 5	Industrial 25 (i.e. Discrete 25)	✓	✓	✓
	Interleaved 25	✓	✓	✓
	Matrix 25	✓	×	×
Code 3 of 9	Code 39	✓	✓	✓
	Trioptic Code 39	×	✓	✓
	Italian Pharmacode (i.e. Code 32)	✓	✓	✓
	French Pharmacode	✓	×	×
EAN/UPC	EAN-8	✓	✓	✓
	EAN-13	✓	✓	✓
	Bookland EAN (i.e. ISBN)	✓	✓	✓
	UPC-E0	✓	✓	✓
	UPC-E1	×	✓	✓
	UPC-A	✓	✓	✓
GS1 Databar	GS1 Databar-14	✓	✓	✓
	GS1 Databar Limited	✓	✓	✓
	GS1 Databar Expanded	✓	✓	✓
2D Symbologies	PDF417	×	×	✓
	MicroPDF417	×	×	✓
	Data Matrix	×	×	✓
	Maxicode	×	×	✓
	QR Code	×	×	✓

RFID TAGS SUPPORTED

The RFID reader supports read/write operations depending on the tags. The supported labels include ISO 15693, Icode®, ISO 14443A, and ISO 14443B.

Currently, the performance of some tags has been confirmed, and the results are listed below for your reference. The results found with RFID module version 1.0 are different from those found with version 0.9 or older versions.

Note: You should study the specifications of RFID tags before use.

ACG_RFID Module Version 1.0		UID Only	Read Page	Write Page
ISO 14443A	Mifare Standard 1K	✓	✓	✓
	Mifare Standard 4K	✓	✓	✓
	Mifare Ultralight	✓	✓	✓
	Mifare DESFire	✓	---	---
	Mifare S50	✓	✓	✓
	SLE44R35	✓	---	---
	SLE66R35	✓	✓	✓
ISO 14443B	SRIX 4K	✓	✓	✓
	SR176	✓	✓	✓
ISO 15693	ICODE SLI	✓	✓	✓
	SRF55V02P	✓	---	---
	SRF55V02S	✓	---	---
	SRF55V10P	✓	---	---
	TI Tag-it HF-I	✓	✓	✓
ICODE® (Phillips)	ICODE	✓	✓	✓

ACG_RFID Module Version 0.9		UID Only	Read Page	Write Page
ISO 14443A	Mifare Standard 1K	✓	---	---
	Mifare Standard 4K	✓	---	---
	Mifare DESFire	✓	---	---
	Mifare S50	✓	---	---
	SLE44R35	✓	---	---
	SLE66R35	✓	---	---
ISO 15693	ICODE SLI	✓	✓	✓
	SRF55V02P	✓	✓	✓

	SRF55V02S	✓	---	---
	SRF55V10P	✓	✓	✓
	TI Tag-it HF-I	✓	✓	✓
	ST LRI64	✓	✓	✓
	ST LRI512	✓	✓	✓
Tagit®	Tagit	✓	✓	✓
ICODE® (Phillips)	ICODE	✓	✓	✓

TI_RFID Module Version 1.0.A		**UID Only**	**Read Page**	**Write Page**
ISO 14443A	Mifare Standard 1K	✓	---	---
	Mifare Standard 4K	✓	---	---
	Mifare Ultralight	✓	---	---
	Mifare DESFire	✓	---	---
	Mifare S50	✓	---	---
	SLE44R35	✓	---	---
	SLE66R35	✓	---	---
ISO 14443B	SRIX 4K	---	---	---
	SR176	---	---	---
ISO 15693	ICODE SLI	✓	✓	✓
	SRF55V02P	✓	✓	✓
	SRF55V02S	✓	---	---
	SRF55V10P	✓	✓	✓
	TI Tag-it HF-I	✓	✓	✓
	ST LRI512	✓	---	---
Tag-it®	Tag-it	✓	✓	✓
ICODE® (Phillips)	ICODE	---	---	---

Appendix II

CCD/LASER SCAN ENGINE

The tables below list reader settings as well as symbology settings for the CCD or Laser scan engine.

READER SETTINGS TABLE

CCD/Laser	Description	Default
Time-out		**3 sec.**
1~255 (second)	Set the maximum time for decoding to continue during a scan attempt. It applies to the following scan modes only – ▸ Aiming mode ▸ Laser mode ▸ Auto Off mode ▸ Auto Power Off mode	
Scan Mode		**Laser mode**
Continuous Mode	Non-stop scanning ▸ To decode the same barcode repeatedly, move away the scan beam and target it at the barcode for each scanning.	
Test Mode	Non-stop scanning ▸ Capable of decoding the same barcode repeatedly	
Repeat Mode	Non-stop scanning ▸ Capable of re-transmitting barcode data if triggering within one second after a successful decoding	
Momentary Mode	Hold down the scan trigger to start with scanning. ▸ The scanning won't stop until you release the trigger.	
Alternate Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until you press the trigger again.	
Aiming Mode	Press the scan trigger to aim at a barcode. Within one second, press the trigger again to decode the barcode. ▸ The scanning won't stop until (a) a barcode is decoded or (b) the pre-set timeout expires.	
Laser Mode	Hold down the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read, (b) the preset timeout expires, or (c) you release the trigger.	
Auto Off Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read or (b) the preset timeout expires.	

Auto Power Off Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until the preset timeout expires, and, the preset timeout period re-counts after each successful decoding.
Read Redundancy	**None**
None	No redundancy means one successful decoding will make the reading valid and induce the "READER Event".
One time, Two times, or Three times	The higher the reading security is (that is, the more redundancy the user selects), the slower the reading speed gets. ▸ If "Three Times" is selected, it will take a total of four consecutive successful decodings of the same barcode to make the reading valid.

SYMBOLOGY SETTINGS TABLE

CCD/Laser	Description	Default
Codabar		**Enable**
Select Start/Stop Characters	If "Transmit Start/Stop Characters" is desired, select one set: ▸ abcd / abcd ▸ abcd / tn*e ▸ ABCD / ABCD ▸ ABCD / TN*E	abcd/abcd
Transmit Start/Stop Characters	Decide whether to include the start/stop characters in the data being transmitted.	No
Code 128		**Enable**
GS1-128		**Enable**
Transmit Code ID	Decide whether to include Code ID (“]C1”) will be included in the data being transmitted.	No
Field Separator	Decide whether to replace the field separator. For example, type the desired character “;” (semicolon) as the new field separator.	No
Industrial 25 (= Discrete 25)		**Enable**
Start/Stop Selection	This decides the readability of all 2 of 5 symbology variants. For example, flight tickets actually use an Industrial 2 of 5 barcode but with Interleaved 2 of 5 start/stop pattern. In order to read this barcode, the start/stop pattern selection parameter of Industrial 2 of 5 should set to "Interleaved 25".	Industrial 25
Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Select Length	▸ One or two fixed lengths ▸ Range	4~127
Interleaved 25		**Enable**
Start/Stop Selection	Refer to Industrial 25.	Interleaved 25
Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Select Length	▸ One or two fixed lengths ▸ Range	4~127
Matrix 25		**Enable**
Start/Stop Selection	Refer to Industrial 25.	Matrix 25

Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Select Length	▸ One or two fixed lengths ▸ Range	4~127
French Pharmacode		**Disable**
*Transmit Start/Stop Character	Controlled by the same setting of Code 39.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Italian Pharmacode (= Code 32)		**Disable**
*Transmit Start/Stop Character	Controlled by the same setting of Code 39.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Code 39		**Enable**
Transmit Start/Stop Character	Decide whether to include the start/stop characters "*" in the data being transmitted.	No
Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Code 39 Full ASCII	Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable
Code 93		**Enable**
MSI		**Disable**
Verify Checksum	Select one of the three calculation formulas to verify the checksum. If the checksum is incorrect, the barcode will not be accepted. ▸ Single Modulo 10 ▸ Double Modulo 10 ▸ Modulo 11 & 10	Single Modulo 10
Transmit Checksum	Decide whether to include the checksum in the data being transmitted. ▸ Last digit not transmitted ▸ Both digits transmitted ▸ Both digits not transmitted	Both digits transmitted
Select Length	▸ One or two fixed lengths ▸ Range	4~127
Negative Barcode		**Disable**
Plessey		**Disable**

Convert to UK Plessey	When applied, each occurrence of the character "A" in the barcode data will be replaced by the character "X".	No
Transmit Checksum	Decide whether to include the checksum (2 digits) in the data being transmitted.	Yes
Telepen		**Disable**
Original Telepen (Numeric)	The original Telepen includes numeric characters.	Yes
AIM Telepen (Full ASCII)	AIM Telepen (Full ASCII) includes all the alphanumeric and special characters.	No
GS1 Databar-14		**Disable**
Transmit Code ID	Decide whether to include Code ID ("]e0") will be included in the data being transmitted.	Yes
Transmit Application ID	Decide whether to include the Application ID ("01") in the data being transmitted.	Yes
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
GS1 Databar Limited		**Disable**
Transmit Code ID	Refer to GS1 Databar-14.	Yes
Transmit Application ID	Refer to GS1 Databar -14.	Yes
Transmit Checksum	Refer to GS1 Databar -14.	Yes
GS1 Databar Expanded		**Disable**
Transmit Code ID	Refer to GS1 Databar -14.	Yes
EAN-8		**Enable**
Convert to EAN-13	The EAN-8 barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Addon 2 / Addon 5	Decide whether to decode EAN-8 with supplementals.	No
EAN-13 / UPC-A		**Enable**
ISBN Conversion	The EAN-13 barcode starting with 978 and 979 will be converted to ISBN.	No
ISSN Conversion	The EAN-13 barcode starting with 977 will be converted to ISSN.	No
GTIN for EAN-13	The EAN-13 barcode will be expanded into 14-digit Global Trade Item Number (GTIN).	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Addon 2 / Addon 5	Decide whether to decode EAN-13/UPC-A with supplementals.	No

(UPC-A) Convert to EAN-13	The UPC-A barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	Yes
(UPC-A) Transmit Checksum	Decide whether to include the UPC-A checksum in the data being transmitted.	Yes
(UPC-A) Transmit System Number	Decide whether to include the UPC-A System Number in the data being transmitted.	Yes
UPC-E		**Enable**
Convert to UPC-A	The UPC-E barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
Transmit Checksum	Decide whether to include the UPC-E checksum in the data being transmitted.	Yes
Transmit System Number	Decide whether to include the UPC-E System Number in the data being transmitted.	No
Addon 2 / Addon 5	Decide whether to decode UPC-E with supplementals.	No
*It cannot read UPC-E1 barcode!		

Appendix III

LR/ELR LASER SCAN ENGINE

The tables below list reader settings as well as symbology settings for the Long Range Laser (LR) or Extra Long Range Laser (ELR) scan engine.

READER SETTINGS TABLE

LR/ELR	Description	Default
Aiming Duration	Decide whether to have the aiming dot. When you press the [SCAN] button, the scan engine will emit a red dot for aiming. It will stay on until it times out or you press the [SCAN] button again. Then, it will emit a scan beam. ▸ 0~9, in units of 1 second. ▸ Enter 0 if aiming is not desired.	**No aiming**
Decode Time-out	Set the maximum time for decoding to continue during a scan attempt. ▸ 5~99, in units of 0.1 second.	**3.0 sec.**
Transmit AIM Code ID	Decide whether to include AIM Code ID in the beginning of data. Each AIM Code ID contains the three-character string "**]cm**" – ▸] = Flag Character (ASCII 93) ▸ c = Code Character (see below) ▸ m = Modifier Character (see below)	**Disable**

AIM CODE ID – CODE CHARACTERS

Code Character	Code Type
A	Code 39
C	Code 128
E	UPC/EAN
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 25
M	MSI
S	Discrete 25, IATA 2 of 5
X	Code 39 Trioptic, Bookland EAN

AIM CODE ID – MODIFIER CHARACTERS

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Checksum has been verified.
	3	Checksum has been verified and stripped.
	4	Full ASCII conversion has been performed.
	5	Result of option values 1 and 4.
	7	Result of option values 3 and 4.
Code 128	0	Standard data packet. No Function Code 1"FNC1" in the first character position.
	1	Function Code 1"FNC1" in the first character position.
	2	Function Code 1"FNC1" in the second character position.
Interleaved 25	0	No check digit processing.
	1	Checksum has been verified.
	3	Checksum has been verified and stripped.
Codabar	0	No check digit processing.
Code 93	0	Always transmit 0.
MSI	0	Modulo 10 check digit verified and transmitted.
	1	Modulo 10 check digit verified but not transmitted.
Discrete 25	0	Always transmit 0.
UPC/EAN	0	Standard data packet in full EAN country code format, which is 13 digits for UPC-A and UPC-E (not including supplemental data).
	1	Two-digit supplemental data only.
	2	Five-digit supplemental data only.
	4	EAN-8 data packet.
	A UPC-A with Addon 2 barcode, 012345678905-10, is transmitted to the host as a 21-character string, **]E0**0012345678905**]E1**10.	
Bookland EAN	0	Always transmit 0.
Trioptic Code 39	0	Always transmit 0.

SYMBOLOGY SETTINGS TABLE

LR/ELR/2D	Description	Default
Codabar		**Enable**
CLSI Editing	When applied, the CLSI editing strips the start/stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar barcode. ▸ The 14-character barcode length does not include start/stop characters.	No
NOTIS Editing	Decide whether to include the start/stop characters in the data being transmitted. ▸ NOTIS Editing is to strip the start/stop characters, i.e. to disable "Transmit Start/Stop Characters".	No
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	4~55
Code 128		**Enable**
GS1-128		**Enable**
Field Separator	Decide whether to replace the field separator. For example, type the desired character ";" (semicolon) as the new field separator.	No
ISBT 128		**Enable**
Industrial 25 (= Discrete 25)		**Enable**
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	4~55
Interleaved 25		**Enable**
Convert to EAN-13	Convert a 14-character barcode into EAN-13 if the following requirements are met: ▸ The barcode must have a leading 0 and a valid EAN-13 check digit.	No
Verify Checksum	Decide whether to verify the checksum. If desired, select one of the algorithms below. If the checksum is incorrect, the barcode will not be accepted. ▸ No ▸ USS algorithm ▸ OPCC algorithm	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted. ▸ "Verify Checksum" must be enabled so that the checksum can be left out (= "Transmit Checksum" disabled).	No

<table>
<tr><td>Select Length</td><td>▸ Any Length
▸ One or two fixed lengths
▸ Range (1~55)</td><td>4~55</td></tr>
<tr><td colspan="2">Code 39</td><td>Enable</td></tr>
<tr><td>Convert to Code 32</td><td>Convert to Italian Pharmacode.</td><td>No</td></tr>
<tr><td>Code 32 Prefix</td><td>Prefix character "A" to Code 32 barcodes.</td><td>No</td></tr>
<tr><td>Verify Checksum</td><td>Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.</td><td>No</td></tr>
<tr><td>Transmit Checksum</td><td>Decide whether to include the checksum in the data being transmitted.
▸ "Verify Checksum" must be enabled so that the checksum can be left out (= "Transmit Checksum" disabled).</td><td>No</td></tr>
<tr><td>Code 39 Full ASCII</td><td>Code 39 Full ASCII includes all the alphanumeric and special characters.</td><td>Disable</td></tr>
<tr><td>Select Length</td><td>▸ Any Length
▸ One or two fixed lengths
▸ Range (1~55)</td><td>4~55</td></tr>
<tr><td colspan="2">Trioptic Code 39</td><td>Disable</td></tr>
<tr><td colspan="2">Code 93</td><td>Enable</td></tr>
<tr><td>Select Length</td><td>▸ Any Length
▸ One or two fixed lengths
▸ Range (1~55)</td><td>4~55</td></tr>
<tr><td colspan="2">MSI</td><td>Enable</td></tr>
<tr><td>Verify Checksum</td><td>If Two Check Digits option is selected, an additional verification is required to ensure integrity. Select one of the algorithms below. If the checksum is incorrect, the barcode will not be accepted.
<table>
<tr><th>Check Digit</th><th>Algorithm</th></tr>
<tr><td>One Check Digit</td><td>Single Modulo 10</td></tr>
<tr><td>Two Check Digits</td><td>▸ Mod 10/Mod 11
▸ Mod 10/Mod 10</td></tr>
</table></td><td>Single Modulo 10</td></tr>
<tr><td>Transmit Checksum</td><td>Decide whether to include the checksum in the data being transmitted.</td><td>No</td></tr>
<tr><td>Select Length</td><td>▸ Any Length
▸ One or two fixed lengths
▸ Range (1~55)</td><td>4~55</td></tr>
<tr><td colspan="2">GS1 Databar</td><td>---</td></tr>
<tr><td>GS1 Databar -14</td><td rowspan="2">"Convert to UPC/EAN" only applies to GS1 Databar -14 and GS1 Databar Limited barcodes not decoded as part of a</td><td>See below.</td></tr>
<tr><td>GS1 Databar Limited</td><td>See below.</td></tr>
</table>

GS1 Databar Expanded	Composite barcode.	See below.
Convert GS1 Databar to UPC/EAN	**Convert to EAN-13** Strip the leading "010" from barcodes. ▸ "01" is the Application ID and must be followed by a single zero (the first digit encoded) **Convert to UPC-A** Strip the leading "0100" from barcodes. ▸ "01" is the Application ID and must be followed by two or more zeros (but not six zeros)	No

Note: (1) GS1 Databar-14, GS1 Databar Limited, GS1 Databar Expanded are all disabled for LR/ELR Laser scan engine.

(2) GS1 Databar-14, GS1 Databar Limited, GS1 Databar Expanded are all enabled for 2D scan engine.

EAN-8		**Enable**
Convert to EAN-13	The EAN-8 barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	No
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
EAN-13		**Enable**
Bookland EAN (= ISBN)	The EAN-13 barcode starting with 978 will be converted to ISBN.	Yes
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
UPC-A		**Enable**
Transmit Checksum	Decide whether to include the UPC-A checksum in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-A preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
UPC-E0		**Enable**
Transmit Checksum	Decide whether to include the UPC-E0 checksum in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E0 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E0 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UPC-E1		**Disable**

Transmit Checksum	Decide whether to include the UPC-E1 checksum in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E1 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E1 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UCC Coupon Extended Code		**Disable**
Read UPC-A barcodes starting with digit "5", EAN-13 barcodes starting with digits "99", and UPC-A/GS1-128 Coupon Codes. ▸ UPC-A, EAN-13, and GS1-128 must be enabled first!		
UPC/EAN Addon		**---**
Addon 2 / Addon 5	Decide whether to decode EAN-8, EAN-13, UPC-E0, UPC-E1, UPC-A with supplementals. ▸ Ignore Supplementals ▸ Decode Only With Supplementals ▸ Decode With Supplementals (= Auto-discriminate)	Ignore...
Addon Redundancy	When "Decode with Supplementals" is applied, decide the number of times of supplementary decoding the same barcode that makes a valid reading.	10 times

Note: (1) Addon Redundancy is set to 14 times for LR/ELR Laser scan engine.
(2) Addon Redundancy is set to 10 times for 2D scan engine.

Appendix IV

2D SCAN ENGINE

The tables below list reader settings as well as symbology settings for the 2D scan engine.

READER SETTINGS TABLE

2D	Description	Default
Focus Mode	Select the focus mode to control the working range: ▸ Far Focus – optimized to read at its far position ▸ Near Focus – optimized to read at its near position ▸ Smart Focus – toggles the focus position after every frame	**Far Focus**
Decode Illumination	Decide whether to flash illumination on every barcode capture to aid decoding. ▸ Turn On (Internal LED) ▸ Turn Off	**On**
Aiming Pattern	Decide whether to project the aiming pattern during barcode capture. ▸ Turn On ▸ Turn Off	**On**
Decode Time-out	Set the maximum time for decoding to continue during a scan attempt. ▸ 5~99, in units of 0.1 second.	**3.0 sec.**
Transmit AIM Code ID	Decide whether to include AIM Code ID in the beginning of data. Each AIM Code ID contains the three-character string "**]cm**" – ▸] = Flag Character (ASCII 93) ▸ c = Code Character (see below) ▸ m = Modifier Character (see below)	**Disable**

AIM CODE ID – CODE CHARACTERS

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, Coupon (Code 128 portion)
d	Data Matrix
E	UPC/EAN, Coupon (UPC portion)
e	GS1 Databar Family

F	Codabar
G	Code 93
H	Code 11
I	Interleaved 25
L	PDF417, Macro PDF417, Micro PDF417
M	MSI
Q	QR Code
S	Discrete 25, IATA 2 of 5
U	Maxicode
X	Code 39 Trioptic, Bookland EAN, US Postnet, US Planet, UK Postal, Japan Postal, Australian Postal, Dutch Postal

AIM CODE ID – MODIFIER CHARACTERS

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Checksum has been verified.
	3	Checksum has been verified and stripped.
	4	Full ASCII conversion has been performed.
	5	Result of option values 1 and 4.
	7	Result of option values 3 and 4.
Code 128	0	Standard data packet. No Function Code 1“FNC1” in the first character position.
	1	Function Code 1“FNC1” in the first character position.
	2	Function Code 1“FNC1” in the second character position.
Interleaved 25	0	No check digit processing.
	1	Checksum has been verified.
	3	Checksum has been verified and stripped.
Codabar	0	No check digit processing.
Code 93	0	Always transmit 0.
MSI	0	Modulo 10 check digit verified and transmitted.
	1	Modulo 10 check digit verified but not transmitted.
Discrete 25	0	Always transmit 0.
UPC/EAN	0	Standard data packet in full EAN country code format, which is 13 digits for UPC-A and UPC-E (not including supplemental data).
	3	Standard data packet with two-digit or five-digit supplemental data.
	4	EAN-8 data packet.

	A UPC-A with Addon 2 barcode, 012345678905-10, is transmitted to the host as a 18-character string, **]E3**001234567890510.	
Bookland EAN	0	Always transmit 0.
Trioptic Code 39	0	Always transmit 0.
Code 11	0	Single check digit (has been verified.)
	1	Two check digits (has been verified.)
	3	Checksum has been verified but not transmitted.
GS1 Databar Family	0	Always transmit 0.
	GS1 Databar-14 and GS1 Databar Limited will be transmitted with an Application Identifier "01". For example, an GS1 Databar-14 barcode, 100123456788902, is transmitted as **]e0**0110100123456788902.	

Note: In GS1-128 emulation mode, GS1 Databar is transmitted using Code 128 rules (i.e. "]C1").

GS1 Composites (GS1 Databar, GS1-128, 2D portion of UPC composite)	Native mode transmission	
	0	Standard data packet
	1	Data packet containing the data following an encoded symbol separator character.
	2	Data packet containing the data following an escape mechanism character. The data packet does not support the ECI protocol.
	3	Data packet containing the data following an escape mechanism character. The data packet supports the ECI protocol.
	GS1-128 emulation	
	1	Data packet is a GS1-128 barcode (i.e. data is preceded with "]JC1").

Note: UPC portion of composite is transmitted using UPC rules.

PDF417, Micro PDF417	0	Scan engine is set to conform to protocol defined in 1994 PDF417 symbology specifications. ▸ When this option is transmitted, the receiver cannot reliably determine whether ECIs have been invoked or whether data byte 92DEC has been doubled in transmission.
	1	Scan engine is set to follow the ECI protocol (Extended Channel Interpretation). All data characters 92DEC are doubled.
	2	Scan engine is set for Basic Channel operation (no escape character transmission protocol). Data characters 92DEC are not doubled. ▸ When decoders are set to this mode, unbuffered Macro symbols and symbols requiring the decoder to convey ECI escape sequences cannot be transmitted.

	3	The barcode contains a GS1-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The barcode contains a GS1-128 symbol, and the first codeword is in the range 908-909.
	5	The barcode contains a GS1-128 symbol, and the first codeword is in the range 910-911.
	A PDF417 barcode, ABCD, with no transmission protocol enabled, is transmitted as]L2ABCD.	
Data Matrix	0	ECC 000-140, not supported.
	1	ECC 200.
	2	ECC 200, FNC1 in first or fifth position.
	3	ECC 200, FNC1 in second or sixth position.
	4	ECC 200, ECI protocol implemented.
	5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented.
	6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented.
Maxicode	0	Mode 4 or 5
	1	Mode 2 or 3
	2	Mode 4 or 5, ECI protocol implemented.
	3	Mode 2 or 3, ECI protocol implemented in secondary message.
QR Code	0	Model 1
	1	Model 2, ECI protocol not implemented.
	2	Model 2, ECI protocol implemented.
	3	Model 2, ECI protocol not implemented, FNC1 implied in first position.
	4	Model 2, ECI protocol implemented, FNC1 implied in first position.
	5	Model 2, ECI protocol not implemented, FNC1 implied in second position.
	6	Model 2, ECI protocol implemented, FNC1 implied in second position

SYMBOLOGY SETTINGS TABLE

The symbology settings for the LR/ELR scan engine are all supported on the 2D scan engine. In addition, the 2D scan engine supports the following symbology settings:

2D	Description	Default
Code 11		**Enable**
Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted. ▸ No verification ▸ One Check Digit ▸ Two Check Digits	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted. ▸ "Verify Checksum" must be enabled so that the checksum can be left out (= "Transmit Checksum" disabled).	No
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	4~55
Postal Codes		**---**
US Postnet		Enable
US Planet		Enable
Transmit US Postal Checksum	US Postnet or US Planet must be enabled first!	Enable
UK Postal		Enable
Transmit UK Postal Checksum	UK Postal must be enabled first!	Enable
Japan Postal		Enable
Australian Postal		Enable
Dutch Postal		Enable
Composite Codes		**---**
Composite CC-C		Enable
Composite CC-A/B		Disable
Composite TLC-39		Disable
GS1 Code 128 Emulation Mode	Transmit data as if it was encoded in Code 128 barcodes. ▸ Transmit AIM Code Identifier must be enabled first!	Disable

UPC Composite Mode	UPC barcodes can be "linked" with a 2D barcode during transmission as if they were one barcode. **UPC Never Linked** Transmit UPC barcodes regardless of whether a 2D barcode is detected. **UPC Always Linked** Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted. ▸ CC-A/B or CC-C must be enabled! **Auto-discriminate UPC Composites** Transmit UPC barcodes as well as the 2D portion if present.	UPC Always Linked
2D Symbologies		**---**
PDF417		Enable
MicroPDF417		Disable
MicroPDF417 Code 128 Emulation	Transmit data from certain MicroPDF417 barcodes as if it was encoded in Code 128 barcodes. ▸ Transmit AIM Code Identifier must be enabled first! When applied, the MicroPDF417 barcodes are transmitted with one of these prefixes: **The first codeword of MicroPDF417 is 903-907, 912, 914, 915:** The original Code ID "]L3" will be changed to "]C1". **The first codeword of MicroPDF417 is 908 or 909:** The original Code ID "]L4" will be changed to "]C2". **The first codeword of MicroPDF417 is 910 or 911:** The original Code ID "]L5" will be changed to "]C0".	Disable
Data Matrix		Enable
Maxicode		Enable
QR Code		Enable
2D Symbologies - Macro PDF		**---**
Macro PDF is a special feature for concatenating multiple PDF barcodes into one file, known as Macro PDF417 or Macro MicroPDF417.		

Transmit/Decode Mode	Decide how to handle Macro PDF decoding. **Buffer All Symbols / Transmit Macro PDF When Complete** Transmit all decoded data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. If the decoded data exceeds the limit of 50 symbols, no transmission because the entire sequence was not scanned! ▸ The transmission of the control header must be disabled. **Transmit Any Symbol in Set / No Particular Order** Transmit data from each Macro PDF symbol as decoded, regardless of the sequence. ▸ The transmission of the control header must be enabled. **Passthrough All Symbols** Transmit and decode all Macro PDF symbols and perform no processing. In this mode, the host is responsible for detecting and parsing the Macro PDF sequences.	Passthrough All Symbols
Send Control Header	The control header contains the segment index and file ID. This option has no effect when "Passthrough All Symbols" is applied.	Yes
ESC Characters	When enabled, it uses the backslash "\" as an Escape character for systems that can process transmissions containing special data sequences. It will format special data according to the Global Label Identifier (GLI) protocol, which only affects the data portion of a Macro PDF symbol transmission. The Control Header, if enabled, is always sent with GLI formatting.	None

Note: When printing barcodes, keep each Macro PDF sequence separate, as each has a unique identifier. Do not mix barcodes from several Macro PDF sequences, even if they encode the same data. When you scan Macro PDF sequences, scan the entire Macro PDF sequence without interruption!