

CipherLab User Guide

MIRROR 5250 Terminal Emulation

8000 / 8300 / 8400 / 8500 Series
Mobile Computers

DOC Version 2.25



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RELEASE NOTES

Version	Date	Notes
2.25	Feb. 09, 2010	<ul style="list-style-type: none">▶ Modified: Appendix IV — Reader Settings Table
2.24	Feb. 08, 2010	<ul style="list-style-type: none">▶ New: 2.1.4 Code ID▶ Modified: 2.3.1 Input — add Check Code Length▶ Modified: Chapter 3 Barcode screenshot updated▶ Modified: Appendix I — support ISBT 128 for CCD/Laser▶ Modified: Appendix II — support ISBT 128 for CCD/Laser▶ Modified: Appendix II — support UPC-E1 for CCD/Laser▶ New: Appendix II — Code ID Table▶ New: Appendix III — Code ID Table▶ New: Appendix IV — Code ID Table
2.23	Nov. 24, 2009	<ul style="list-style-type: none">▶ New: support 8400-2D▶ Modified: 3.4.2 WEP Key — change to ASCII input▶ Modified: 3.4.3 WPA-PSK/WPA2-PSK Passphrase — change to ASCII input▶ Modified: Appendix IV — Chinese 25, Matrix 25, Picklist Mode, 1D Inverse, 2D Inverse, UPU FICS Postal and USPS 4CB/One Code/Intelligent Mail
2.22	July 08, 2009	<ul style="list-style-type: none">▶ New: support 8400▶ New: Features — support quick download by saving download properties to an initial file▶ Modified: Utilities Menu — remove “RF”▶ Modified: 1.5 Download & Baud Rate — remove “RF”▶ Modified: 2.3.2 Scanner — remove▶ Modified: 2.5.1 Buzzer Test▶ Modified: 4.7.2 Keypad Type — add 8300 Keypad Type▶ Modified: 3.4.3 WPA Passphrase — supports WPA2-PSK for 8400▶ Modified: remove Bluetooth-related descriptions (3560 phased out)
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- 2.20 Jan. 16, 2009 Separate documentation of 5250 Emulator and VT Emulator
- ▶ Modified: System tab (1) remove Func Toggle to the Emulation tab
 - ▶ Modified: Wireless LAN tab (1) change WPA Passphrase from 8~64 to 8~63 hex values (2) Power Saving Mode (added)
 - ▶ Modified: Emulation tab (1) add 8500 Keypad Type (2) support 8500 44-TE Key
 - ▶ New: GPRS tab for 8500 only
- 2.10 July 17, 2008 New Word template applied
- ▶ New: 2.6 Hardware Test for buzzer and barcode reader
 - ▶ Modified: Appendix II – support “Field Separator” setting for EAN-128 with CCD/Laser scan engine
- 2.00 Oct. 02, 2007 New Word template applied
- ▶ Merge documentation of 5250 Emulator and VT Emulator
- 1.11 June 12, 2006 Company name changed to CIPHERLAB CO., LTD. since April 2006
- ▶ Modified: Modified for 8061/8071/8360/8370/8500

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INTRODUCTION

Seeing the need to combine wireless connectivity and telnet terminal emulation, MIRROR 5250 Emulator, also known as CipherNet-5250, is designed to provide telnet terminal emulation on the 8000/8300/8400/8500 Series Mobile Computers, which are capable of 802.11b/g or GPRS connectivity.

The software, consisting of CipherNet programs (.exe) and the associated runtime (.shx), is designed for the users to develop custom telnet sessions for the use with the terminal emulation runtime preloaded on the mobile computers, without spending time writing any program code. Each of the mobile computers is a telnet client that allows the user to connect to a host computer, such as an IBM AS/400 server that supports 5250 emulation, and make use of the applications running on it. Thus, the mobile computer works as an input device to a host computer, and the data collected or input will be sent back to the host computer. On the other hand, the mobile computer works as an output device as well because it can display data coming in from the host. Based on the nature that the screen size of the mobile computer is smaller than that of an actual terminal, CipherNet programs provide a number of unique features for reformatting host screens.

This manual serves to provide comprehensive understanding of MIRROR 5250 Emulator, and helps start a telnet session running host applications. We recommend that you read the document thoroughly before use and keep it at hand for quick reference.

Thank you for choosing CipherLab products!

FEATURES

- ▶ CipherNet-5250 supports 5250 terminal emulation
- ▶ Can automatically insert data into an input field in the host application via reading barcodes or RFID tags
- ▶ Easy cloning by saving user settings to a configuration file (.NET)
- ▶ Supports auto sign on, cursor tracking, etc.
- ▶ Supports key mapping
- ▶ Supports control for barcode reader as well as RFID reader
- ▶ Supports control for beeper and vibrator
- ▶ Provides font size options
- ▶ Supports multiple languages
- ▶ Supports host screen capture and reformatting (Activation key is required!)
- ▶ Supports quick download by saving download properties to an initial file

GETTING STARTED

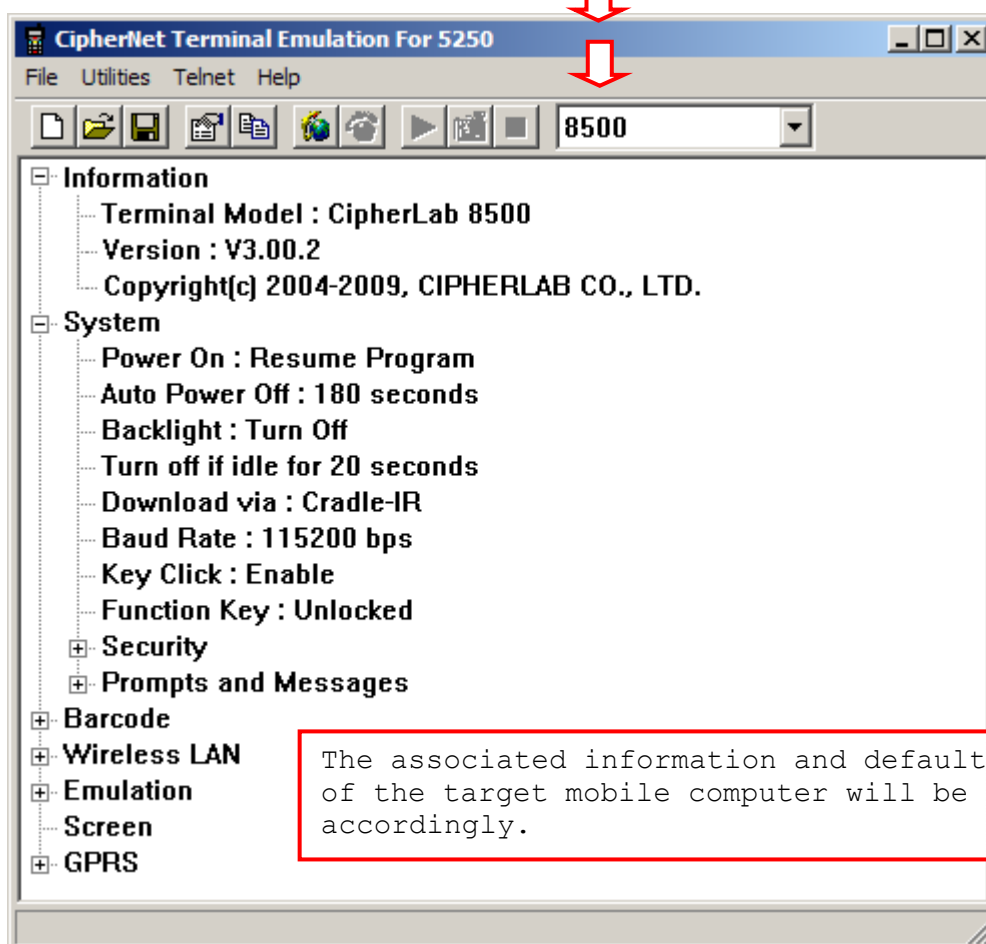
- 1) Run **CipherNet-5250.exe** from the Product CD.
- 2) Click **OK** to accept the End-User License Agreement (EULA).
- 3) Download the runtime program (.SHX) to the mobile computer via **Utilities Menu | Download Program**.

Associated Runtime Programs

80xx-5250.SHX	(Download this program file to 8071.)
83xx-5250.SHX	(Download this program file to 8330 or 8370.)
84xx-TN-*.SHX	(Download this program file to 8400 or 8470.)
85xx-5250.SHX	(Download this program file to 8500, 8570, 8580 or 8590.)

On the mobile computer, press **7, 9** and **Power** simultaneously to enter **System Menu | Load Program**.

- 4) Click the drop-down menu of **Select Product** and select the mobile computer you are working on.



- 5) Configure the current user settings via **Utilities Menu | Configure**.

When you are editing an existing or new configuration file, the information and settings above will be updated accordingly.

- 6) Save the current user settings to a configuration file via **File Menu | Save**.
- 7) Download the configuration file (.NET) to the mobile computer via **Utilities Menu | Download Settings**.

From the **CipherNet Runtime Menu** on the mobile computer, select **2. Utilities Menu | 8. Download**.

- 8) From the **CipherNet Runtime Menu** on the mobile computer, select **1. Telnet** to start a fresh new telnet session after downloading.

The mobile computer will be associated with an access point and connected to a host. During the telnet session, you will be able to make use of the host applications after login. To exit the telnet session, press **ESC** and **FN** simultaneously after logging out properly.

▶ Understanding the Status Icons

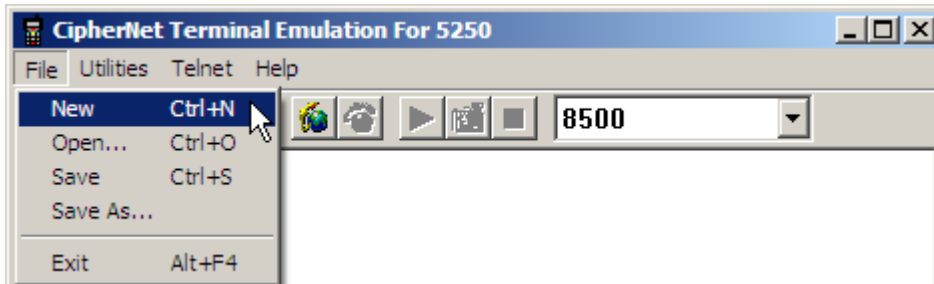
On the terminal screen, a number of status icons will be displayed on the bottom line.

Icon	Remark
Special Key	For 8500 Series, individual icons for Shift , Alt and FN indicate a specific key is pressed.
Navigator	A graphic icon to indicate the relationship between the terminal screen and the host screen. Refer to 4 Emulation Settings .
Lock	A lock icon indicates that you have pressed a function key that is not allowed. The message "Function key not allowed." is displayed on the terminal screen. ▶ Press ESC to unlock it. The icon will become an empty box.
Reader	Refer to 2.1 Barcode Reader . ▶ An empty box indicates both readers are disabled. ▶ A barcode icon indicates only the barcode is enabled. ▶ A cross-out barcode icon indicates both the barcode and RFID readers are enabled. ▶ A flash icon indicates only the RFID reader is enabled.
Antenna	An antenna icon indicates the RF signal strength.
Battery	A battery icon indicates the battery strength.

WORKING WITH MENUS & TOOLBAR

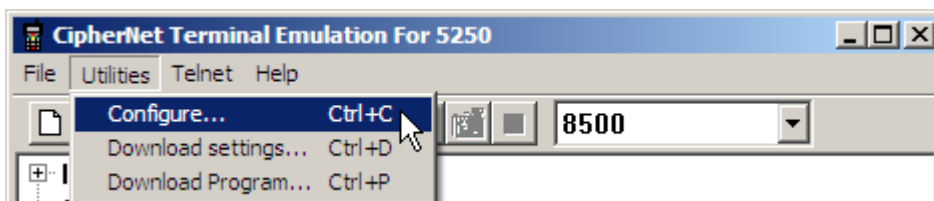
The menu bar contains a number of menus that specify which task you want the system to perform. Each menu contains a list of commands.

FILE MENU



Command	Action...
<i>New</i>	To create a new configuration file for the telnet client. Refer to each chapter.
<i>Open</i>	To open an existing configuration file. File path needs to be specified.
<i>Save</i>	To save the current settings to a configuration file (.NET).
<i>Save As</i>	To save the current settings to a new file.
<i>Exit</i>	To close the application.

UTILITIES MENU



Command	Action...
<i>Configure</i>	To configure the current user settings. Refer to each chapter. <ul style="list-style-type: none"> ▶ System Settings ▶ Barcode Settings ▶ Wireless LAN Settings ▶ Emulation Settings ▶ Screen Settings ▶ GPRS Settings
<i>Download Settings</i>	To download the current configuration file (.NET) to the target mobile computer. <ul style="list-style-type: none"> ▶ If "Download via USB VCOM" is selected, skip baud rate settings.

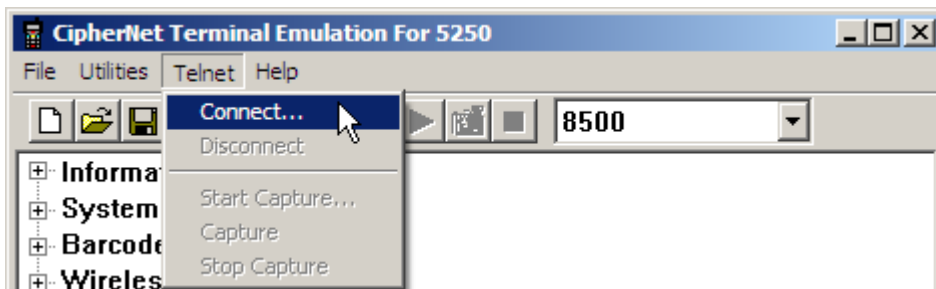
- ▶ The download properties will be saved to an initial file automatically. As long as the settings are correct, the Download Properties dialog box will not appear.

Download Program

To download the runtime program (.SHX) to the target mobile computer.

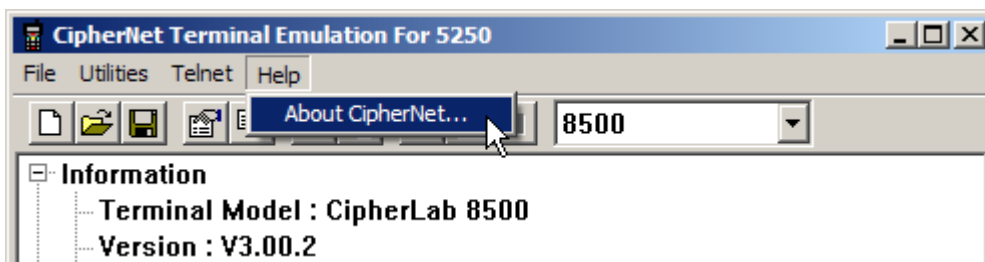
- ▶ For language setting other than "single byte character" in CipherNet-5250, download the font file for the selected language.

TELNET MENU



Command	Action...
<i>Connect</i>	To connect to a host. <ul style="list-style-type: none"> ▶ Click "Save Log" if necessary.
<i>Disconnect</i>	To disconnect with the host.
<i>Start Capture</i>	To start the Capture task with a file (.SCR) for saving host session screens.
<i>Capture</i>	To capture the current host session screen.
<i>Stop Capture</i>	To stop the Capture task and close the .SCR file.

HELP MENU














Command	Action...
<i>About CipherNet</i>	To show version information about CipherNet and End-User License Agreement. <ul style="list-style-type: none"> ▶ Version information is also available from the tree view.

TOOLBAR

The toolbar allows quick access to commands that are available in the current stage.

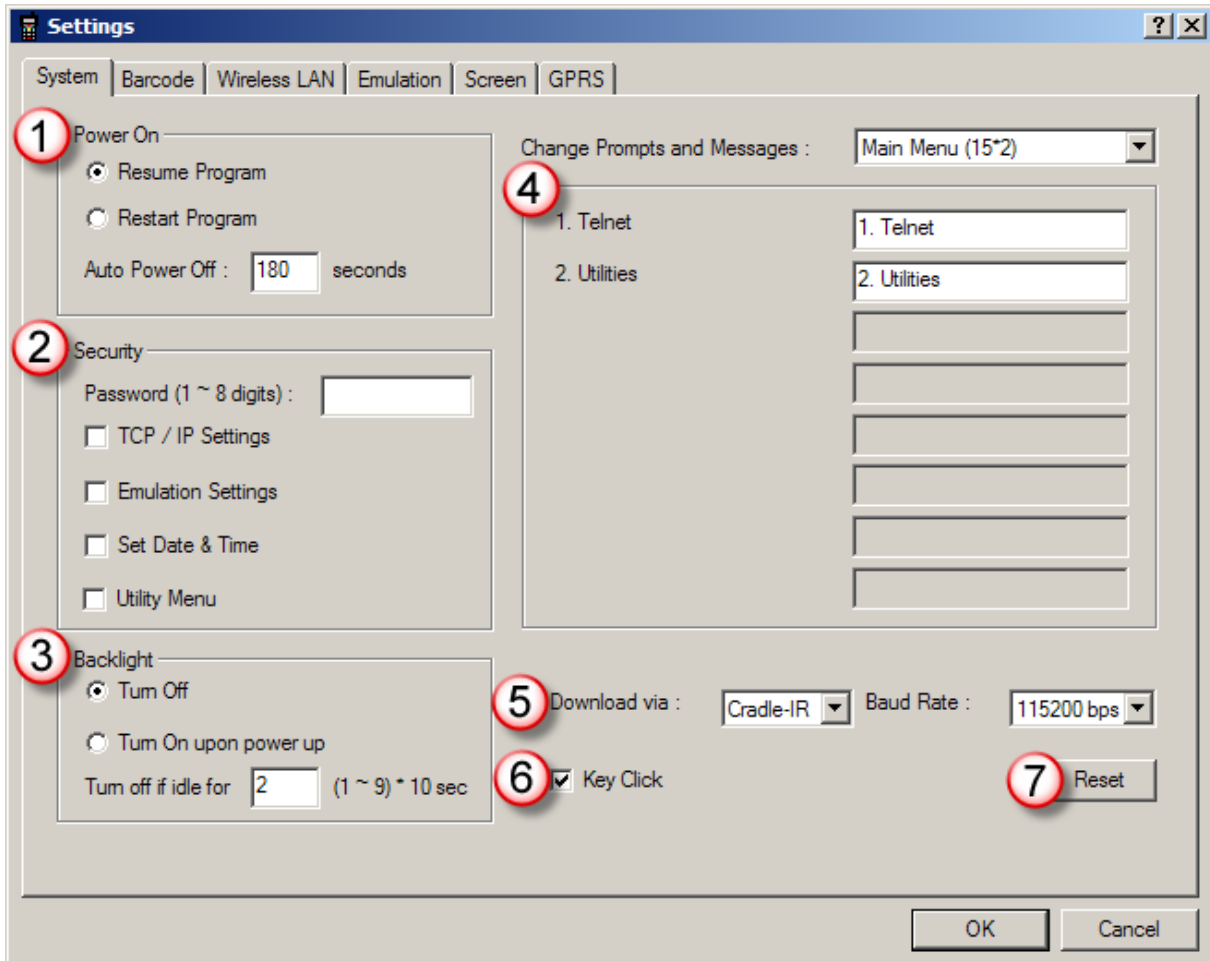


From left to right, they stand for the following commands:

	File Menu New
	File Menu Open
	File Menu Save
	Utilities Menu Configure
	Utilities Menu Download Settings
	Telnet Menu Connect
	Telnet Menu Disconnect
	Telnet Menu Start Capture
	Telnet Menu Capture
	Telnet Menu Stop Capture
	Select Product

SYSTEM SETTINGS

On this property page, system settings of the mobile computer can be changed.



Once the configuration file (.NET) has been downloaded to the mobile computer, the new settings will take effect immediately and become the defaults. However, you still can change many of the settings directly on the mobile computer via **CipherNet Runtime Menu** or **System Menu**:

CipherNet Runtime Menu – Press the Power key on the mobile computer.

Backlight	CipherNet Runtime Menu 2. Utilities 4. Backlight
Baud Rate	CipherNet Runtime Menu 2. Utilities 7. Baud Rate
Download via	CipherNet Runtime Menu 2. Utilities 8. Download

System Menu – Press 7, 9 and the Power key simultaneously on the mobile computer.

Backlight (Period)	System Menu 2. Settings 2. Backlight Period
Power On	System Menu 2. Settings 3. Auto Off
	System Menu 2. Settings 4. Power On Options
Key Click	System Menu 2. Settings 5. Key Click

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1.1 POWER ON

1.1.1 RESUME PROGRAM

By default, the mobile computer will start from the latest telnet session at the time it is turned off.

1.1.2 RESTART PROGRAM

If selected, the mobile computer will start from the **CipherNet Runtime Menu**.

1.1.3 AUTO POWER OFF

By default, the mobile computer will be automatically turned off when no operation is taking place within 180 seconds.

1.2 SECURITY

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 any task. If any task is selected and provided with a password, you will not be allowed to enter an associated menu on the mobile computer without the password. This can prevent unauthorized users from changing the application settings.

- ▶ A password can be up to 8 alphanumeric characters.

Note: The password is case-sensitive.

Security Option	Remark
<i>TCP / IP Settings</i>	If selected and provided with a password, you will not be allowed to enter the following menu on the mobile computer unless the correct password is entered: CipherNet Runtime Menu 2. Utilities 1. TCP/IP Settings
<i>Emulation Settings</i>	If selected and provided with a password, you will not be allowed to enter the following menu on the mobile computer unless the correct password is entered: CipherNet Runtime Menu 2. Utilities 2. Emulation Settings
<i>Set Date & Time</i>	If selected and provided with a password, you will not be allowed to enter the following menu on the mobile computer unless the correct password is entered: CipherNet Runtime Menu 2. Utilities 6. Set Date & Time
<i>Utilities Menu</i>	If selected and provided with a password, you will not be allowed to enter the following menu on the mobile computer unless the correct password is entered: CipherNet Runtime Menu 2. Utilities

1.3 BACKLIGHT

By default, the backlight for the LCD and the keypad of the mobile computer is turned off.

- ▶ When the backlight is turned on, 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.

1.4 CHANGE PROMPTS & MESSAGES

Re-define the prompts and messages, if necessary. If you want to customize the client application to your local language, you must translate the text of the menus and messages for the runtime into your own language.

- 1) Download the font file (.SHX) for the selected language to the mobile computer via **Utilities Menu | Download Program**.

On the mobile computer, press **7**, **9** and **Power** simultaneously to enter **System Menu | Load Program**.

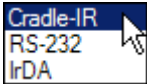

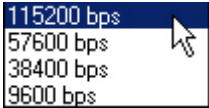
- 2) Click the drop-down menu to select among the groups of prompts and messages. Modify them within a maximum length of 15 or 20 characters, depending on the screen size; otherwise, they will be automatically truncated.
- 3) Save the current user settings to a configuration file via **File Menu | Save**.
- 4) Download the configuration file (.NET) to the mobile computer via **Utilities Menu | Download Settings**.

From the **CipherNet Runtime Menu** on the mobile computer, select **2. Utilities | 8. Download**.

Note: For CipherNet-5250, you must download the font file for the selected language to the mobile computer so that it can display the prompts and messages correctly.

1.5 DOWNLOAD & BAUD RATE

Click the drop-down menu to select a desired communications setting for the mobile computer to download the runtime and configuration file (*.NET).

Download Option		Remark
<i>Download via</i>	8000/8300/8500:  8400: 	If USB-VCOM is selected, it is not necessary to configure the Baud Rate settings.
<i>Baud Rate</i>		By default, the baud rate setting is 115200 bps. However, it will be ignored by USB-VCOM .

1.6 KEY CLICK

By default, the mobile computer will produce an audible signal when you press any key on the keypad, except for the **SCAN** key. Cancel the check box if such feedback is not desired.

1.7 RESET

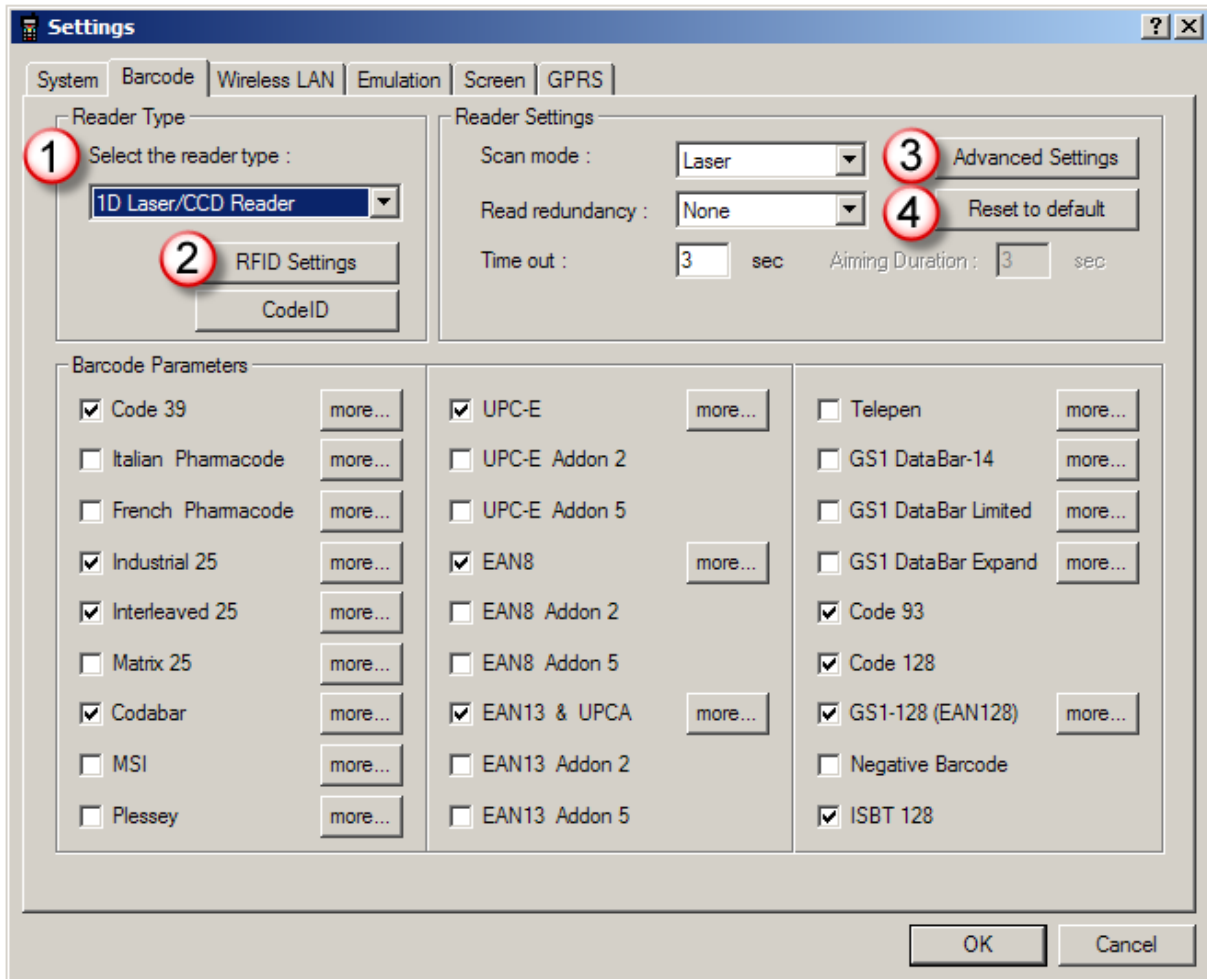
Click **Reset** to load the default settings.

Note: The current system settings will be cleared.

BARCODE SETTINGS

According to the requirements of a specific application, you may enable or disable any of the barcode symbologies and configure its associated parameters.

Supported barcodes depend on the scan engine integrated on the mobile computer.



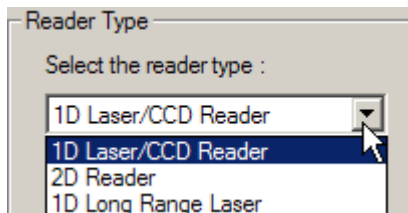
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2.1 BARCODE READER

2.1.1 SELECT READER TYPE

Select a reader type that matches the hardware configuration of your mobile computer. The associated barcode reader settings, as well as the barcode parameters (= symbology settings) will be displayed accordingly.



For more information, refer to the following appendixes:


- ▶ [Appendix I - Scan Engine Settings](#) for information on 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.

Note: If you accidentally selected the wrong reader type and downloaded the settings to the mobile computer, the mobile computer will use the defaults for the correct reader type instead.

2.1.2 CONFIGURE READER SETTINGS

Depending on the barcode reader selected, configure the associated reader settings. Refer to the Reader Settings Table in Appendixes II ~ IV.

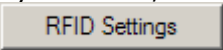
2.1.3 CONFIGURE SYMBOLOGY SETTINGS

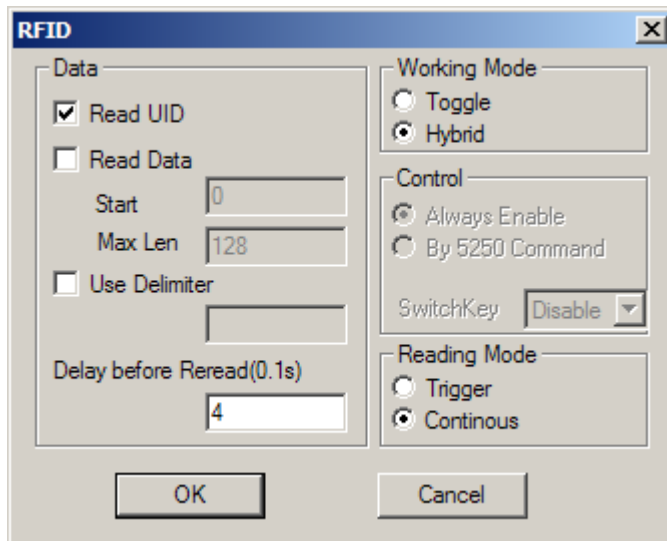
Depending on the barcode reader selected, configure the associated symbologies. Refer to the Symbology Settings Table in Appendixes II ~ IV. For a symbology along with the button , it means advanced symbology settings are available.

2.1.4 CODE ID

Depending on the barcode reader selected, configure Code ID settings. Refer to the Code ID Table in Appendixes II ~ IV.

2.2 RFID READER

By default, the RFID reader is enabled to read UID only. Click the button  to configure the associated settings.



2.2.1 DATA

Read UID

By default, the RFID reader is set to read tag UID (Unique Identification).

- ▶ UID: a permanent factory programmed unique identification (UID) code which is unique to each tag.

Read Data

Select the check box so that RFID data 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 when both are read.

- ▶ Click the editing box and select one character from the Grid Control (ASCII codes).

Delay before Re-read

By default, the RFID reader is set to re-read the same tag by an interval of 0.4 second when the tag is not removed out of range.

- ▶ You may specify a delay time before re-read in the range of 1~9999, in units of 100 milliseconds.

2.2.2 WORKING MODE

Toggle

In this mode, only one reader can work at a time: either RFID or barcode reader.

Control Options	Working with the Switch Key
Always Enabled	The RFID reader is enabled after login; however, it will not work until you press the switch key. To stop it from working, press the switch key again.
By 5250 Command	The RFID reader is disabled after login. It will not work until you send the 5250 command to activate it and then press the switch key. To stop it from working, press the switch key again.

Hybrid (=dual mode)

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

2.2.3 CONTROL

If **Toggle** is selected, you must select a switch key from the drop-down menu.

Always Enable

By default, the RFID reader is always enabled after login.

By 5250 Command

If selected, the RFID reader is disabled after login. You must send the 5250 command to enable it.

Switch Key

The switch key works as the toggle of readers. When you press it on the mobile computer, only one reader is allowed to work at a time.

- ▶ By default, the switch key is disabled.
- ▶ Select the switch key (FN+0 ~ FN+9). The selected combination will become unavailable on the Function Key Mapping list. For example, if you select FN+5, you will find the key combination mapped to "SwitchKey" in the Function Key Mapping on the Emulation tab.

2.2.4 READING MODE

Trigger

If selected, you may press the trigger to start each RFID reading.

- ▶ When working mode is set "Hybrid", you can press the trigger to read an RFID tag or a barcode label depending on which one first comes in range.

Continuous

By default, the RFID reader works in a continuous way. It will keep on reading the same RFID tag until the tag is removed out of range.

2.3 ADVANCED SETTINGS

These settings are provided to enhance the read operation via the barcode reader.

2.3.1 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 found mismatching, the barcode will be discarded.

Below are some examples.

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

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	(Discarded)

Check Code Length

By default, the maximum barcode length is 15. Select the check box so that it will perform a length check on the barcode according to the length setting. When the barcode is found longer than the specified length, it will be discarded.

Read Partial Barcode

By default, it will return the whole barcode that has been decoded. Select the check box so that it will return partial barcode according to the settings of the start position and maximum length.

Below are some examples.

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

2.3.2 DATA

Add Prefix Code

Select the check box to prefix a code to the input data. Click the editing box next to it, and select one or more codes from the Grid Control (ASCII codes). For example, you may add a dollar sign "\$" to the front of the input data for price information.

Add Suffix Code

Select the check box to suffix a code to the input data. Click the editing box next to it, and select one or more codes from the Grid Control (ASCII codes).

Note: You may use prefix/suffix code to wrap the input data.

Last Field Suffix

Select from the drop-down list to suffix a code to the last input field only. For example, you may use this setting to automatically add "ENTER" to the last field.

Other Field Suffix

Select from the drop-down list to suffix a code to the input fields except the last one. For example, you may use this setting to automatically add "NEXT" to the rest fields so that each can advance to a next field.

2.3.3 GOOD READ (GOOD FEEDBACK)

When data is successfully read, the mobile computer may inform you by issuing a beep or vibrating.

Beep Sequence

A beep sequence refers to pairs of Beep Frequency(x) and Beep Duration(y). You may specify whether or not to have a beep when decoding of a barcode is done successfully.

- ▶ You may specify pairs of "x y" other than the default "0E 05".

Vibrator

Specify how long the vibrator is turned on (in units of 0.1 second) to indicate a barcode has been read successfully.

- ▶ By default, the vibrator is turned off.

2.3.4 ALARM (ERROR FEEDBACK)

When an error occurs, the mobile computer may inform you by issuing a beep or vibrating.

Beep Sequence

A beep sequence refers to pairs of Beep Frequency(x) and Beep Duration(y). You may specify whether or not to have a warning beep to notify that an error occurs while reading a barcode.

- ▶ You may specify pairs of "x y" other than the default "1E 07 00 05 1E 07".

Vibrator

Specify how long the vibrator is turned on (in units of 0.1 second) to notify that an error occurs while reading a barcode.

- ▶ By default, the vibrator is turned off.

2.4 RESET

Click **Reset** to load the default settings. This applies to the following settings —

- ▶ Reader Settings
- ▶ Barcode & Parameters
- ▶ Advanced Settings
- ▶ RFID Settings

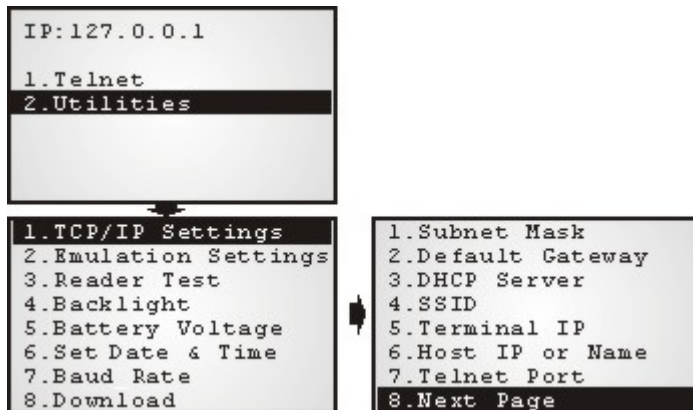
Note: The current settings will be cleared.

2.5 HARDWARE TEST

2.5.1 BUZZER TEST

You can test the buzzer by playing a beep sequence.

- 1) Turn on the mobile computer. The main menu created by the preloaded **CipherNet Runtime** appears.
- 2) On the mobile computer, select **2. Utilities | 1. TCP / IP Settings**.



- 3) In the submenu, press the following key combination to enter the buzzer test:
 - ▶ **F10** on 8400/8500
 - ▶ **FN + 0** on 8000/8300

Take the 44-key 8500 mobile computer for example. You need to press **FN** to enable the function key, and then press the key for red-coded **F10**.

- 4) Enter a desired beep sequence, and then press **Enter** to play it.

2.5.2 READER TEST

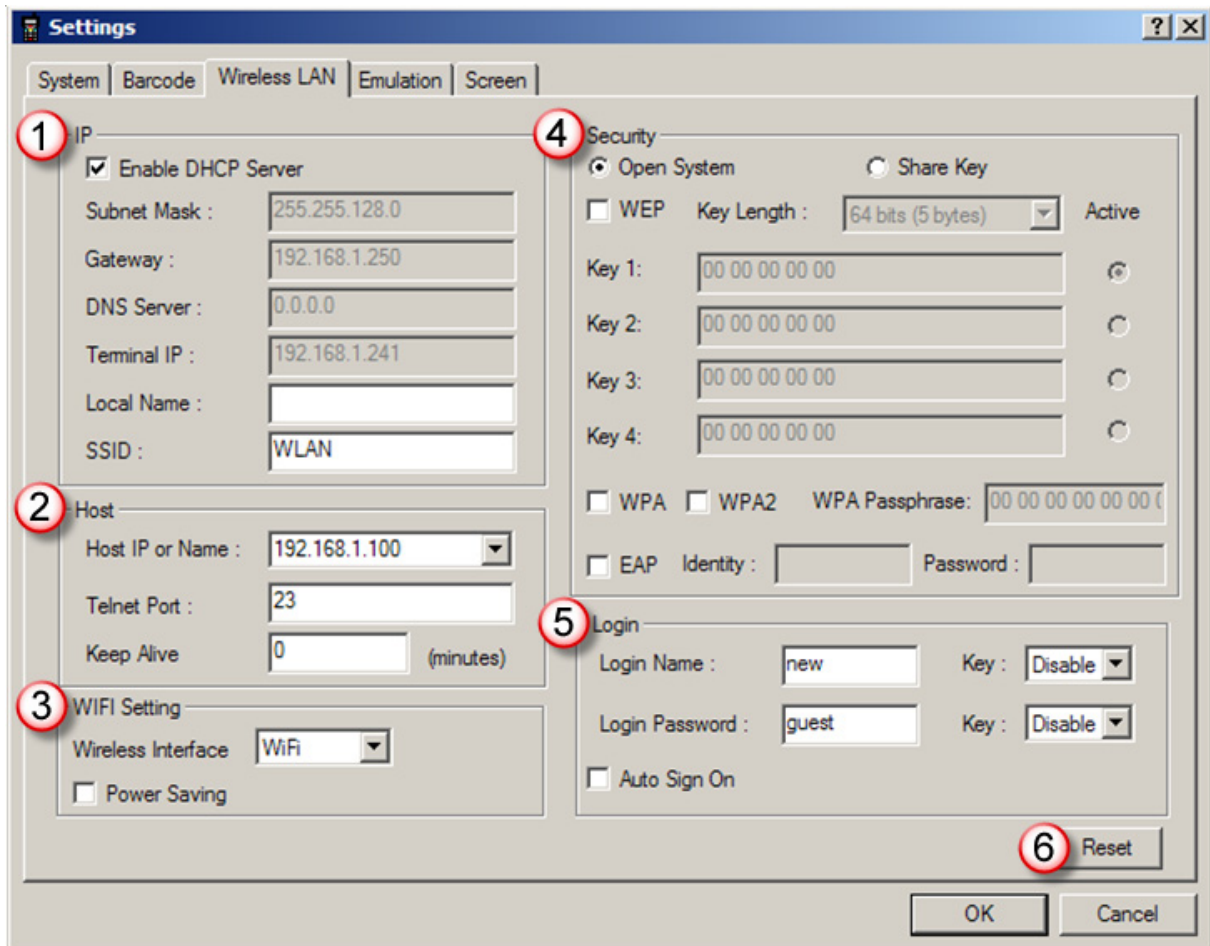
You can test the barcode reader by scanning barcode labels.

- 1) Turn on the mobile computer. The main menu created by the preloaded **CipherNet Runtime** appears.
- 2) On the mobile computer, select **2. Utilities | 3. Reader Test**.
- 3) Start to scan barcode labels.

Along with the read data or error message on the terminal screen, there will be a beep to indicate Good Read or Error.

WIRELESS LAN SETTINGS

To establish a telnet connection to a host, WLAN networking settings must be configured correctly.



Once the configuration file (.NET) has been downloaded to the mobile computer, the new settings will take effect immediately and become the defaults. However, you still can change many of the settings directly on the mobile computer via **CipherNet Runtime Menu** or **System Menu**:

CipherNet Runtime Menu – Press the Power key on the mobile computer.

IP	CipherNet Runtime Menu 2. Utilities 1. TCP/IP Settings
Host	CipherNet Runtime Menu 2. Utilities 1. TCP/IP Settings
Wi-Fi Setting: Power Saving	CipherNet Runtime Menu 2. Utilities 1. TCP/IP Settings
Login	CipherNet Runtime Menu 2. Utilities 2. Emulation Settings

System Menu – Press 7, 9 and the Power key simultaneously on the mobile computer.

IP	System Menu 8. Next Page 3. Wi-Fi Menu 2. Network Setting
	System Menu 8. Next Page 3. Wi-Fi Menu 3. WLAN Setting
Security	System Menu 8. Next Page 3. Wi-Fi Menu 4. Security

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3.1 LOCAL IP

3.1.1 ENABLE DHCP SERVER

By default, DHCP server is enabled and all the settings can be obtained from it.

If DHCP server is disabled, you must provide the following information –

- ▶ Subnet Mask
- ▶ Gateway
- ▶ DNS Server
- ▶ Terminal IP

3.1.2 LOCAL NAME

You may enter a name for identifying the mobile computer.

3.1.3 SSID

This refers to Service Set ID or Identifier, which serves to uniquely identify a group of wireless network devices used in a given "Service Set". For example, you need to specify the same SSID here as is used for access points so that the mobile computer can associate to the access points.

Note: SSID can be made up of 32 characters maximum.

3.2 HOST IP

3.2.1 HOST IP/NAME

Specify the IP address or name of the host that you wish to access via telnet.

3.2.2 TELNET PORT

Specify the telnet port number. Port 23 is assigned by default.

3.2.3 KEEP ALIVE

During a normal telnet session, a host will send a checking packet to the mobile computer on a regular basis to maintain the connection. However, the host you access might not be configured to keep the session alive. In that case, you can have the mobile computer automatically send a checking packet to the host at intervals.

- ▶ By default, the value is set 0; that is, this feature is disabled.
- ▶ Specify the interval in the range of 0~255, in units of minute.

3.3 WLAN INTERFACE

Select "Wi-Fi" for 802.11b/g connectivity, and proceed to configure Wi-Fi security settings.

- ▶ Enable the Power Saving setting if necessary.

3.4 SECURITY

Authentication and encryption help provide data protection on the 802.11b/g network. Refer to [3.3 WLAN Interface](#).

3.4.1 OPEN SYSTEM/SHARED KEY

Two types of network authentication methods are supported: Open System and Shared Key.

Setting	Remark
<i>Open System</i>	Using Open authentication, any wireless station can request authentication. The station that needs to authenticate with another wireless station sends an authentication management frame that contains the identity of the sending station. The receiving station or AP will grant any request for authentication. <ul style="list-style-type: none"> ▶ Open authentication allows any device network access. If no encryption is enabled on the network, any device that knows the SSID of the access point can gain access to the network.
<i>Shared Key</i>	Using Shared Key authentication, each wireless station is assumed to have received a secret shared key over a secure channel that is independent from the

	<p>802.11b/g wireless network communications channel.</p> <ul style="list-style-type: none"> ▶ Shared key authentication requires that the client configure a static WEP key. The client access will be granted only if it passed a challenge based authentication.
--	--

Note: For Shared Key authentication, the active WEP key is used for authentication.

3.4.2 WEP KEY

Select the check box to implement Wired Equivalent Privacy or Wireless Encryption Protocol (WEP) for data encryption.

Setting	Remark
<i>Key Length</i>	<p>Encryption type can be 64 bits (5 bytes) or 128 bits (13 bytes). You can also choose to password protect it to ensure privacy. The password phrase is used to generate a WEP key automatically. You have the option of either using a password phrase or entering a WEP key manually.</p> <ul style="list-style-type: none"> ▶ Using 64-bit encryption, the password phrase can be 5 characters long. Enter up to 5 characters (ASCII codes) for the WEP key. ▶ For 128-bit encryption, the password phrase can be 13 characters long. Enter up to 13 characters (ASCII codes) for the WEP key.
<i>Key 1 ~ 4</i>	Key index number. Up to four WEP keys can be configured.
<i>Active</i>	Only one key (the active one) can be used at a time.

Note: You must use the same settings as configured for other devices on your wireless network, e.g. access points.

3.4.3 WPA-PSK/WPA2-PSK PASSPHRASE

WPA-PSK is supported to enhance security over wireless networks, and this Pre-Shared key mode requires a passphrase to access the network. The passphrase must be 8 to 63 characters (ASCII codes).

- ▶ For 8400, it also supports WPA2-PSK!

3.4.4 EAP

Select the check box to enable authentication using Extensible Authentication Protocol (EAP). It requires user name and password so that the mobile computer can identify itself when associating to Cisco® access points.

Setting	Remark
<i>Identity</i>	Specify a user name. (32 characters maximum)
<i>Password</i>	Specify a password. (32 characters maximum)

3.5 LOGIN

To successfully log on to a host, the following settings must be specified correctly.

Note: After logging out properly, press **ESC** and **FN** (the function key) simultaneously to disconnect with the host and return to the main menu.

3.5.1 LOGIN

Normally, the cursor will stay on the "Username" field waiting for input during a fresh new telnet session. Instead of using the arrow keys to move the cursor to the "Password" input field, you may press the function key or key combination mapped to "NEXT". For example, you may map the physical **Tab** key to "NEXT" for 8500 Series. Refer to [4.7 Func Toggle & Function Key Mapping](#).

Setting	Remark
<i>Username, Password</i>	Specify username and password for logging on to the host you wish to access.
<i>Shortcut Key</i>	By default, the shortcut keys are disabled. You will have to enter the username and password manually. <ul style="list-style-type: none"> ▶ Select the shortcut keys (FN+0 ~ FN+9) so that you can enter the text string for Username and Password by two strokes. Each selected key combination 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 on the Emulation tab.

Note: Use the shortcut keys to enter the text string for Username/Password by two strokes. For this feature to work properly, Username/Password must be specified correctly.

3.5.2 AUTO SIGNON

By default, this feature is disabled. The host will request Username and Password every time the mobile computer attempts to log on.

- ▶ If this feature is supported by the host, select the check box so that the mobile computer can be allowed to automatically log on to the host. Refer to [3.5.1 Login](#).

Note: For this feature to work properly, Username/Password must be specified correctly and cannot exceed 20 characters.

3.6 RESET

Click **Reset** to load the default settings.

Note: The current settings will be cleared.

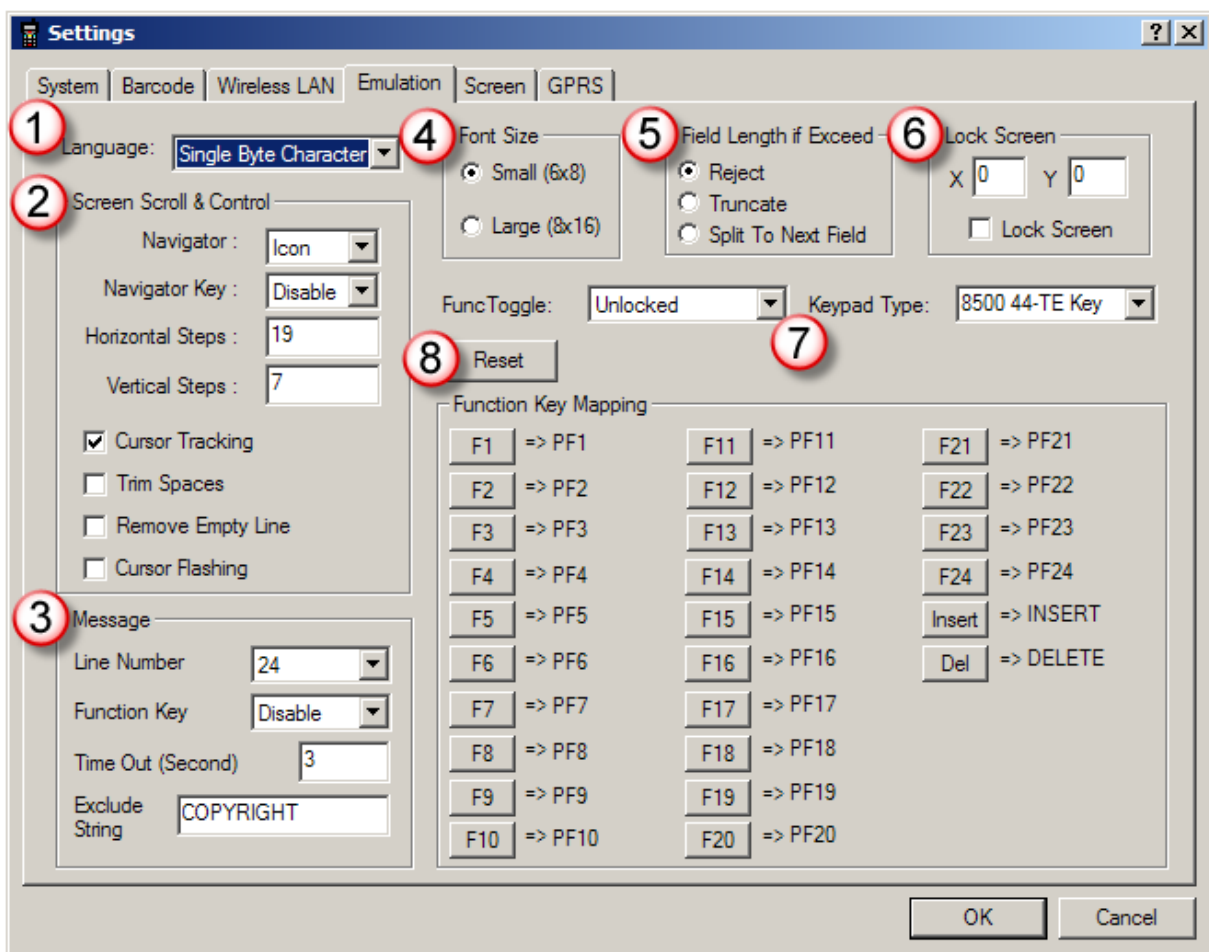
EMULATION SETTINGS

To successfully emulate an IBM 5250 terminal, emulation settings must be configured correctly. Once the configuration file (.NET) has been downloaded to the mobile computer, the new settings will take effect immediately and become the defaults. However, you still can change many of the settings directly on the mobile computer via **CipherNet Runtime Menu** or **System Menu**:

CipherNet Runtime Menu – Press the Power key on the mobile computer.

Screen Scroll & Control

CipherNet Runtime Menu | 2. Utilities | 2. Emulation Settings



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4.1 LANGUAGE

By default, single-byte characters are used for the current language setting, i.e. English. If you select any language other than English from the drop-down menu, you need to download the font file for the selected language in advance. Otherwise, the language settings will not take effect. Refer to [1.4 Change Prompts & Messages](#).

Language Option		Font File Required	Font Size
Single Byte Character (English)	Single-Byte	N/A (default system font)	Depends on 4.4 Font Size setting
Traditional Chinese	Double-Byte	TC font file	font size 16x16
Simplified Chinese	Double-Byte	SC font file	font size 16x16
Korean	Double-Byte	KR font file	font size 16x16
Japanese	Double-Byte	JP font file	font size 16x16
Greek	Single-Byte	Multi-language font file	Depends on 4.4 Font Size setting
French	Single-Byte	Multi-language font file	Depends on 4.4 Font Size setting

4.2 SCREEN SCROLL & CONTROL

Limited to the actual screen size, the mobile computer can only display a portion of the host screen. The following features help ease working from the terminal screen.

4.2.1 NAVIGATOR

A navigator can be a graphic icon or miniature window on the terminal screen, indicating the relationship between the terminal screen and the host screen. A miniature cursor is blinking to indicate the input position.

Options	Remarks
<i>None</i>	Disable the navigator.
<i>Icon</i>	By default, a graphic icon is used for navigation. <ul style="list-style-type: none"> ▶ Take 8500 Series for example. The icon will appear on the bottom line of the screen.
<i>20*15</i> <i>32*24</i>	Instead of the small icon, you may select "20*15" or "32*24" for a larger icon. <ul style="list-style-type: none"> ▶ Take 8500 Series for example. The icon will take the top few lines of the screen.

4.2.2 NAVIGATOR KEY

The navigator key works as the toggle of navigator. When you press the navigator key on the mobile computer, it will hide or show the navigator by turns.

- ▶ On 8300/8400/8500 Series, the navigator key only works when a larger icon (20*15 or 32*24) for navigator is applied.

Options	Remarks
<i>Disable</i>	By default, the navigator key is disabled.
<i>FN+0 ~</i> <i>FN+9</i>	Select a function key combination for the navigator key. <ul style="list-style-type: none"> ▶ Select the navigator key (FN+0 ~ FN+9). The selected key combination will become unavailable on the Function Key Mapping list. For example, if you select FN+6, you will find it mapped to "Navigator Key".

4.2.3 HORIZONTAL STEPS

Specify how many horizontal steps the cursor will move at a time on the host screen when you press the following key combinations simultaneously –

- ▶ **FN + Left** (for 8300/8400/8500 Series) or **FN + "-+ \$"** (for 8000 Series)
- ▶ **FN + Right** (for 8300/8400/8500 Series) or **FN + "%#●"** (for 8000 Series)

4.2.4 VERTICAL STEPS

Specify how many vertical steps the cursor will move at a time on the host screen when you press the following key combinations simultaneously –

- ▶ **FN + Up**
- ▶ **FN + Down**

Note: The horizontal and vertical steps are associated with the font size.

4.2.5 CURSOR TRACKING

This feature is enabled by default. The terminal screen will automatically adjust itself so that the cursor will always be visible on the screen. Thus, every screen received from the host will be displayed with the cursor visible to indicate the first input field.

Refer to [4.6 Lock Screen](#). When the Lock Screen feature is enabled, the Cursor Tracking feature will be disabled automatically; and vice versa.

Note: This feature only works when a screen refresh incident occurs on the host.

4.2.6 TRIM SPACES

Select the check box to make the most use of the terminal screen; unnecessary spaces will be discarded. Take the following for example.

Original line: -> 1. Set up<-

Trimmed ->1. Set up<-

Note: Spaces between characters will not be discarded.

4.2.7 REMOVE EMPTY LINE

Select the check box to automatically ignore empty lines on the host screen.

Note: This feature can only be enabled when there is no contradiction with 5250's field definition.

4.2.8 CURSOR FLASHING

Select the check box to have a flashing cursor.

4.3 MESSAGE

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 combination, you will be able to follow the messages more closely.

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

Settings	Remarks
<i>Line Number</i>	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 24.

<i>Function Key</i>	This function key is used to recall the most recent dialog box after it has been closed due to a specified time-out. <ul style="list-style-type: none"> ▶ By default, the message key is disabled. ▶ Select the message key (FN+0 ~ FN+9). The selected key 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".
<i>Timeout</i>	Specify a period of time before the dialog box is closed, in units of second.
<i>Exclude String</i>	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.

4.4 FONT SIZE

The terminal screen size varies by the mobile computer. Display capability, as shown below, depends on the screen size as well as the font you use. Refer to [1.4 Change Prompts & Messages](#).

Mobile Computer	Small (Font 6x8)	Large (Font 8x16)
8000 Series	16 characters by 8 lines (default)	12 characters by 4 lines
8300 Series	20 characters by 8 lines (default)	15 characters by 4 lines
8400 Series	26 characters by 18 lines (default)	20 characters by 9 lines
8500 Series	26 characters by 19 lines (default)	20 characters by 9 lines

The font size setting affects single-byte languages as well as the alphanumeric characters for double-byte languages. Refer to [4.1 Language](#).

- ▶ By default, small font (6x8) is applied. Data coming in from the host will be displayed accordingly.
- ▶ Large font (8x16) must be applied for double-byte languages, such as Chinese, Japanese, etc. In that case, select the check box first so that all the prompts and messages will use large font. Proceed to [1.4 Change Prompts & Messages](#).

This setting also affects the default horizontal/vertical steps the cursor move at one time on the host screen.

4.5 FIELD LENGTH IF EXCEED

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.

Options	Remarks
<i>Reject</i>	Simply reject the input data.
<i>Truncate</i>	Discard the part that exceeds the field length. The rest of data is accepted.
<i>Split to Next Field</i>	The whole data is accepted. The part that exceeds the field length will be displayed in next field.

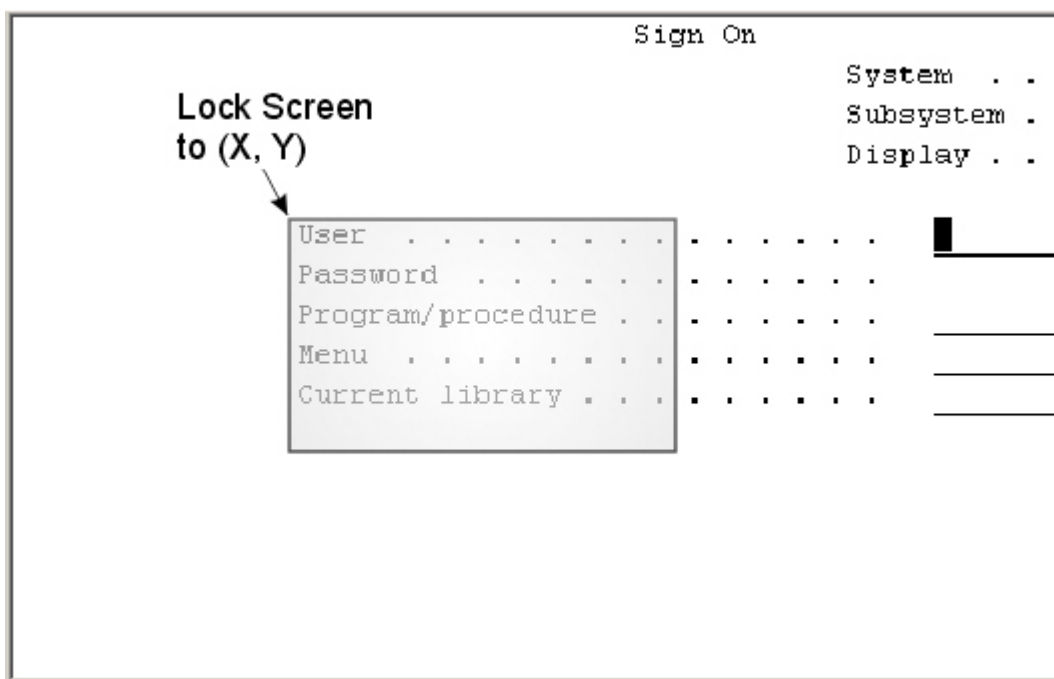
4.6 LOCK SCREEN

By default, the upper-left point of the terminal screen is not locked when the cursor tracking feature is enabled. That is, the terminal 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 terminal screen when being mapped on the host screen.

Note: This feature is suitable for host applications when the desired information is always displayed closely and fit to the terminal screen. When the Lock Screen feature is enabled, the Cursor Tracking feature will be disabled automatically; and vice versa.

The coordinates (0,0) on the terminal 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. The relationship between the terminal screen (small) and the host screen (large) is based on the upper-left point of the screens (see below).



The cursor is outside of the terminal screen (see above). To view the hidden information or locate the cursor, you need to adjust the terminal screen manually.

Horizontal / Vertical Steps

Press the following key combinations simultaneously –

- ▶ **FN + Left** (for 8300/8400/8500 Series) or **FN + “-+ \$”** (for 8000 Series)
- ▶ **FN + Right** (for 8300/8400/8500 Series) or **FN + “%# ●”** (for 8000 Series)
- ▶ **FN + Up**

▶ **FN + Down**

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

Note: For 8500 Series, the above 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 terminal screen instead. That is, you cannot use them to adjust LCD contrast and backlight intensity until you log out.

Cursor Movement

- ▶ To move the cursor to a desired input field, press the function key that is mapped to "NEXT".
- ▶ To move the cursor to a desired input point, press the arrow keys **Up**, **Down**, **Left**, and **Right**.

4.7 FUNC TOGGLE & FUNCTION KEY MAPPING

The function key or key combination is one of the keys on the mobile physical 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.

4.7.1 FUNC TOGGLE

Generally, a function key combination, which requires pressing **FN** to enter the function mode, works as follows —

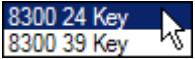
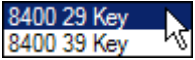
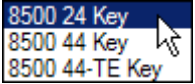
- 1) Press **FN** on the 8300/8400/8500 Series mobile computer.
There will be an "F" icon on the screen to indicate the function mode is on.
- 2) Press the second key to get the value of a key combination (say, press the number key **1** to get the value of **F1**). The icon will go off as the function mode is toggled off.
To have the function mode persist, you may choose to lock the function toggle in advance so that it will not be toggled off automatically.
- 3) To get the value of another key combination, repeat the above steps.
To abort the function mode, press **FN** again and the icon will go off.

Note: For 8300/8400/8500 Series, the function key is unlocked by default.
For 8000 Series, the function key only works with the function toggle locked.

Function Toggle	Remark
<i>Unlocked</i> (also known as <i>Auto Resume mode</i>)	The function mode is toggled on by pressing the function key. It can be toggled off by pressing the second key of the key combination.
<i>Locked</i> (also known as <i>Toggle mode</i>)	The function mode is toggled on by pressing the function key. It can only be toggled off by pressing the function key again.

4.7.2 KEYPAD TYPE

The following options for keypad layout are supported for 8300/8400/8500 Series. Select the matching keypad type first, and map the available function keys to meet your needs.

Mobile Computer	Keypad Type	Remark
8300 Series		
8400 Series		
8500 Series		44-TE Key is a new option specifically provided for terminal emulation use!

4.7.3 KEY MAPPING

By default, FN+1 ~ FN+9 are mapped to PF1 ~ PF9 (Program Function keys). Click an available function key and change its mapping to meet a specific need.

Note: The function key mapping list varies by the mobile computer and keypad layout. If a specific key is not available on the physical keypad, its associated key mapping may not take effect.

For example, the following function keys may be required during a telnet session.

Function Key	Mapped to	Remarks
Any available key	F3	Exit the sign-on request.
Any available key	F12	Cancel a task.
Any available key	Switch Key	See 2.2 RFID Reader
Tab or any other key	NEXT	See 3.5.1 Login – Username/Password
Any available key	Name Key	See 3.5.1 Login – Username/Password
Any available key	Password Key	See 3.5.1 Login – Username/Password
Any available key	Navigator Key	See 4.2.2 Navigator Key .
Any available key	Message Key	See 4.3 Message .

4.8 RESET

Click **Reset** to load the default settings.

Note: The current settings will be cleared.

SCREEN REFORMATTING

The screen reformat feature requires you to enable it by entering the activation key on the mobile computer; otherwise, the screen settings cannot take effect. If you have received an activation key, proceed with the screen capture task.

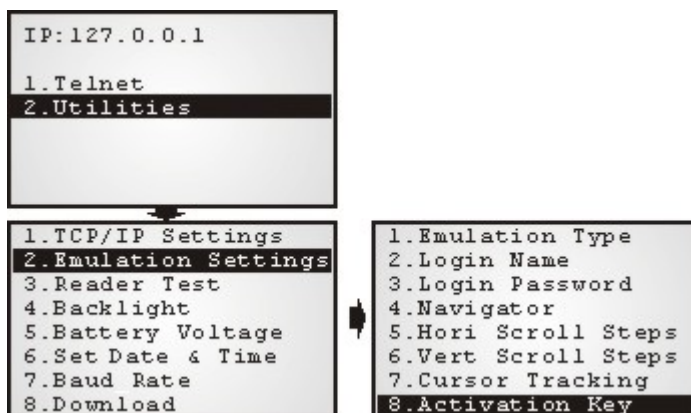
Note: CipherLab will issue a unique activation key under the pay-by-use policy. Please contact your local sales representative for licensing.

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5.1 ACTIVATE THE SCREEN REFORMAT FEATURE


- 1) Press **Power** on the mobile computer to enter the **CipherNet Runtime Menu**.
- 2) Select **2. Utilities | 2. Emulation Settings | 8. Activation Key**.



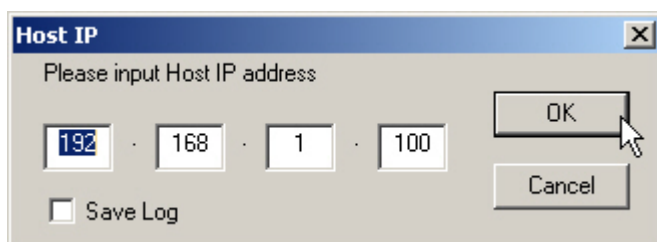
- 3) Scan the activation barcode (or enter the activation key you received).
- 4) Return to the main menu and select **1. Telnet**.
A new session will start with reformatted screens.

5.2 CAPTURE HOST SESSION SCREENS

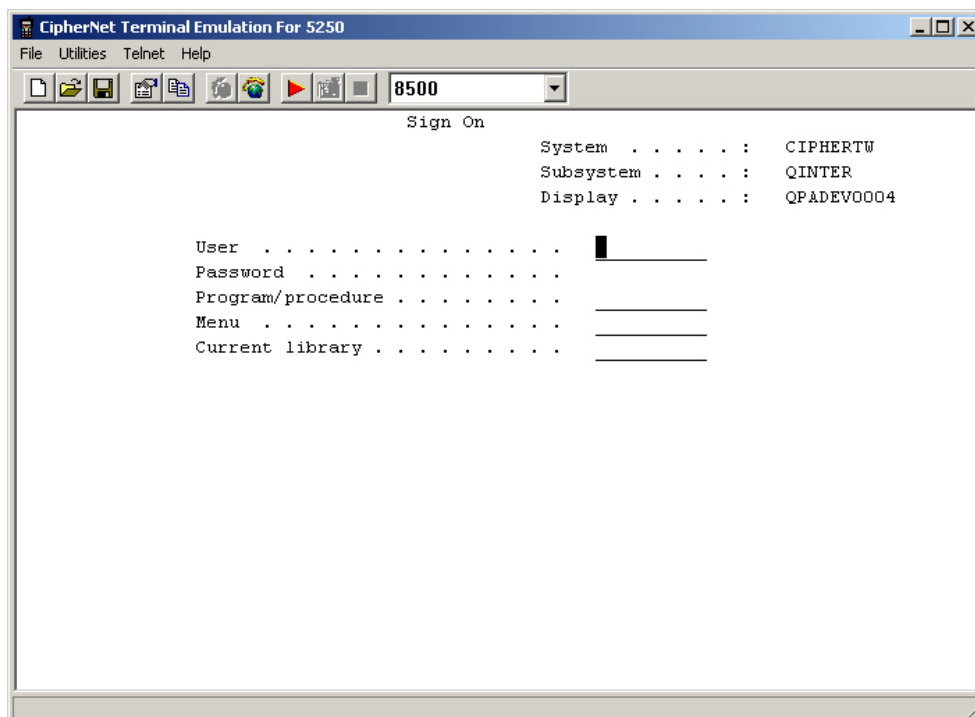
5.2.1 LOGON TO HOST

- 1) Run the CipherNet program on your computer.
- 2) Click **OK** to accept the End-User License Agreement (EULA).
- 3) Connect to the host via **Telnet Menu | Connect** or click  on the toolbar.
- 4) Enter the IP address of the host that you wish to access via telnet.

Select the check box of Save Log in case you need to analyze the activities during a telnet session. The information will be saved to a log file in the "Logs" folder automatically created in the same directory where the CipherNet program is.



- 5) Click **OK** to start connecting to the host. The host system will prompt you to enter username/password to login as shown below.






- 6) After login, you may start using the host application you need.

Note: Wireless LAN networking settings must be configured properly.

5.2.2 CAPTURE HOST SCREENS

You may capture screens from the host application using the associated commands via [Telnet Menu](#) or the following icons on the toolbar. A status message will appear on the left bottom of the CipherNet window, indicating the current status.

- 1) Click  to start the capture task and save the host screens to a .SCR file.
(Status message: Ready to capture)
- 2) Click  to capture the current host screen. Skip unnecessary screens.
(Status message: A total of screens that have been captured.)
- 3) Click  to stop the capture task when you have captured the screens necessary for the terminal operation during a normal session.
- 4) Proceed to reformat host screens via **Utilities Menu | Configure**.

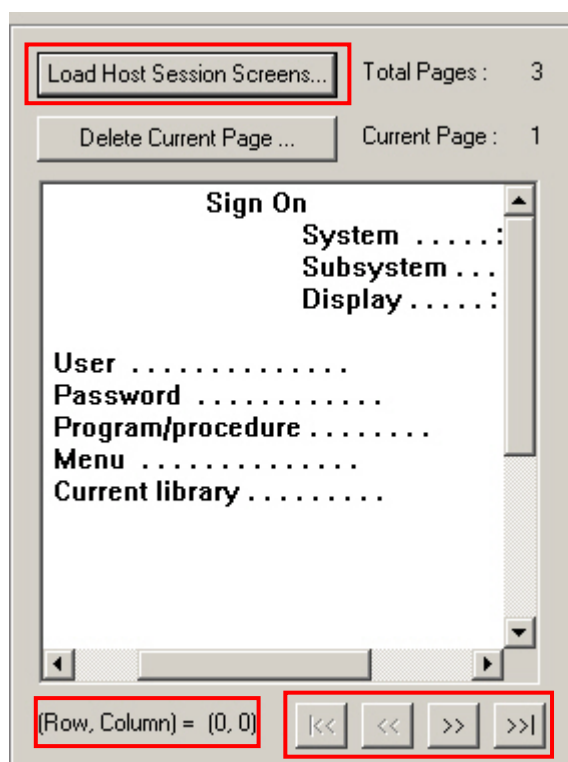
Note: Try to capture all the necessary screens. If you cannot decide which screen to skip now, capture it. You can always delete it later when the .SCR file is loaded for screen reformatting.

5.3 REFORMAT HOST SCREENS

The target is to reformat the captured host screens, or pages, so that they can be best displayed on the terminal screen.

The Screen settings page is divided into two parts: one is a window (left) displaying the captured host screens for viewing and editing, and the other is the associated forms (right) for reformatting these pages to fit in the terminal screen.

5.3.1 HOST SCREEN



Load Host Session Screens

Click **Load Host Session Screens...** to import the screens from a .SCR file. The total of pages, or screens, is displayed next to the button.

Click on any part of the window. The current position (Row, Column) will be displayed accordingly.

- ▶ Drag the horizontal/vertical scroll bars to view the hidden text of the current page.
- ▶ Click the four control buttons to change the page currently displayed –



for displaying the first page



for displaying the previous page

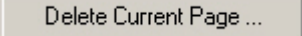


for displaying the next page



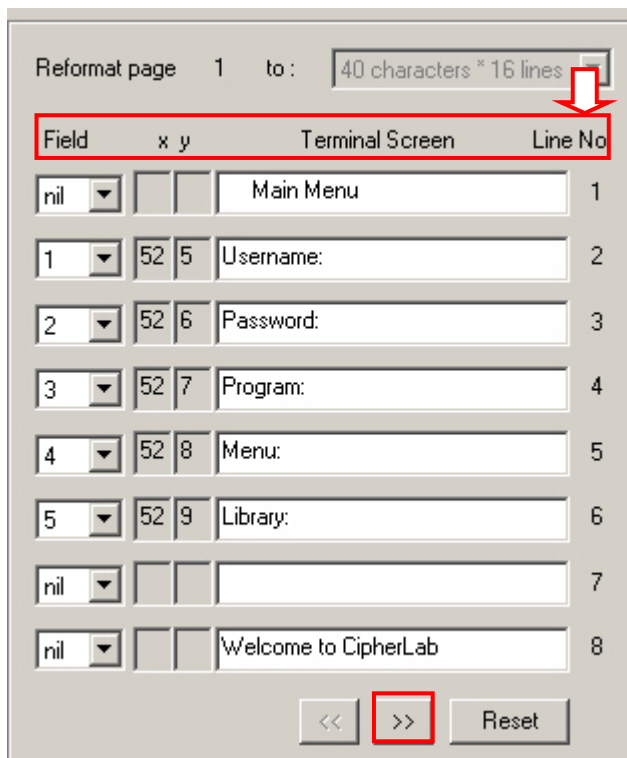
for displaying the last page

Delete Current Screen

Click  if the screen currently displayed is not desired for reformatting. The current number of page, or screen, is displayed next to the button.

Note: If you neither delete nor reformat a captured screen, there will be an empty screen displayed during a telnet session.

5.3.2 TERMINAL SCREEN



Reformat page 1 to : 40 characters * 16 lines

Field	x	y	Terminal Screen	Line No
nil			Main Menu	1
1	52	5	Username:	2
2	52	6	Password:	3
3	52	7	Program:	4
4	52	8	Menu:	5
5	52	9	Library:	6
nil				7
nil			Welcome to CipherLab	8

<< >> Reset

Reformat Page ... to

Specify the page format on the terminal screen. You can have different page format for different host screen.

- ▶ This setting or its options depend on the font size you use in [4.4 Font Size](#).

Field (x, y)

If the original message of a line does not prompt you to input selection, i.e. no input fields, leave it as "nil".

If the original message of a line prompts you to input selection, select the matching field number and rephrase its message if necessary. The total of fields on the host screen is reflected in the drop-down menu of Field.

Terminal Screen (Messages)

Copy the necessary messages from the Host Screen window and rephrase them, if necessary, to fit to the terminal screen.

Line No.

This indicates the line number when the message is displayed on the terminal screen.

Control Buttons

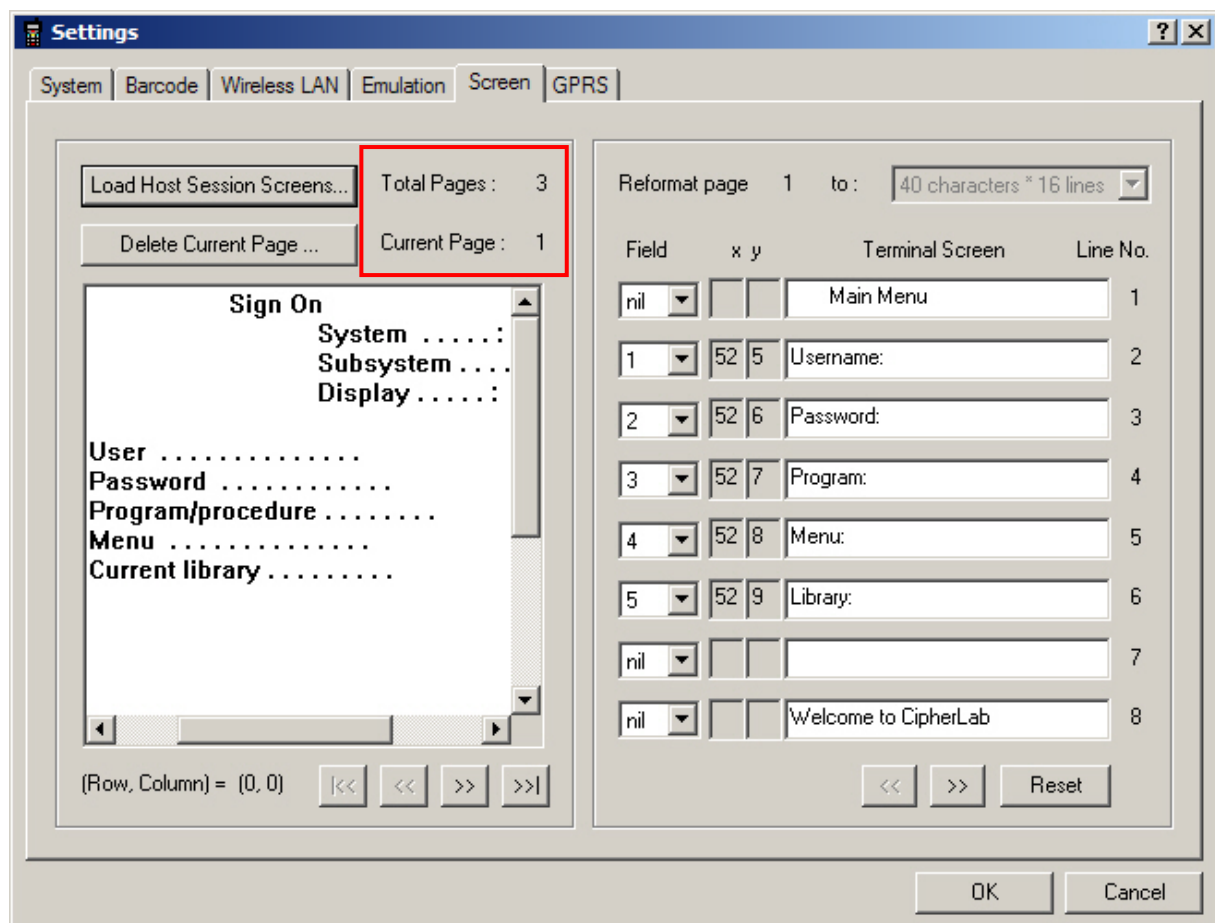
If the total lines of page format setting exceed 8, the two buttons will become available for moving forward or backward to display the rest lines.

Reset

Click **Reset** to load the default settings.

Note: The current host screens and settings for reformatting will be cleared after clicking **Reset**.

5.3.3 EXAMPLE


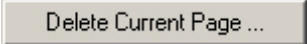


- ▶ You have loaded a total of 3 host screens, and currently work on the first page.
- ▶ From the Host Screen window (left), you can see there are four message lines and one empty line on this page. You may ignore the empty lines and simply skip them when reformatting.
- ▶ Copy the necessary messages for reformatting (right). You may need to rephrase them so that they can best fit in to a terminal screen, which is decided by the page format of the terminal screen.

Note: The coordinates of a Field can be ignored if the message is not requesting you to input information.

- ▶ Below shows the messages displayed on the host screen before reformatting, and those rephrased to be displayed on the terminal screen after reformatting.

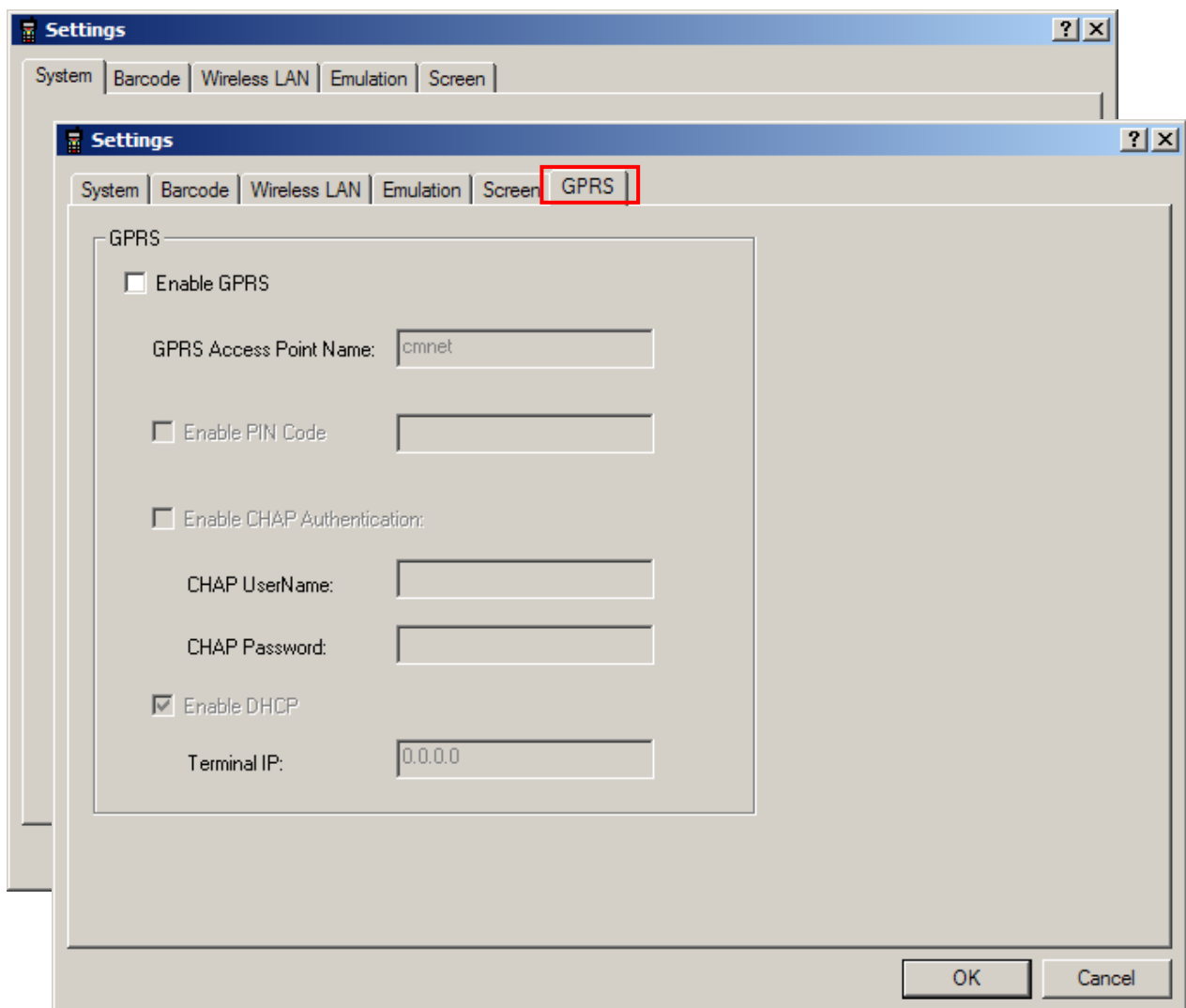
Rows	Host Screen	Lines	Terminal Screen
1	Sign On	1	Main Menu
2	System...	2	Username:
3	Subsystem...	3	Password:
4	Display...	4	Program:
5	User...	5	Menu:
6	Password...	6	Library:
7	Program/procedure...	7	(empty)
8	Menu...	8	Welcome to CipherLab
9	Current library...	9	
(before reformatting)		(after reformatting)	

- ▶ Proceed to next host screen by clicking  at the bottom of Host Screen window. If a host screen is not desired for reformatting, you must delete it by clicking ; otherwise, it will become an empty screen during a telnet session.

GPRS SETTINGS

The GPRS connectivity is only supported for 8500 Series.

- ▶ Access Point Name — name of access point that connects the mobile network to the Internet
- ▶ IP address (DHCP or static)
- ▶ User name and password (may be optional, depending on Challenge-Handshake Authentication Protocol)



Once the configuration file (.NET) has been downloaded to the mobile computer, the new settings will take effect immediately and become the defaults. However, you still can change many of the settings directly on the mobile computer via **CipherNet Runtime Menu** or **System Menu**:

Item	Remark
Access Point Name	Required
PIN Code	Required if not using default
CHAP User Name & Password	Depends on CHAP authentication setting
IP Address, dynamic or static	Required; provide a static IP if DHCP is disabled

SCAN ENGINE SETTINGS

The **MIRROR Terminal Emulator** allows configuring the following reader types, depending on the module equipped on your mobile computer:

	8000	8300	8400	8500
Barcode Reader				
<i>1D CCD Scan Engine</i>	✓	✓	✓	✓
<i>1D Laser Scan Engine</i>	✓	✓	✓	✓
<i>1D Long Range Laser Scan Engine (LR)</i>	x	✓	x	✓
<i>1D Extra Long Range Laser Scan Engine (ELR)</i>	x	x	x	✓
<i>2D Scan Engine</i>	x	x	✓	✓
RFID Reader				
<i>ACG_RFID Module v0.9</i>	x	x	x	✓
<i>ACG_RFID Module v1.0</i>	x	✓	x	✓

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 CipherNet run-time program 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	x	x	✓
Code 93	✓	✓	✓
Composite Code	x	x	✓
MSI	✓	✓	✓
Plessey	✓	x	x

Postal Codes		x	x	✓
Telepen		✓	x	x
Code 128	Code 128	✓	✓	✓
	GS1-128 (EAN-128)	✓	✓	✓
	ISBT 128	✓	✓	✓
Code 2 of 5	Industrial 25 (Discrete 25)	✓	✓	✓
	Interleaved 25	✓	✓	✓
	Matrix 25	✓	x	8400*
	Chinese 25	✓	x	8400*

Note: Matrix 25 and Chinese 25 are supported on 2D scan engine for 8400 only.

Code 3 of 9	Code 39	✓	✓	✓
	Trioptic Code 39	x	✓	✓
	Italian Pharmacode (Code 32)	✓	✓	✓
	French Pharmacode	✓	x	x
EAN/UPC	EAN-8	✓	✓	✓
	EAN-13	✓	✓	✓
	Bookland EAN (ISBN)	✓	✓	✓
	UPC-E0	✓	✓	✓
	UPC-E1	x	✓	✓
	UPC-A	✓	✓	✓
GS1 DataBar (RSS)	GS1 DataBar Omnidirectional (RSS-14)	✓	✓	✓
	GS1 DataBar Limited (RSS Limited)	✓	✓	✓
	GS1 DataBar Expanded (RSS Expanded)	✓	✓	✓
2D Symbologies	PDF417	x	x	✓
	MicroPDF417	x	x	✓
	Data Matrix	x	x	✓
	Maxicode	x	x	✓
	QR Code	x	x	✓

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	✓	✓	✓

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 Engine	Description	Default
Scan Mode		Laser mode
Continuous Mode	Non-stop scanning <ul style="list-style-type: none"> ▶ 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 <ul style="list-style-type: none"> ▶ Capable of decoding the same barcode repeatedly 	
Repeat Mode	Non-stop scanning <ul style="list-style-type: none"> ▶ 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. <ul style="list-style-type: none"> ▶ The scanning won't stop until you release the trigger. 	
Alternate Mode	Press the scan trigger to start with scanning. <ul style="list-style-type: none"> ▶ 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. <ul style="list-style-type: none"> ▶ The scanning won't stop until (a) a barcode is decoded, (b) the pre-set timeout expires, or (c) you release the trigger. 	
Laser Mode	Hold down the scan trigger to start with scanning. <ul style="list-style-type: none"> ▶ 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. <ul style="list-style-type: none"> ▶ 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. <ul style="list-style-type: none"> ▶ 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. <ul style="list-style-type: none"> ▶ If "Three Times" is selected, it will take a total of four consecutive successful decodings of the same barcode to make the reading valid.
Time-out	3 sec.
0~255 (second)	Set the maximum time for decoding to continue during a scan attempt. It applies to the following scan modes only – <ul style="list-style-type: none"> ▶ Aiming mode ▶ Laser mode ▶ Auto Off mode ▶ Auto Power Off mode

SYMBOLGY SETTINGS TABLE

CCD/Laser Engine	Description	Default
Codabar		Enable
Transmit Start/Stop Characters	Decide whether to include the start/stop characters in the data being transmitted. If "Transmit Start/Stop Characters" is desired, select one set: <ul style="list-style-type: none"> ▶ abcd / abcd ▶ abcd / tn*e ▶ ABCD / ABCD ▶ ABCD / TN*E 	No
Code 128		Enable
GS1-128 (EAN-128)		Enable
Transmit Code ID (for EAN-128)	Decide whether to include Code ID ("]C1") will be included in the data being transmitted.	No
Replace Field Separator	Decide whether to replace the field separator. If the barcode contains Field Separator "0x1D", it will be changed to the desired Field Separator. For example, type the desired character ";" (semicolon) as the new field separator. Then if the barcode contains Field Separator "0x1D", it will be changed to ";".	No
ISBT 128		Enable
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 Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No

Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range 	1~127
Interleaved 25		Enable
Start/Stop Selection	Refer to Industrial 25.	Interleaved 25
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range 	1~126
Matrix 25		Disable
Start/Stop Selection	Refer to Industrial 25.	Matrix 25
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range 	1~127
French Pharmacode		Disable
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Italian Pharmacode (Code 32)		Disable
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes

Note: For French/Italian Pharmacode, "Transmit Start/Stop Character" is not provided in UI but it is controlled by the same setting of Code 39.

Code 39		Enable
Transmit Start/Stop Character	Decide whether to include the start/stop characters "*" in the data being transmitted.	No
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit 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 Check Digit	Select one of the three calculation formulas to verify the check digit. If the check digit is incorrect, the barcode will not be accepted. <ul style="list-style-type: none"> ▶ Single Modulo 10 ▶ Double Modulo 10 ▶ Modulo 11 & 10 	Single Modulo 10
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted. <ul style="list-style-type: none"> ▶ Last digit not transmitted ▶ Both digits transmitted ▶ Both digits not transmitted 	Both digits transmitted
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range 	0~127
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 Check Digit	Decide whether to include the two check 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 Omnidirectional (RSS-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 Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
GS1 DataBar Limited (RSS Limited)		Disable
Transmit Code ID	Refer to RSS-14.	Yes
Transmit Application ID	Refer to RSS-14.	Yes
Transmit Check Digit	Refer to RSS-14.	Yes
GS1 DataBar Expanded (RSS Expanded)		Disable
Transmit Code ID	Refer to RSS-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 Check Digit	Decide whether to include the check digit 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 Check Digit	Decide whether to include the check digit 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 Check Digit	Decide whether to include the UPC-A check digit 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 Check Digit	Decide whether to include the UPC-E check digit in the data being transmitted.	Yes
Transmit System Number	Decide whether to include the UPC-E System Number in the data being transmitted.	No
Enable UPC-E1	Decide whether to decode both UPC-E0 and UPC-E1 barcodes. ▶ By default, it decodes the UPC-E0 barcodes only.	No
Enable UPC-E1 Triple Check	Decide whether to apply read redundancy to the UPC-E1 barcode. ▶ When applied, the same UPC-E1 barcode has to be read three times to make a valid reading. This is helpful when the barcode is defaced and requires more attempts to read it successfully.	No
Addon 2 / Addon 5	Decide whether to decode UPC-E with supplementals.	No

CODE ID TABLE

Code ID Options	Set 1	Set 2	Set 3	Set 4	Set 5
Code 39	A	C	Y	M	A
Italian Pharmacode	A	C	Y	M	A
French Pharmacode	A	C	Y	M	A
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S
Codabar	F	N	X	N	F
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
ISBT 128	H	K	K	K	C
UPC-E	S	E	C	E	E
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
MSI	V	V	D	P	M
Plessey	W	W	E	Q	P
Telepen	Z	---	---	---	---

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 Engine	Description	Default
Scan Mode		Laser mode
Aiming Mode	<p>Press the scan trigger to aim at a barcode. Within one second, press the trigger again to decode the barcode.</p> <ul style="list-style-type: none"> ▶ The scanning won't stop until (a) a barcode is decoded, (b) the pre-set timeout expires, or (c) you release the trigger. 	
Laser Mode	<p>Hold down the scan trigger to start with scanning.</p> <ul style="list-style-type: none"> ▶ The scanning won't stop until (a) a barcode is read, (b) the preset timeout expires, or (c) you release the trigger. 	
Aiming Duration		3 sec.
0~255 (second)	<p>Set the maximum time for decoding to continue during a scan attempt.</p> <ul style="list-style-type: none"> ▶ It applies to Aiming mode only. 	

SYMBOLGY SETTINGS TABLE

LR/ELR Engine	Description	Default
Codabar		Disable
CLSI Editing	<p>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.</p> <ul style="list-style-type: none"> ▶ The 14-character barcode length does not include start/stop characters. 	No
NOTIS Editing	<p>Decide whether to include the start/stop characters in the data being transmitted.</p> <ul style="list-style-type: none"> ▶ NOTIS Editing is to strip the start/stop characters, i.e. to disable "Transmit Start/Stop Characters". 	No
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length
Code 128		Enable
GS1-128		Enable

Replace Separator	Field	Decide whether to replace the field separator. If the barcode contains Field Separator "0x1D", it will be changed to the desired Field Separator. For example, type the desired character ";" (semicolon) as the new field separator. Then if the barcode contains Field Separator "0x1D", it will be changed to ";".	No
ISBT 128			Enable
Industrial 25 (Discrete 25)			Enable
Select Length		<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length
Interleaved 25			Enable
Convert to EAN-13		Convert a 14-character barcode into EAN-13 if the following requirements are met: <ul style="list-style-type: none"> ▶ The barcode must have a leading 0 and a valid EAN-13 check digit. 	No
Verify Check Digit		Decide whether to verify the check digit. If desired, select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted. <ul style="list-style-type: none"> ▶ No ▶ USS algorithm ▶ OPCC algorithm 	No
Transmit Check Digit		Decide whether to include the check digit in the data being transmitted. <ul style="list-style-type: none"> ▶ "Verify Check Digit" must be enabled so that the check digit can be left out (= "Transmit Check Digit" disabled). 	No
Select Length		<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length
Code 39			Enable
Convert to Code 32		Convert to Italian Pharmacode.	No
Code 32 Prefix		Prefix character "A" to Code 32 barcodes.	No
Verify Check Digit		Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit		Decide whether to include the check digit in the data being transmitted. <ul style="list-style-type: none"> ▶ "Verify Check Digit" must be enabled so that the check digit can be left out (= "Transmit Check Digit" disabled). 	No
Code 39 Full ASCII		Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable

Trioptic Code 39	Decide whether to decode Trioptic Code 39. <ul style="list-style-type: none"> ▶ Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. It always contains six characters. 							
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length						
Code 93		Disable						
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length						
MSI		Disable						
Verify Check Digit	<p>If Two Check Digits option is selected, an additional verification is required to ensure integrity. Select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Check Digit</th> <th style="text-align: left;">Algorithm</th> </tr> </thead> <tbody> <tr> <td>One Check Digit</td> <td>Single Modulo 10</td> </tr> <tr> <td>Two Check Digits</td> <td> <ul style="list-style-type: none"> ▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10 </td> </tr> </tbody> </table>	Check Digit	Algorithm	One Check Digit	Single Modulo 10	Two Check Digits	<ul style="list-style-type: none"> ▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10 	Single Modulo 10
Check Digit	Algorithm							
One Check Digit	Single Modulo 10							
Two Check Digits	<ul style="list-style-type: none"> ▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10 							
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	No						
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length						
GS1 DataBar (RSS)		---						
GS1 DataBar Omnidirectional (RSS-14)	"Convert to UPC/EAN" only applies to RSS-14 and RSS Limited barcodes not decoded as part of a Composite barcode.	Enable						
GS1 DataBar Limited (RSS Limited)	Convert to EAN-13	Enable						
GS1 DataBar Expanded (RSS Expanded)	Strip the leading "010" from barcodes. <ul style="list-style-type: none"> ▶ "01" is the Application ID and must be followed by a single zero (the first digit encoded) 	Enable						
Convert RSS to UPC/EAN	Convert to UPC-A Strip the leading "0100" from barcodes. <ul style="list-style-type: none"> ▶ "01" is the Application ID and must be followed by two or more zeros (but not six zeros) 	No						
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.	No
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
UPC-A		Enable
Transmit Check Digit	Decide whether to include the UPC-A check digit 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 Check Digit	Decide whether to include the UPC-E0 check digit 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 Check Digit	Decide whether to include the UPC-E1 check digit 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/EAN-128 Coupon Codes. ▶ UPC-A, EAN-13, and EAN-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

CODE ID TABLE

Code ID Options	Set 1	Set 2	Set 3	Set 4	Set 5
Codabar	F	N	X	N	F
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Code 39	A	C	Y	M	A
Trioptic Code 39	A	C	Y	M	X
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
Italian Pharmacode	A	C	Y	M	A
MSI	V	V	D	P	M
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
UPC-E	S	E	C	E	E

2D SCAN ENGINE

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

READER SETTINGS TABLE

2D Engine	Description	Default
Scan Mode		Laser mode
Continuous Mode	Non-stop scanning <ul style="list-style-type: none"> ▶ 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 <ul style="list-style-type: none"> ▶ Capable of decoding the same barcode repeatedly 	
Alternate Mode	Press the scan trigger to start with scanning. <ul style="list-style-type: none"> ▶ 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. <ul style="list-style-type: none"> ▶ The scanning won't stop until (a) a barcode is decoded, (b) the pre-set timeout expires, or (c) you release the trigger. 	
Laser Mode	Hold down the scan trigger to start with scanning. <ul style="list-style-type: none"> ▶ 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. <ul style="list-style-type: none"> ▶ The scanning won't stop until (a) a barcode is read or (b) the preset timeout expires. 	
Focus Mode	Select the focus mode to control the working range: <ul style="list-style-type: none"> ▶ 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. <ul style="list-style-type: none"> ▶ Turn On (Internal LED) ▶ Turn Off 	On
Aiming Pattern	Decide whether to project the aiming pattern during barcode capture. <ul style="list-style-type: none"> ▶ Turn On ▶ Turn Off 	On

Time-out		3 sec.
0~255 (second)	Set the maximum time for decoding to continue during a scan attempt. It applies to the following scan modes only - <ul style="list-style-type: none"> ▶ Aiming mode ▶ Laser mode ▶ Auto Off mode 	
Aiming Duration		3 sec.
1~255 (second)	Set the maximum time for aiming to continue before a scan attempt.	
Picklist Mode	Picklist mode enables the decoder to decode only barcodes aligned under the center of the laser aiming pattern. <ul style="list-style-type: none"> ▶ Enable ▶ Disable 	Disable
1D Inverse Decode	1D Inverse Decoder: <ul style="list-style-type: none"> ▶ Decode regular 1D barcode only ▶ Decode inverse 1D barcode only ▶ Decode both regular and inverse 	Decode regular 1D barcode only

Note: (1) Focus Mode is supported on 2D scan engine for 8500 only.
(2) Picklist Mode and 1D Inverse Decoding are supported on 2D scan engine for 8400 only.

SYMBOLGY SETTINGS TABLE

1D SYMBOLOGIES

2D Engine	Description	Default
Codabar		Disable
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. <ul style="list-style-type: none"> ▶ 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. <ul style="list-style-type: none"> ▶ NOTIS Editing is to strip the start/stop characters, i.e. to disable "Transmit Start/Stop Characters". 	No
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length
Code 128		Enable
GS1-128		Enable
Replace Field Separator	Decide whether to replace the field separator. If the barcode contains Field Separator "0x1D", it will be changed to the desired Field Separator. For example, type the desired character ";" (semicolon) as the new field separator. Then if the barcode contains Field Separator "0x1D", it will be changed to ";".	No
ISBT 128		Enable
Industrial 25 (Discrete 25)		Enable
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length
Interleaved 25		Enable
Convert to EAN-13	Convert a 14-character barcode into EAN-13 if the following requirements are met: <ul style="list-style-type: none"> ▶ The barcode must have a leading 0 and a valid EAN-13 check digit. 	No
Verify Check Digit	Decide whether to verify the check digit. If desired, select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted. <ul style="list-style-type: none"> ▶ No ▶ USS algorithm ▶ OPCC algorithm 	No

Transmit Check Digit	Decide whether to include the check digit in the data being transmitted. <ul style="list-style-type: none"> ▶ "Verify Check Digit" must be enabled so that the check digit can be left out (= "Transmit Check Digit" disabled). 	No
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length
Matrix 25		Disable
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	No
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length
Chinese 25		Disable

Note: Matrix 25 and Chinese 25 are supported on 2D scan engine for 8400 only.

Code 39		Enable
Convert to Code 32	Convert to Italian Pharmacode.	No
Code 32 Prefix	Prefix character "A" to Code 32 barcodes.	No
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted. <ul style="list-style-type: none"> ▶ "Verify Check Digit" must be enabled so that the check digit can be left out (= "Transmit Check Digit" disabled). 	No
Code 39 Full ASCII	Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable
Trioptic Code 39	Decide whether to decode Trioptic Code 39. <ul style="list-style-type: none"> ▶ Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. It always contains six characters. 	
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length
Code 93		Disable
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length

MSI		Disable						
Verify Check Digit	<p>If Two Check Digits option is selected, an additional verification is required to ensure integrity. Select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted.</p> <table border="1"> <thead> <tr> <th>Check Digit</th> <th>Algorithm</th> </tr> </thead> <tbody> <tr> <td>One Check Digit</td> <td>Single Modulo 10</td> </tr> <tr> <td>Two Check Digits</td> <td> <ul style="list-style-type: none"> ▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10 </td> </tr> </tbody> </table>	Check Digit	Algorithm	One Check Digit	Single Modulo 10	Two Check Digits	<ul style="list-style-type: none"> ▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10 	Single Modulo 10
Check Digit	Algorithm							
One Check Digit	Single Modulo 10							
Two Check Digits	<ul style="list-style-type: none"> ▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10 							
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	No						
Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length						
GS1 DataBar (RSS)		---						
GS1 DataBar Omnidirectional (RSS-14)	"Convert to UPC/EAN" only applies to RSS-14 and RSS Limited barcodes not decoded as part of a Composite barcode.	Enable						
GS1 DataBar Limited (RSS Limited)	Convert to EAN-13	Enable						
GS1 DataBar Expanded (RSS Expanded)	Strip the leading "010" from barcodes. <ul style="list-style-type: none"> ▶ "01" is the Application ID and must be followed by a single zero (the first digit encoded) 	Enable						
Convert RSS to UPC/EAN	Convert to UPC-A	No						
	Strip the leading "0100" from barcodes. <ul style="list-style-type: none"> ▶ "01" is the Application ID and must be followed by two or more zeros (but not six zeros) 							
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.	No						
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.							
UPC-A		Enable						
Transmit Check Digit	Decide whether to include the UPC-A check digit 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 Check Digit	Decide whether to include the UPC-E0 check digit 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 Check Digit	Decide whether to include the UPC-E1 check digit 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/EAN-128 Coupon Codes. ▶ UPC-A, EAN-13, and EAN-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
Code 11		Disable
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted. ▶ No verification ▶ One Check Digit ▶ Two Check Digits	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted. ▶ "Verify Check Digit" must be enabled so that the check digit can be left out (= "Transmit Check Digit" disabled).	No

Select Length	<ul style="list-style-type: none"> ▶ Any Length ▶ One or two fixed lengths ▶ Range (1~55) 	Any Length
Postal Codes		---
US Postnet		Enable
US Planet		Enable
Transmit US Postal Check Digit	US Postnet or US Planet must be enabled first!	Enable
UK Postal		Enable
Transmit UK Postal Check Digit	UK Postal must be enabled first!	Enable
Japan Postal		Enable
Australian Postal		Enable
Dutch Postal		Enable
UPU FICS Postal		Disable
USPS 4CB/One Code/ Intelligent Mail		Disable

Note: UPU FICS Postal and USPS 4CB/One Code/ Intelligent Mail are supported on 2D scan engine for 8400 only.

Composite Codes		Disable		
Composite CC-C		Disable		
Composite CC-A/B		Disable		
Composite TLC-39		Disable		
GS1-128 Emulation Mode for UCC/EAN Composite Codes	Transmit UCC/EAN Composite Code data as if it was encoded in GS1-128 barcodes.	Disable		
UPC Composite Mode	<p>UPC barcodes can be "linked" with a 2D barcode during transmission as if they were one barcode.</p> <table border="1" style="width: 100%;"> <tr> <td> <p>UPC Never Linked</p> <p>Transmit UPC barcodes regardless of whether a 2D barcode is detected.</p> </td> </tr> <tr> <td> <p>UPC Always Linked</p> <p>Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted.</p> <ul style="list-style-type: none"> ▶ CC-A/B or CC-C must be enabled! </td> </tr> </table>	<p>UPC Never Linked</p> <p>Transmit UPC barcodes regardless of whether a 2D barcode is detected.</p>	<p>UPC Always Linked</p> <p>Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted.</p> <ul style="list-style-type: none"> ▶ CC-A/B or CC-C must be enabled! 	UPC Always Linked
<p>UPC Never Linked</p> <p>Transmit UPC barcodes regardless of whether a 2D barcode is detected.</p>				
<p>UPC Always Linked</p> <p>Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted.</p> <ul style="list-style-type: none"> ▶ CC-A/B or CC-C must be enabled! 				

	<p>Auto-discriminate UPC Composites</p> <p>Transmit UPC barcodes as well as the 2D portion if present.</p>	
--	---	--

2D SYMBOLOGIES

2D Engine	Description	Default						
2D Symbologies		---						
PDF417		Enable						
MicroPDF417		Disable						
Data Matrix		Enable						
Data Matrix Inverse	<p>Decide whether to decode Data Matrix Inverse.</p> <table border="1"> <tr> <td>Regular Only</td> </tr> <tr> <td>Decode regular Data Matrix barcodes only.</td> </tr> <tr> <td>Inverse Only</td> </tr> <tr> <td>Decode inverse Data Matrix barcodes only.</td> </tr> <tr> <td>Inverse Autodetect</td> </tr> <tr> <td>Decode both regular and inverse Data Matrix barcodes.</td> </tr> </table>	Regular Only	Decode regular Data Matrix barcodes only.	Inverse Only	Decode inverse Data Matrix barcodes only.	Inverse Autodetect	Decode both regular and inverse Data Matrix barcodes.	Regular Only
Regular Only								
Decode regular Data Matrix barcodes only.								
Inverse Only								
Decode inverse Data Matrix barcodes only.								
Inverse Autodetect								
Decode both regular and inverse Data Matrix barcodes.								
Mirror Image (for Data Matrix)	<p>Decide whether to decode mirror image Data Matrix barcodes.</p> <table border="1"> <tr> <td>Never</td> </tr> <tr> <td>Do not decode Data Matrix barcodes that are mirror images.</td> </tr> <tr> <td>Always</td> </tr> <tr> <td>Decode only Data Matrix barcodes that are mirror images.</td> </tr> <tr> <td>Auto</td> </tr> <tr> <td>Decode both mirrored and unmirrored Data Matrix barcodes.</td> </tr> </table>	Never	Do not decode Data Matrix barcodes that are mirror images.	Always	Decode only Data Matrix barcodes that are mirror images.	Auto	Decode both mirrored and unmirrored Data Matrix barcodes.	Never
Never								
Do not decode Data Matrix barcodes that are mirror images.								
Always								
Decode only Data Matrix barcodes that are mirror images.								
Auto								
Decode both mirrored and unmirrored Data Matrix barcodes.								
Maxicode		Enable						
QR Code		Enable						
QR Code Inverse	<p>Decide whether to decode QR Code Inverse.</p> <table border="1"> <tr> <td>Regular Only</td> </tr> <tr> <td>Decode regular QR Code only.</td> </tr> <tr> <td>Inverse Only</td> </tr> <tr> <td>Decode inverse QR Code only.</td> </tr> <tr> <td>Inverse Autodetect</td> </tr> <tr> <td>Decode both regular and inverse QR Code.</td> </tr> </table>	Regular Only	Decode regular QR Code only.	Inverse Only	Decode inverse QR Code only.	Inverse Autodetect	Decode both regular and inverse QR Code.	Regular Only
Regular Only								
Decode regular QR Code only.								
Inverse Only								
Decode inverse QR Code only.								
Inverse Autodetect								
Decode both regular and inverse QR Code.								

MicroQR		Enable						
Aztec		Enable						
Aztec Inverse	<p>Decide whether to decode Aztec Inverse.</p> <table border="1"> <tr> <td>Regular Only</td> </tr> <tr> <td>Decode regular Aztec barcodes only.</td> </tr> <tr> <td>Inverse Only</td> </tr> <tr> <td>Decode inverse Aztec barcodes only.</td> </tr> <tr> <td>Inverse Autodetect</td> </tr> <tr> <td>Decode both regular and inverse Aztec barcodes.</td> </tr> </table>	Regular Only	Decode regular Aztec barcodes only.	Inverse Only	Decode inverse Aztec barcodes only.	Inverse Autodetect	Decode both regular and inverse Aztec barcodes.	Regular Only
Regular Only								
Decode regular Aztec barcodes only.								
Inverse Only								
Decode inverse Aztec barcodes only.								
Inverse Autodetect								
Decode both regular and inverse Aztec barcodes.								

Note: Data Matrix Mirror, MicroQR, Aztec, and 2D Inverse are supported on 2D scan engine for 8400 only.

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	<p>Decide how to handle Macro PDF decoding.</p> <table border="1"> <tr> <td>Buffer All Symbols / Transmit Macro PDF When Complete</td> </tr> <tr> <td>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!</td> </tr> <tr> <td>Transmit Any Symbol in Set / No Particular Order</td> </tr> <tr> <td>Transmit data from each Macro PDF symbol as decoded, regardless of the sequence.</td> </tr> <tr> <td>Passthrough All Symbols</td> </tr> <tr> <td>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.</td> </tr> </table>	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!	Transmit Any Symbol in Set / No Particular Order	Transmit data from each Macro PDF symbol as decoded, regardless of the sequence.	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
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!								
Transmit Any Symbol in Set / No Particular Order								
Transmit data from each Macro PDF symbol as decoded, regardless of the sequence.								
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.								
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!

CODE ID TABLE

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Code ID Options	Set 1	Set 2	Set 3	Set 4	Set 5
Codabar	F	N	X	N	F
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Code 39	A	C	Y	M	A
Trioptic Code 39	A	C	Y	M	X
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
Italian Pharmacode	A	C	Y	M	A
MSI	V	V	D	P	M
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
UPC-E	S	E	C	E	E
Code 11	K	J	J	D	H
Composite Code (CC-A/B, CC-C)	L	X	M	J	La
Composite TLC-39	O	Z	O	R	L2
US Postnet	h	a	s	i	X
US Planet	i	b	t	j	X
UK Postal	j	c	u	k	X
Japan Postal	k	d	v	l	X
Australian Postal	l	e	w	m	X
Dutch Postal	m	f	x	n	X
PDF417	a	O	W	T	L
MicroPDF417	b	P	V	U	L
Data Matrix	c	Q	U	V	d
Maxicode	d	R	T	W	U
QR Code	e	S	S	X	Q
Macro PDF417	p	i	a	q	L
Macro MicroPDF417	q	j	b	r	L

8400

Code ID Options	Set 1	Set 2	Set 3	Set 4	Set 5
Codabar	F	N	X	N	F
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S
Chinese 25	Q	M	P	S	X
Code 39	A	C	Y	M	A
Trioptic Code 39	A	C	Y	M	X
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
ISBT 128	H	K	K	K	C
Italian Pharmacode	A	C	Y	M	A
MSI	V	V	D	P	M
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
UPC-E	S	E	C	E	E
Code 11	K	J	J	D	H
Composite Code (CC-A/B, CC-C)	L	X	M	J	La
Composite TLC-39	O	Z	O	R	L2
US Postnet	h	a	s	i	X
US Planet	i	b	t	j	X
UK Postal	j	c	u	k	X
Japan Postal	k	d	v	l	X
Australian Postal	l	e	w	m	X
Dutch Postal	m	f	x	n	X
USPS 4 CB / One Code / Intelligent Mail	n	g	y	o	X
UPU FICS Postal	o	h	z	p	X
PDF417	a	O	W	T	L
MicroPDF417	b	P	V	U	L
Data Matrix	c	Q	U	V	d
Maxicode	d	R	T	W	U
QR Code	e	S	S	X	Q
MicroQR	f	T	R	Y	Q

Aztec	g	U	Q	Z	z
IATA	z	z	r	h	S
Macro PDF417	p	i	a	q	L
Macro MicroPDF417	q	j	b	r	L