CipherLab
Reference Manual

Windows CE Mobile Computer

9300

Version 0.09

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

IMPORTANT NOTICES

FOR USA

This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FOR CANADA

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareil numerique respecte les limites de bruits radioelectriques applicables aux appareils numeriques de Classe B prescrites dans la norme sur le material brouilleur: "Appareils Numeriques," NMB-003 edictee par l'Industrie.

FOR HAND-HELD PRODUCT WITH RF FUNCTIONS

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body. It only operated in hand-held used.

If you only transfer data to Host by WLAN/Bluetooth, please keep the minimum distance 20 cm between machine & your body.

FOR PRODUCT WITH LASER

Per FDA and IEC standards, the scan engines described in this manual are not given a laser classification. However, the following precautions should be observed:

CAUTION

This laser component emits FDA / IEC Class 2 laser light at the exit port. Do not stare into beam.

SAFETY PRECAUTIONS

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

- The use of any batteries or charging devices, which are not originally sold or manufactured by CipherLab, will void your warranty and may cause damage to human body or the product itself.
- DO NOT disassemble, incinerate or short circuit the battery.
- DO NOT expose the scanner or the battery to any flammable sources.
- For green-environment issue, it's important that batteries should be recycled in a proper way.
- Under no circumstances, internal components are self-serviceable.
- The charging and communication cradle uses an AC power adaptor. A socket outlet shall be installed near the equipment and shall be easily accessible. Make sure there is stable power supply for the mobile computer or its peripherals to operate properly.

CARE & MAINTENANCE

- This mobile computer is intended for industrial use. The mobile computer is rated IP 54, however, it may do damage to the mobile computer when being exposed to extreme temperatures or soaked wet.
- When the body of the mobile computer gets dirty, use a clean and wet cloth to wipe off the dust. DO NOT use/mix any bleach or cleaner. Always keep the LCD dry.
- For a liquid crystal display (LCD) or touch screen, use a clean, non-abrasive, lint-free cloth to wipe dust off the screen. DO NOT use any pointed or sharp object to move against the surface.
- If you want to put away the mobile computer for a period of time, download the collected data to a host computer, and then take out the battery pack. Store the mobile computer and battery pack separately.
- When the mobile computer resumes its work, the main and backup batteries will take a certain time to become fully charged.
- If you shall find the mobile computer malfunctioning, write down the specific scenario and consult your local sales representative.

RELEASE NOTES

Version	Date	Notes
1.00		Initial release
0.09	Jun. 16, 2009	First draft

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

CONTENTS

INTRODUCTION

9300 Mobile Computer, running Windows CE 6.0 in palm size, is our first product line of rugged PDA-style Mobile Computer. Light-weight, streamlined and ergonomic, it adds even more powerful and handy tools to delivering the flexibility in customization.

Specifically designed to work as an industrial PDA, 9300 Mobile Computer provides rich options of data collection, voice and data communications, long-lasting working hours, and so on. Its large color transflective TFT display guarantees ease in reading in all lighting conditions. Integrated with Bluetooth and 802.11b/g technologies, you may choose to add the GSM/GPRS module to gain greater speeds and optimal mobility.

This manual serves to guide you through how to install, configure, and operate the mobile computer. The Care & Maintenance section is specifically prepared for those who are in charge of taking care of the mobile computer.

We recommend you to keep one copy of the manual at hand for quick reference or maintenance purposes. To avoid any improper disposal or operation, please read the manual thoroughly before use.

Thank you for choosing CipherLab products!

GETTING FAMILIARIZED WITH 9300

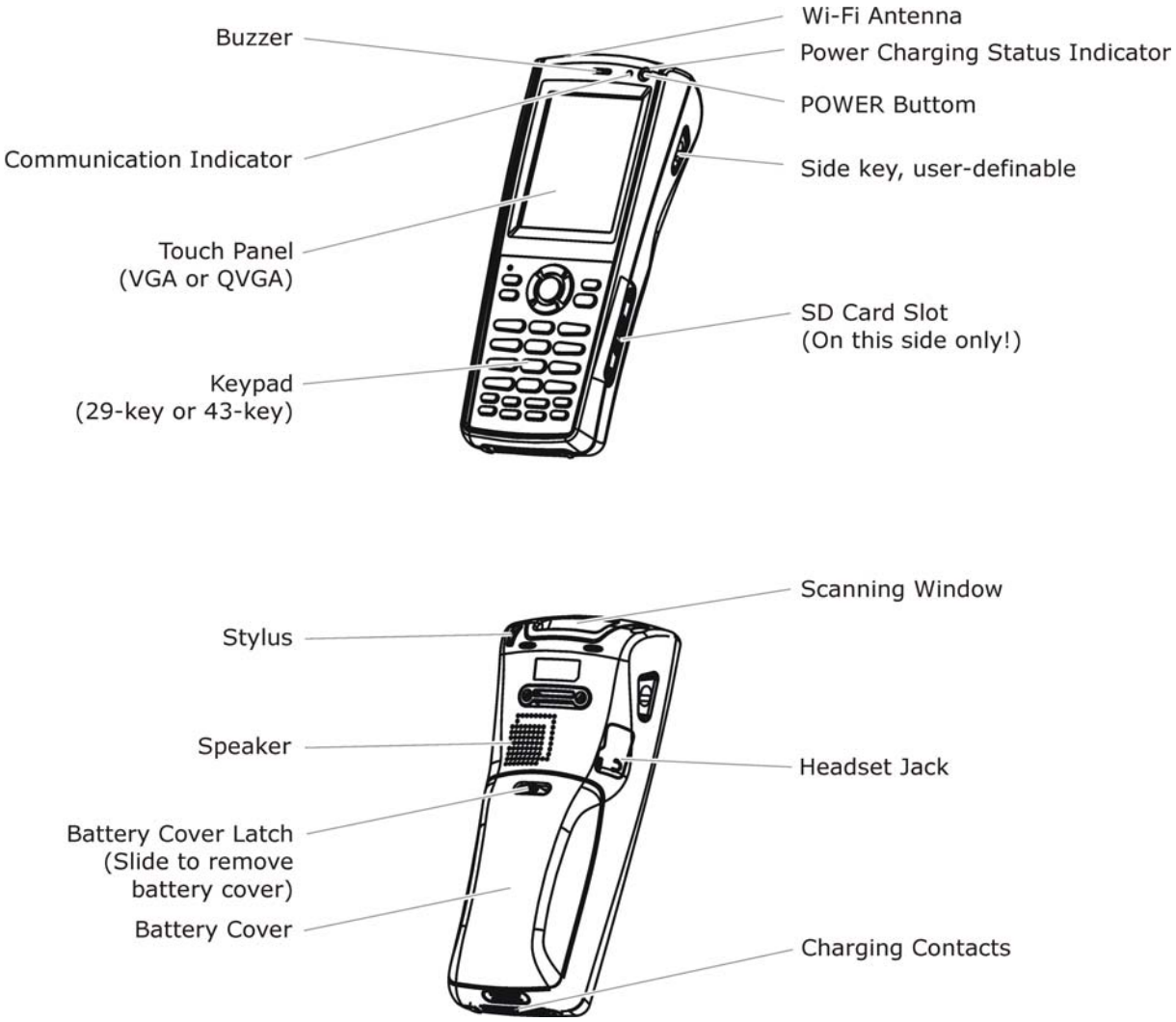


Figure 1: Overview

INSTALLING THE HAND STRAP

The hand strap is ideal for one-handed operation, which requires safe and convenient hold of the mobile computer.

Warning: Always make sure the hand strap is well hooked and screwed to the back of the mobile computer before use.

When the hand strap is desired, install it to the mobile computer by following these steps:

1) Place the mobile computer face down on a flat and clean surface.
2) Screw one end of the hand strap to the back of the mobile computer.
3) Insert and hook the other end of the hand strap to the bottom of the mobile computer.
4) Make sure the hand strap is securely attached to the mobile computer.
5) Adjust the length of the hand strap to suit your handbreadth.

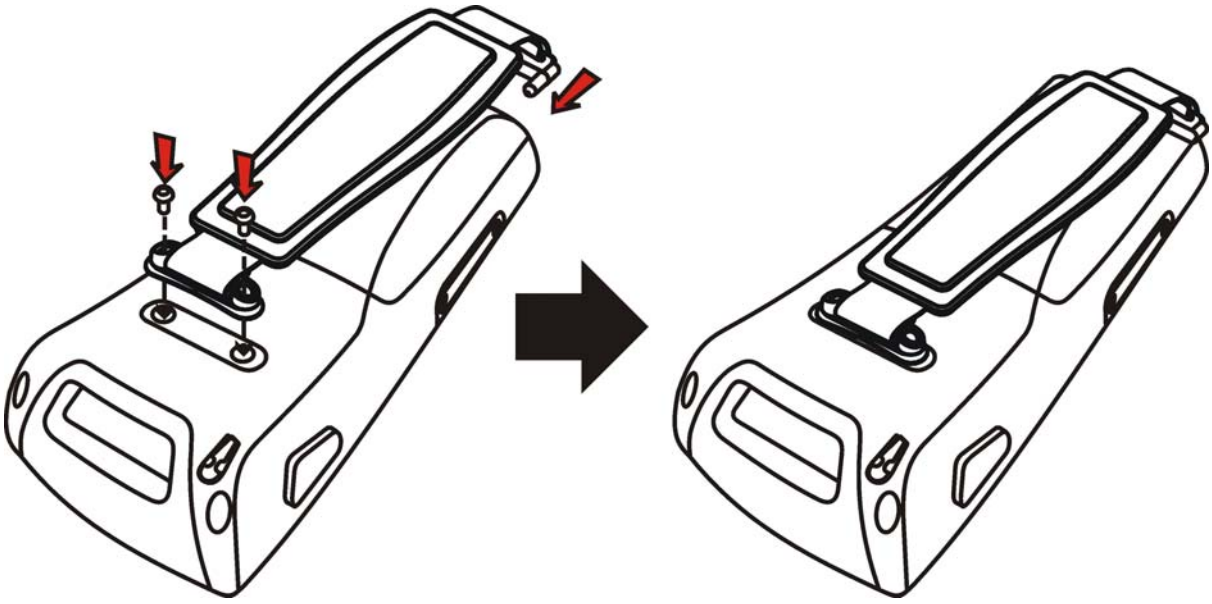


Figure 2: Installing the Hand Strap

CHARGING THE BATTERY

You can use a cradle or charger to charge the Mobile Computer and/or its battery. Below are the 4-Slot Battery Charger and 4-Slot Charging Cradle for 9300. The 4-Slot Battery Charger can be mounted on table or wall. Drill two holes (centers spaced 105 millimeters apart), secure the two supplied screws, and mount the charger by sliding over screws.

Warning: It is recommended that the charging devices be operated at room temperature (18°C to 25°C) for optimal performance. The charging devices will not charge the battery when the temperature exceeds 40°C.

1) Seat batteries with contacts facing to back in the 4-Slo Battery Charger (top), or seat the mobile computers in the 4-Slot Charging Cradle (bottom).
2) Connect the power supply cord to the power receptacle on the charger or cradle.
3) Connect the other end of the power cord to a suitable power outlet.
4) Press the power switch on, and the charger's LED or the Power LED on the cradle will be blue.
5) For the 4-Slot Battery Charger, the LED will be red while charging, and will be green when fully charged.

   For the 4-Slot Charging Cradle, the LED on each of the mobile computers will be red while charging, and will be green when fully charged.

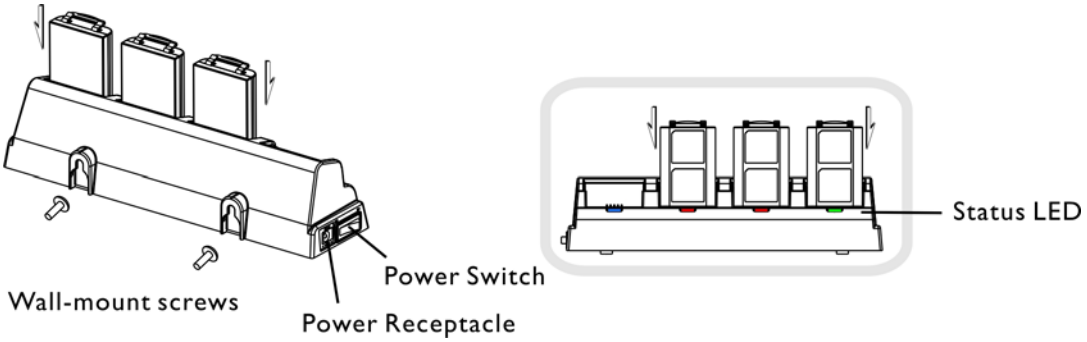


Figure 3: 4-Slot Battery Charger

FEATURES

- Ergonomic design - ruggedized yet streamlined, with hand strap for secure hold.
- Built tough to survive drop test and sealed against moisture/dust to industrial standard IP 64.
- Microsoft Windows CE 6.0 operating system, 624 MHz Marvell PXA310 processor
- 512 MB non-volatile NAND flash memory to store OS and software programs

  (part of the free space is used as a storage card called DiskOnChip)
- 256 MB on-board DDR SDRAM to store and run programs, as well as store program data
- One SD expansion slot for memory card
- Dual mode support - One scan engine (integrated barcode scanner/imager) plus one RFID reader
- Ambidextrous side triggers
- Total wireless solution - connectivity includes Bluetooth, 802.11b/g and GSM/EDGE/GPRS.
- A 2.8" color transflective TFT display delivers excellent visibility in all lighting conditions.
- Programmable feedback includes buzzer, speaker and vibrator.
- Built-in power tools include Reader Configuration Utility, Backup Utility, etc.
- Terminal Emulation client for VT100/220 and IBM 5250 enables a quick link to any backend database.
- Application Generator (AG*.exe for desktop PC) enables easy customization of data collection applications.
- Programming support includes Reader DLL and System APIs.
- Accessories and peripherals include pistol grip, international AC charging cradle, etc.

INSIDE THE PACKAGE

The following items are included in the package. Save the box and packaging material for future use in case you need to store or ship the mobile computer.

- 9300 Mobile Computer
- Rechargeable Li-ion battery pack
- Stylus
- Hand Strap
- Software & Manual CD

Note: For battery charging, you will need to purchase a charging cradle separately.

ACCESSORIES

Rich choices of optional accessories are available for you to enhance the total performance of the mobile computer.

- Protective Cover
- SD Memory Card
- Spare rechargeable Li-ion battery, standard or high capacity pack
- 4-slot Battery Charger
- Charging & Communication Cradle

Chapter 1

USING 9300 MOBILE COMPUTER

This chapter explains the features and usage of 9300 Mobile Computer.

IN THIS CHAPTER

1.1 BATTERY

- Main Battery

  9300 Mobile Computer is powered by a rechargeable 3.7 V/2700 mAh Li-ion battery pack, and it takes approximately 4 hours to fully charge it. However, the charging time may vary by working condition. During normal operation, the mobile computer can work for up to 10 hours.

- Backup Battery

  The backup battery on the main board takes charge when the main battery is removed or drained out. When fully charged, the 3.6 V/15 mAh rechargeable Lithium button cell helps retain data in SRAM and maintain the system running in suspend mode for at least 20 hours without the main battery. In the meantime, you have to replace the main battery as soon as possible.

1.1.1 INSERTING THE BATTERY

When you first receive the package, the rechargeable functionality of the backup battery is turned off. It is controlled by a DIP switch inside the battery compartment as shown below.

For shipping and storage purposes, save the mobile computer and the main battery in separate packages, and adjust the DIP switch to the OFF position (bottom). This will keep both batteries in good condition for future use.

Note: Any improper handling may reduce the battery life.

1) Remove the hand strap.
2) Hold the mobile computer still. Press the battery cover latch and slide it to unlock the battery cover.
3) Remove the battery cover.

4) Insert the battery pack into the battery compartment at a proper angle (30°~45°) so that the metal contacts on the battery are met with the charging contacts inside the compartment. Make sure that the battery is snugly fit into the compartment.

5) Put the battery cover back onto the mobile computer until it clicks into place.

6) If the battery is charged, the mobile computer turns on.

   If the mobile computer does not turn on, charge the battery.

Note: For a new battery, make sure it is fully charged before use. Always prepare a spare battery pack, especially when you are on the road.

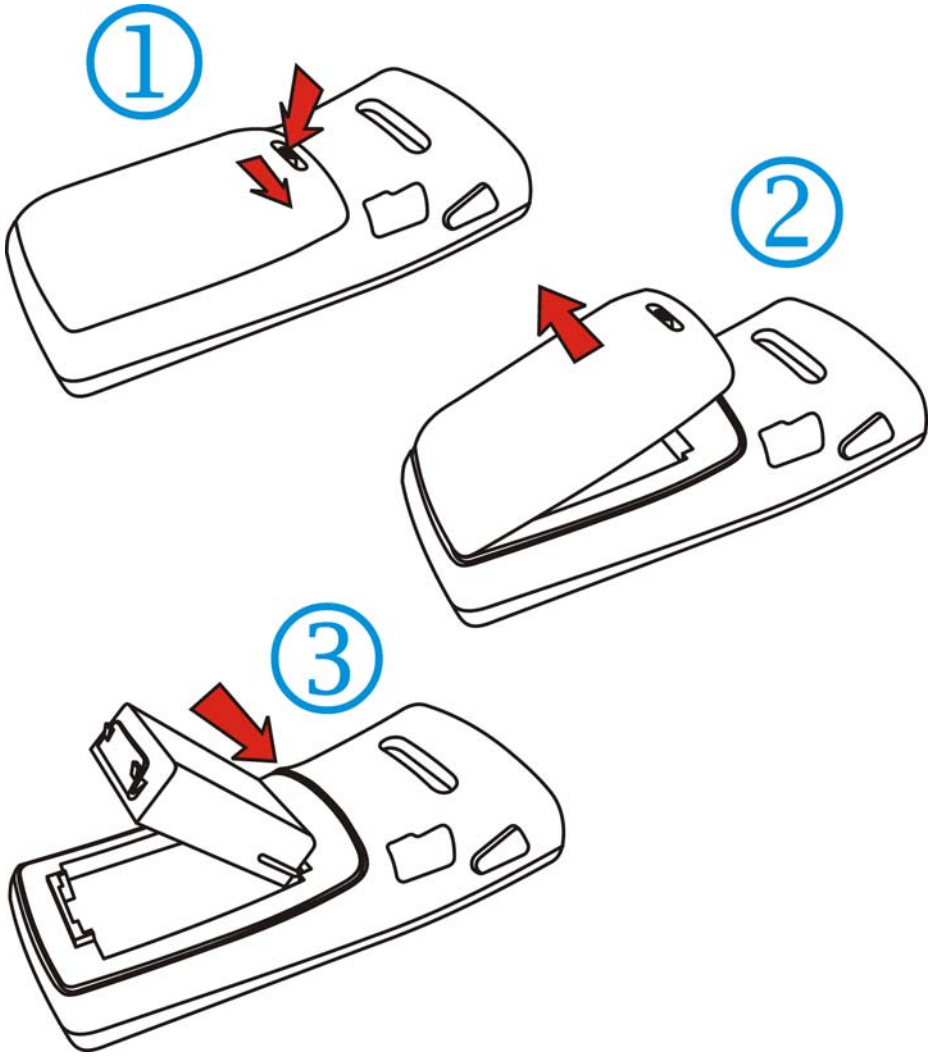


Figure 4: Installing the Main Battery

1.1.2 CHARGING THE BATTERY

The main and backup batteries may not be charged to full for shipment. When you first receive the package, you will need to charge batteries to full before using the mobile computer.

Note: To charge the batteries to full, it requires approximately 8 hours for the first time. After the initial charging, it takes only 4 hours to charge the batteries to full.

Because the internal backup battery is constantly charged from the main battery, the initial charging requires inserting the battery pack to the mobile computer and then seating the mobile computer in the cradle for charging. This will have both the main and backup batteries charged at the same time. To charge the backup battery, make sure that you slide the DIP switch inside the battery compartment to the ON position.

Note: For a new battery, make sure it is fully charged before use. Always prepare a spare battery pack, especially when you are on the road.

1.1.3 UNDERSTANDING THE BATTERY ICONS

The battery pack is the only power source for the mobile computer to work. It also charges the backup battery on the main board so that the data stored in SRAM can be retained properly. Therefore, when the main battery charge goes low, you need to replace the battery pack with a charged one or charge it as soon as possible. Most of all, always save data before it is too late; you should backup important data on a regular basis.

Double-tap a battery icon so that you can quickly access the [Power Properties] dialog box.

Battery Status Icons	Description
	Battery charge remaining in the main battery – The more bars, the more power in the main battery.
	Main battery is ready for charging.
	Main battery charge becomes low and needs charging.
	Main battery charge becomes very low and needs charging immediately.

Warning: Data loss may occur with SRAM during low battery condition. Always save data before running out of power or keep a fresh battery for replacement.

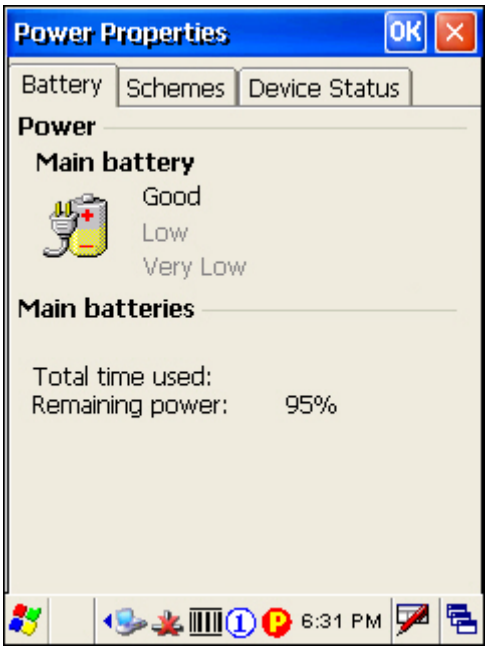
1.1.4 POWER MANAGEMENT

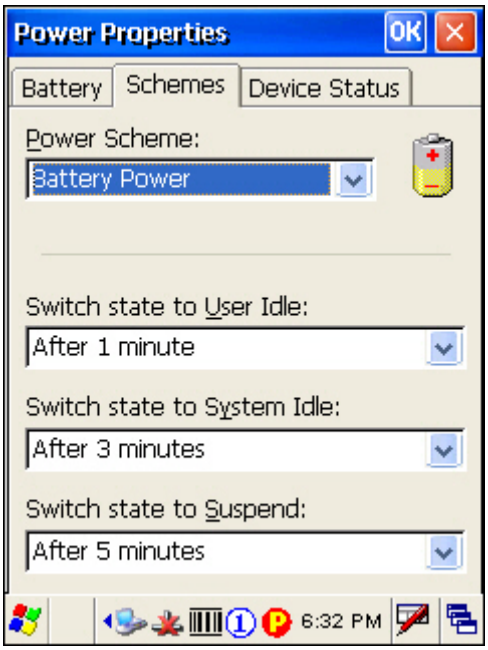
For any portable device, power management is a critical issue especially when you are on the road. Below are some tips to help you save battery power.

Warning: Using backlight, wireless connectivity, and peripherals while on battery power will substantially reduce battery power.

- To speed up charging the mobile computer, turn off the mobile computer and seat it in the cradle.
- Bring a second battery pack on the road.
- Stop wireless connectivity, Bluetooth, 802.11b/g or GSM/GPRS that is not in use.
- Go to **Start** > **Settings** > **Control Panel** and double-tap the **Display** icon. Refer to 1.4.1 Adjusting the Backlight.
- Go to **Start** > **Settings** > **Control Panel** and double-tap the **Power** icon. (below)

1. In the Battery tab (left below), you can always monitor the charging status.





2. Tap the Schemes tab. (right above)
3. Select the desired power scheme and options for suspending operation when not in use. The system can be set to three different states to conserve power:
   - User Idle state
   - System Idle state
   - Suspend state

   The time choices represent the amount of time that must pass before the system will switch to the next power conservation state.

1.2 MEMORY

- Read-only Memory (ROM)

  512 megabytes flash memory for storing OS (Windows CE 6.0) and custom application programs. Yet a portion of the memory is referred to as DiskOnChip, which can store data and programs that you wish to retain even after hardware reset.

- Random-access Memory (RAM)

  256 megabytes SDRAM for storing and running programs, as well as storing program data. Its contents will be retained by the backup battery.

- Expansion Slot

  The mobile computer is equipped with one SD card slot, which is user accessible. You may upgrade memory by inserting an optional SD memory card.

1.2.1 CAUTION OF DATA LOSS

When the main battery is removed or drained, the backup battery on the main board is to retain the contents of SRAM and maintain the OS in suspend mode for at least 20 hours, on condition that the backup battery has already been fully charged.

If you want to put away the mobile computer for a couple of days, you should be aware that data loss occurs when both the main and backup batteries discharge completely. Therefore, it is necessary to backup data and files before putting away the mobile computer!

1.2.2 INSERTING THE SD CARD

If you wish to expand memory, follow these steps to insert a memory card into the SD card slot:

1) Press  for the mobile computer to enter suspend mode.
2) Place the mobile computer face down on a flat and clean surface.
3) Remove the side plate by unscrewing the two screws (on the right side when you place the mobile computer face down) as shown below.
4) Insert the SD card properly.

5) Replace the side plate and tighten the screws.

Warning: Make sure the mobile computer is set to Suspend mode; otherwise, it may cause damage to the mobile computer.

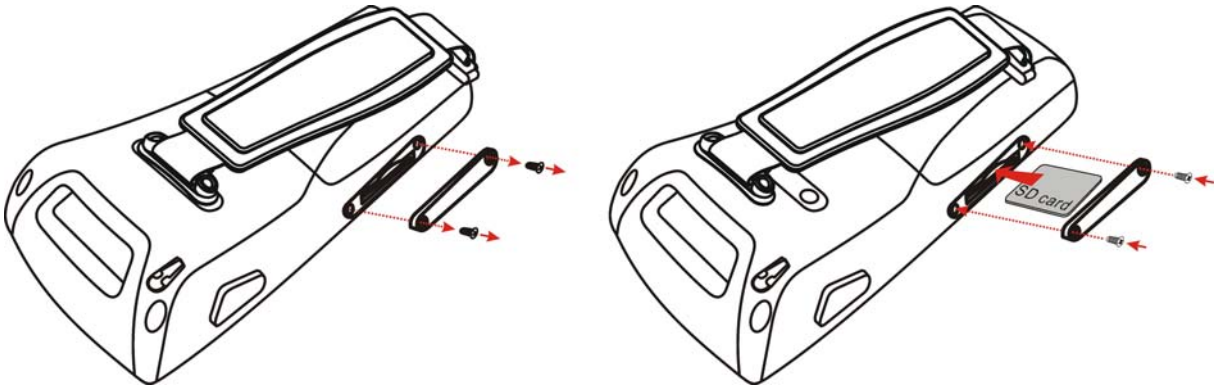


Figure 5: Inserting the SD Card

REMOVING THE SD CARD

If you wish to remove the SD card, simply push the card after removing the side plate. The SD card will be rejected automatically.

1.3 KEYPAD

Silicon rubber has been chosen for their durability and prompt feedback.

Note: Functionality of keys is application-dependent.

1.3.1 KEYPAD SETTINGS

- Press [FN] first, and then [0].

  The LED backlight of keypad is turned off by default. It can be toggled ON/OFF by the key combination: [FN] + [0]. It is suggested to turn on the keypad backlight while working in a dark area; however, using backlight while on battery power will substantially reduce battery power.

- Go to **Start** > **Settings** > **Control Panel** and double-tap the **Keyboard** icon.

  The Character Repeat functionality is enabled by default. You may cancel the check box to disable it. When enabled, tap, hold, and drag the slider for a desired Repeat Delay and Repeat Rate.

1.3.2 29-KEY KEYPAD

The 29-key keypad includes alphanumeric, navigation, function keys, and so on. This keypad is set to numeric mode by default.

Figure 6: 29-key Layout

ALPHA KEY

This alphanumeric keypad is set to numeric mode by default. The Alpha key serves as a toggle among numeric, alpha (lower-case alphabetic), and ALPHA (upper-case alphabetic) input modes.

Note: It is not necessary to hold down the [Alpha] key.

The alpha icon will appear on the status bar in a sequence as shown below.

Status Icon	Alpha Key	Input Mode
	N/A	Numbers
	Press  one time	Small letters
	Press  two times	Capital letters

Note: If you are using the software keypad via SIP, tap CAP (Caps Lock) to toggle between upper case and lower case alphabetic modes.

1.3.3 43-KEY KEYPAD

The 43-key keypad includes numeric, alphabetic, function and other modifier keys, as well as keys for navigation and assorted characters.

Figure 7: 43-key Layout

1.3.4 FUNCTION KEY

The [FN] (function) key serves as a modifier key, and the functionality of each key combination is application-dependent.

1) To enable this modifier key, press [FN] on the keypad. A circular icon of the letter "F" will appear on the status bar. This modifier key is hold down as long as the icon is displayed. 

2) Now press another key to get the value of key combination (say, press [1] to get the value of F1). The icon will go off now.
3) To get the value of another key combination modified by the [FN] key, repeat the above steps.
4) To abort the key modification, press [FN] again, and the icon will go off.

Note: It is not necessary to hold down the [FN] key.

Below is a list of the factory setting for a variety of key combinations.

Key Combination	Action
[FN], △	Move text up one screenful (Page Up)
[FN], ▽	Move text down one screenful (Page Down)
[FN], ◁	Move to the beginning of screen or document (Home)
[FN], ▷	Move to the end of screen or document (End)
[FN], [0]	Toggle ON/OFF the backlight of keypad only
([FN], [*@-] for 28-key) ([FN], [.$] for 59-key)	Turn ON the backlight of LCD and decrease its luminosity
([FN], [.#$] for 28-key) ([FN], [- ;] for 59-key)	Turn ON the backlight of LCD and increase its luminosity

Note: Press the [FN] key first, and then press the second key for a specific function.

1.3.5 PROGRAMMABLE KEYS

Depending on the keypad layout, a number of keys are user-definable, such as the programmable keys. They can be re-defined as another key or to serve as a shortcut key for launching a specific program. Refer to the Button Assignment Utility.

Programmable Keys	Other User-Definable Keys
P1, P2 (28-key)	SCAN key and four side triggers on each side of the touch screen
P1, P2, P3 and P4 (59-key)	Four side triggers on each side of the touch screen

1.4 TOUCH SCREEN

The mobile computer comes with a 2.8" TFT graphic LCD, 320 by 240 pixels resolution (QVGA). The LED backlight of screen, which helps ease reading under dim environments, can be controlled manually and automatically.

Warning: Using backlight while on battery power will substantially reduce battery power. It is suggested to dim the backlight while working in a well-lit area or automatically turn off the mobile computer when not in use.

1.4.1 ADJUSTING THE BACKLIGHT

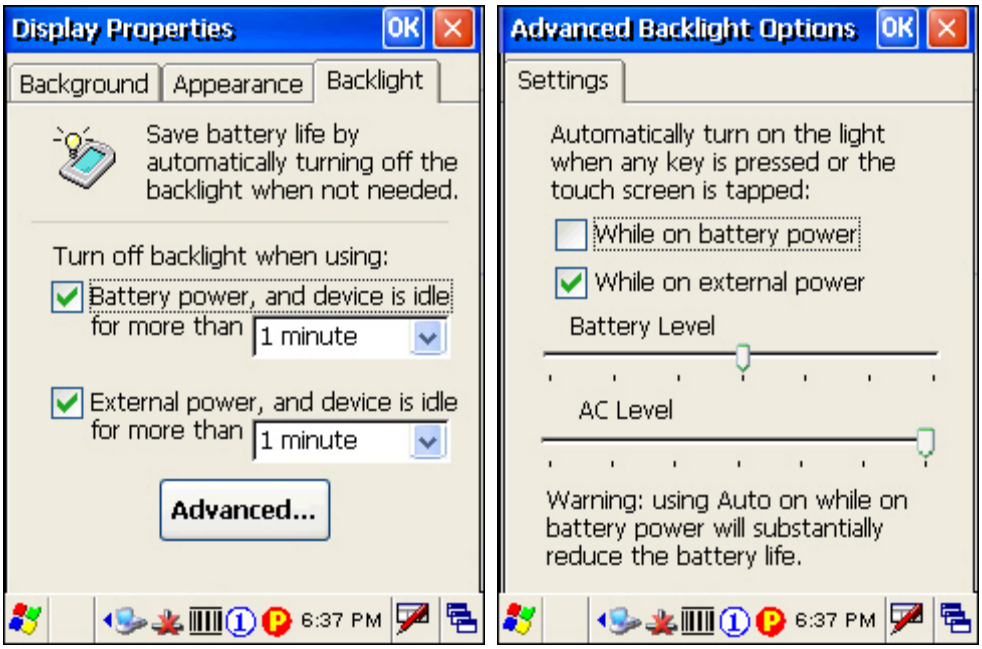
The LED backlight of the screen can be turned on and adjusted decreasingly or increasingly by the following key combinations. Keep pressing the key combination until the luminosity is decreased or increased to a desired level.

Key Combination	Action
 ,  ([Backlight], [DOWN] for 29-key)  ,  ([[Backlight], [DOWN] for 43-key)	Turn ON the backlight of LCD and decrease its luminosity
 ,  ([[Backlight], [UP] for 29-key)  ,  ([[Backlight], [UP] for 43-key)	Turn ON the backlight of LCD and increase its luminosity

Note: Press the [FN] key first, and then press the second key for adjustment.

- Go to **Start** > **Settings** > **Control Panel** and double-tap the **Display** icon.

1. Tap the Backlight tab. (left below)



2. Select one or both of the check boxes to automatically turn off the LCD backlight when using batteries or external power. From the appropriate list, select the amount of time the device should be idle before the backlight is turned off.
3. Tap the [Advanced] button.
4. In the Settings tab (right above), you can select the luminosity of backlight when it is set to be automatically turned on by pressing any key or tapping the screen. Tap, hold, and drag the slider for AC and battery powered respectively. For more luminosity, move the slider to the right.

1.4.2 RE-CALIBRATING THE SCREEN

This LCD is also a touch screen that can be calibrated through screen alignment.

- Go to **Start** > **Settings** > **Control Panel** and double-tap the **Stylus** icon.

  Tap the Calibration tab, and then tap the [Recalibrate] button.

Warning: DO NOT use any pointed or sharp objects to move against the surface of the screen.

1.5 NOTIFICATIONS

1.5.1 STATUS LED

The tri-color LED on top is used to provide information on the charging status or wireless power status. The green LED is also used for "Good Read" while collecting data.

Tasks	Green LED	Red LED	Blue
Charging 9300	---	On	---
Charging done	On	---	---
Good Read	On	---	---
Bluetooth enabled	---	---	On

1.5.2 AUDIO

- Buzzer

  The mobile computer has a buzzer on the back. It can be programmed for status feedback. Its frequency and duration are software programmable.

- Speaker

  The mobile computer is integrated with a mono speaker, which can be used for playing sounds applied to events in Windows and programs, as well as playing audio files such as .WAV files. In addition, it can be programmed for status feedback.

- Headset

  A headset jack is provided, which is a 2.5 mm DIA stereo earphone jack with microphone input. Bluetooth headset is also supported.

1.5.3 VIBRATOR

The mobile computer is integrated with a vibrator, which is software programmable for feedback. This can be helpful when working in noisy environments.

1.6 DATA CAPTURE

1.6.1 BARCODE & RFID READER

A wide variety of scan engines is available for delivering flexibility to meet different requirements. Depending on the scan engine integrated, the mobile computer is capable of scanning barcodes of a number of symbologies that are enabled by default while running 93ReaderConfig.exe. If you need to scan barcodes that are encoded in a different symbology, enable the symbology first. Refer to Appendixes for details on scan engine settings.

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

Note: The mobile computer allows the co-existence of one integrated scan engine and the RFID reader.

SPECIFICATIONS

PLATFORM, PROCESSOR & MEMORY

Operating System

	Microsoft Windows CE 6.0

CPU

	Marvell PXA310 at 624 MHz

Memory

ROM	512 MB non-volatile NAND flash memory
RAM	256 MB on-board DDR SDRAM memory
Expansion Slot	One SD card slot for inserting memory card, optional

COMMUNICATIONS & DATA CAPTURE

Communications

USB via Cradle	USB 1.1 Specification
	Host port (type-A) / Device port (type-B)
	USB Client 2.0
WPAN	Built-in module for Bluetooth Class 2 connectivity
WLAN	Built-in module for 802.11b/g networking
RS232	Support baud rate 9600, 19200, 38400, 57600, 115200, 230k, 640k, and 921k.

Data & Image Capture

Barcode Reader	Ordering options include	▸ 1D SE 955 Standard Laser ▸ 2D Imager

ELECTRICAL CHARACTERISTICS

Batteries

Main Battery Pack	Rechargeable Li-ion battery – 3.7 V, 2700 mAh
Backup Battery	Rechargeable Lithium battery – 3.6 V, 15 mAh
	Data retention for at least 20 hours

Power Adapter

Input	AC 100~240 V, 50/60 Hz
Output	DC 5 V, 3 A (Charging & Comm. Cradle)

Working Time (Laser, one scan per 5 seconds)

Batch Mode with backlight	10 hours
Wi-Fi Mode with backlight	8 hours

PHYSICAL CHARACTERISTICS

Color Touch Screen Display

Display	2.8” Transflective TFT-LCD, 65536 colors
Resolution	QVGA (320 × 240 pixels)

Keypad

Layout	29 keys for alphanumeric layout
	▸ Ordering Option – 43-key layout
Backlight	White LED backlight for display and keypad

Notifications

Status LED	Two dual color LED – Red / Green and Green / Blue
Audio	Integrated with one mono speaker and buzzer
	Headset jack – 2.5 mm DIA stereo earphone jack with microphone input
	▸ Bluetooth headset supported
Vibrator	0.45G

Enclosures

Materials	Plastic and metal
Dimensions	170 mm (L) 70 mm (W) 40 mm (H)
Weight	Approx. 350 g (configuration-dependent)

ENVIRONMENTAL CHARACTERISTICS

Temperature

Operating	-10 °C to 50 °C
Storage	-20 °C to 60 °C

Humidity

Operating	10% to 90%, non-condensing
Storage	5% to 95%, non-condensing

Resistance

Impact Resistance	1.5 m, 5 drops per 6 sides
Tumble Test	100 cm, 1000 drops
Splash/Dust Resistance	IP 54
Electrostatic Discharge	± 15 kV air discharge, ± 8 kV direct discharge

Regulations

EMC Regulations	FCC, IC, CE, C-Tick, MIC, BSMI, NCC, TELEC, SRMC

PROGRAMMING SUPPORT

Development Environment & Tools

Integrated Development Environment	Visual Studio 2005
	Visual Studio .NET 2003
	eMbedded Visual C++ 4.0 SP4
Software Development Kit	9300 SDK or Windows CE 6.0 Standard SDK
	System API (static and DLL) for system configuration
	ReaderDLL for reader configuration

Software & Utilities

Reader Configuration Utility

Terminal Emulation for VT100/220 or IBM 5250

Application Generator

STREAM Wireless Studio

Web Browser

Third-party software –

- Wavelink Avalanche Enabler & Telnet Client
- MCL Collection - MCL Client

ACCESSORIES

Accessory Options

SD Memory Card

Protective Cover

Spare rechargeable battery pack, standard or high capacity pack

4-Slot Battery Charger

Charging & Communication Cradle

Appendix I

SCAN ENGINE SETTINGS

The **Reader Configuration Utility** (93ReaderConfig.exe) allows configuring the following reader types, depending on the module equipped on your mobile computer:

- 1D CCD scan engine
- 1D Laser scan engine
- 2D scan engine
- RFID reader

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 93ReaderConfig utility on the mobile computer, it will read a barcode in position or an RFID tag in proximity depending on which one comes first.

Note: (1) You cannot have 1D+2D scan engines installed on the mobile computer because they are both barcode readers!
(2) You can run only one utility or application at a time to control the reader(s). For example, while running 93ReaderConfig.exe, you should not run Application Generator, STREAM Wireless Studio, MIRROR Browser, or any other application that uses ReaderDLL.

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	2D
Codabar		✓	✓
Code 11		×	✓
Code 93		✓	✓
Composite Code		×	✓
MSI		✓	✓
Plessey		✓	×
Postal Codes		×	✓
Telepen		✓	×
Code 128	Code 128	✓	✓
	EAN-128	✓	✓

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

RFID TAGS SUPPORTED

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

Currently, the performance of many tags has been confirmed, and the results are listed below for your reference.

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

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

Appendix II

CCD/LASER SCAN ENGINE

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

READER SETTINGS TABLE

CCD/Laser	Description	Default
Time-out		**3 sec.**
1~9 (second) for 93ReaderConfig.exe 0~255 (second) for programming	Set the maximum time for decoding to continue during a scan attempt. It applies to the following scan modes only – ▸ Aiming mode ▸ Laser mode ▸ Auto Off mode ▸ Auto Power Off mode	
Scan Mode		**Laser mode**
Continuous Mode	Non-stop scanning ▸ To decode the same barcode repeatedly, move away the scan beam and target it at the barcode for each scanning.	
Test Mode	Non-stop scanning ▸ Capable of decoding the same barcode repeatedly	
Repeat Mode	Non-stop scanning ▸ Capable of re-transmitting barcode data if triggering within one second after a successful decoding	
Momentary Mode	Hold down the scan trigger to start with scanning. ▸ The scanning won't stop until you release the trigger.	
Alternate Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until you press the trigger again.	
Aiming Mode	Press the scan trigger to aim at a barcode. Within one second, press the trigger again to decode the barcode. ▸ The scanning won't stop until (a) a barcode is decoded or (b) the pre-set timeout expires.	
Laser Mode	Hold down the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read, (b) the preset timeout expires, or (c) you release the trigger.	
Auto Off Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read or (b) the preset timeout expires.	

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

SYMBOLOGY SETTINGS TABLE

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

Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Select Length	▸ One or two fixed lengths ▸ Range	4~127
Matrix 25		**Enable**
Start/Stop Selection	Refer to Industrial 25.	Matrix 25
Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Select Length	▸ One or two fixed lengths ▸ Range	4~127
French Pharmacode		**Disable**
*Transmit Start/Stop Character	Controlled by the same setting of Code 39.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Italian Pharmacode (= Code 32)		**Disable**
*Transmit Start/Stop Character	Controlled by the same setting of Code 39.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Code 39		**Enable**
Transmit Start/Stop Character	Decide whether to include the start/stop characters "*" in the data being transmitted.	No
Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Code 39 Full ASCII	Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable
Code 93		**Enable**
MSI		**Disable**
Verify Checksum	Select one of the three calculation formulas to verify the checksum. If the checksum is incorrect, the barcode will not be accepted. ▸ Single Modulo 10 ▸ Double Modulo 10 ▸ Modulo 11 & 10	Single Modulo 10

Transmit Checksum	Decide whether to include the checksum in the data being transmitted. ▸ Last digit not transmitted ▸ Both digits transmitted ▸ Both digits not transmitted	Both digits transmitted
Select Length	▸ One or two fixed lengths ▸ Range	4~127
Negative Barcode		**Disable**
Plessey		**Disable**
Convert to UK Plessey	When applied, each occurrence of the character "A" in the barcode data will be replaced by the character "X".	No
Transmit Checksum	Decide whether to include the checksum (2 digits) in the data being transmitted.	Yes
Telepen		**Disable**
Original Telepen (Numeric)	The original Telepen includes numeric characters.	Yes
AIM Telepen (Full ASCII)	AIM Telepen (Full ASCII) includes all the alphanumeric and special characters.	No
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 Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
RSS Limited		**Disable**
Transmit Code ID	Refer to RSS-14.	Yes
Transmit Application ID	Refer to RSS-14.	Yes
Transmit Checksum	Refer to RSS-14.	Yes
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 Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Addon 2 / Addon 5	Decide whether to decode EAN-8 with supplementals.	No
EAN-13 / UPC-A		**Enable**
ISBN Conversion	The EAN-13 barcode starting with 978 and 979 will be converted to ISBN.	No

ISSN Conversion	The EAN-13 barcode starting with 977 will be converted to ISSN.	No
GTIN for EAN-13	The EAN-13 barcode will be expanded into 14-digit Global Trade Item Number (GTIN).	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted.	Yes
Addon 2 / Addon 5	Decide whether to decode EAN-13/UPC-A with supplementals.	No
(UPC-A) Convert to EAN-13	The UPC-A barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	Yes
(UPC-A) Transmit Checksum	Decide whether to include the UPC-A checksum in the data being transmitted.	Yes
(UPC-A) Transmit System Number	Decide whether to include the UPC-A System Number in the data being transmitted.	Yes
UPC-E		**Enable**
Convert to UPC-A	The UPC-E barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
Transmit Checksum	Decide whether to include the UPC-E checksum in the data being transmitted.	Yes
Transmit System Number	Decide whether to include the UPC-E System Number in the data being transmitted.	No
Addon 2 / Addon 5	Decide whether to decode UPC-E with supplementals.	No
*It cannot read UPC-E1 barcodes!		

Appendix III

2D SCAN ENGINE

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

READER SETTINGS TABLE

<table>
<tr><th>2D</th><th>Description</th><th>Default</th></tr>
<tr><td>Decode Time-out</td><td>Set the maximum time for decoding to continue during a scan attempt.
1~9 (second) for 93ReaderConfig.exe – default to 3
5~99 (0.1 second) for programming – default to 30</td><td>3 sec.</td></tr>
<tr><td>Focus Mode</td><td>Select the focus mode to control the working range:
Far Focus – optimized to read at its far position
Near Focus – optimized to read at its near position
Smart Focus – toggles the focus position after every frame</td><td>Far Focus</td></tr>
<tr><td>Decode Illumination</td><td>Decide whether to flash illumination on every barcode capture to aid decoding.
Turn On (Internal LED)
Turn Off</td><td>On</td></tr>
<tr><td>Aiming Pattern</td><td>Decide whether to project the aiming pattern during barcode capture.
Turn On
Turn Off</td><td>On</td></tr>
<tr><td colspan="2">Read Redundancy</td><td>Level 1</td></tr>
<tr><td>Level 1</td><td colspan="2">The following barcodes must be successfully read twice before being decoded:
<table>
<tr><th>Barcode Types</th><th>Code Length</th></tr>
<tr><td>Codabar</td><td>8 characters or less</td></tr>
<tr><td>MSI</td><td>4 characters or less</td></tr>
<tr><td>Discrete 25 (=Industrial 25)</td><td>8 characters or less</td></tr>
<tr><td>Interleaved 25</td><td>8 characters or less</td></tr>
</table></td></tr>
<tr><td>Level 2</td><td colspan="2">All barcodes must be successfully read twice before being decoded.</td></tr>
<tr><td>Level 3</td><td colspan="2">All barcodes except for the following barcodes must be successfully read twice before being decoded.
The following barcodes must be read three times:</td></tr>
</table>

	<table><tr><th>Barcode Types “Excluded”</th><th>Code Length</th></tr><tr><td>Codabar</td><td>8 characters or less</td></tr><tr><td>MSI</td><td>4 characters or less</td></tr><tr><td>Discrete 25 (=Industrial 25)</td><td>8 characters or less</td></tr><tr><td>Interleaved 25</td><td>8 characters or less</td></tr></table>	
Level 4	All barcodes must be successfully read three times before being decoded.	
Security Level	Select a decode security level appropriate for the barcode quality when reading delta barcodes such as Code 128, Code 93, UPC/EAN. ▸ Security Level 0 – This default setting allows the scan engine to operate in its most aggressive state, providing sufficient security in decoding most “in-spec” barcodes. ▸ Security Level 1 – Select this option if misdecodes occur. This level should eliminate most misdecodes. ▸ Security Level 2 – Select this option if Security Level 1 fails to eliminate misdecodes. ▸ Security Level 3 – Select this option if Security Level 2 also fails to eliminate misdecodes. However, selecting this option impairs the decoding ability of the scan engine. If this level of security is necessary, try to improve the barcode quality.	**Level 0**

SYMBOLOGY SETTINGS TABLE

2D	Description	Default
Codabar		**Enable**
CLSI Editing	When applied, the CLSI editing strips the start/stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar barcode. ▸ The 14-character barcode length does not include start/stop characters.	No
NOTIS Editing	Decide whether to include the start/stop characters in the data being transmitted. ▸ NOTIS Editing is to strip the start/stop characters, i.e. to disable "Transmit Start/Stop Characters".	No
Select Length	▸ One or two fixed lengths ▸ Range (1~55)	4~55
Code 128		**---**
Code 128	Read standard Code 128 barcodes (=without leading FNC1 character).	Enable
UCC/EAN-128	Read UCC/EAN-128 barcodes with leading FNC1 character.	Enable
ISBT 128	Read ISBT 128 barcodes.	Enable

Industrial 25 (= Discrete 25)		**Enable**
Select Length	▸ One or two fixed lengths ▸ Range (1~55)	4~55
Interleaved 25		**Enable**
Convert to EAN-13	Convert a 14-character barcode into EAN-13 if the following requirements are met: ▸ The barcode must have a leading 0 and a valid EAN-13 check digit. ▸ “Verify Checksum” must be disabled.	No
Verify Checksum	Decide whether to verify the checksum. If desired, select one of the algorithms below. If the checksum is incorrect, the barcode will not be accepted. ▸ No ▸ USS algorithm ▸ OPCC algorithm	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted. ▸ "Verify Checksum" must be enabled so that the checksum can be left out (= "Transmit Checksum" disabled).	No
Select Length	▸ One or two fixed lengths ▸ Range (1~55)	4~55
Code 39		**Enable**
Convert to Code 32	Convert to Italian Pharmacode.	No
Code 32 Prefix	Prefix character "A" to Code 32 barcodes.	No
Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted. ▸ "Verify Checksum" must be enabled so that the checksum can be left out (= "Transmit Checksum" disabled).	No
Code 39 Full ASCII	Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable
Select Length	▸ One or two fixed lengths ▸ Range (1~55)	4~55
Trioptic Code 39		**Disable**
Code 93		**Enable**
Select Length	▸ One or two fixed lengths ▸ Range (1~55)	4~55

<table>
<tr><td colspan="2">MSI</td><td>Enable</td></tr>
<tr><td>Verify Checksum</td><td>If Two Check Digits option is selected, an additional verification is required to ensure integrity. Select one of the algorithms below. If the checksum is incorrect, the barcode will not be accepted.<table><tr><th>Check Digit</th><th>Algorithm</th></tr><tr><td>One Check Digit</td><td>Single Modulo 10</td></tr><tr><td>Two Check Digits</td><td>▸ Mod 10/Mod 11
▸ Mod 10/Mod 10</td></tr></table></td><td>Single Modulo 10</td></tr>
<tr><td>Transmit Checksum</td><td>Decide whether to include the checksum in the data being transmitted.</td><td>No</td></tr>
<tr><td>Select Length</td><td>▸ One or two fixed lengths
▸ Range (1~55)</td><td>4~55</td></tr>
<tr><td colspan="2">RSS</td><td>---</td></tr>
<tr><td>RSS-14</td><td rowspan="4">"Convert to UPC/EAN" only applies to RSS-14 and RSS Limited barcodes not decoded as part of a Composite barcode.<table><tr><th>Convert to EAN-13</th></tr><tr><td>Strip the leading "010" from barcodes.
▸ "01" is the Application ID and must be followed by a single zero (the first digit encoded)</td></tr><tr><th>Convert to UPC-A</th></tr><tr><td>Strip the leading "0100" from barcodes.
▸ "01" is the Application ID and must be followed by two or more zeros (but not six zeros)</td></tr></table></td><td>Enable</td></tr>
<tr><td>RSS Limited</td><td>Enable</td></tr>
<tr><td>RSS Expanded</td><td>Enable</td></tr>
<tr><td>Convert RSS to UPC/EAN</td><td>No</td></tr>
<tr><td colspan="2">EAN-8</td><td>Enable</td></tr>
<tr><td>Convert to EAN-13</td><td>The EAN-8 barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.</td><td>No</td></tr>
<tr><td>Addon 2 / Addon 5</td><td>Refer to UPC/EAN Addon setting.</td><td></td></tr>
<tr><td colspan="2">EAN-13</td><td>Enable</td></tr>
<tr><td>Bookland EAN (= ISBN)</td><td>The EAN-13 barcode starting with 978 will be converted to ISBN.</td><td>Yes</td></tr>
<tr><td>Addon 2 / Addon 5</td><td>Refer to UPC/EAN Addon setting.</td><td></td></tr>
<tr><td colspan="2">UPC-A</td><td>Enable</td></tr>
<tr><td>Transmit Checksum</td><td>Decide whether to include the UPC-A checksum in the data being transmitted.</td><td>Yes</td></tr>
<tr><td>Transmit Preamble</td><td>Decide whether to include the UPC-A preamble System Number (and Country Code) in the data being transmitted.</td><td>System Number</td></tr>
<tr><td>Addon 2 / Addon 5</td><td>Refer to UPC/EAN Addon setting.</td><td></td></tr>
<tr><td colspan="2">UPC-E0</td><td>Enable</td></tr>
</table>

Transmit Checksum	Decide whether to include the UPC-E0 checksum in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E0 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E0 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UPC-E1		**Disable**
Transmit Checksum	Decide whether to include the UPC-E1 checksum in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E1 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E1 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UCC Coupon Extended Code		**Disable**
Read UPC-A barcodes starting with digit "5", EAN-13 barcodes starting with digits "99", and UPC-A/EAN-128 Coupon Codes. ▸ UPC-A, EAN-13, and EAN-128 must be enabled first! ▸ Use “Addon Redundancy” to control auto-discrimination of the EAN-128 (right half) of a coupon code.		
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		**Enable**
Verify Checksum	Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted. ▸ No verification ▸ One Check Digit ▸ Two Check Digits	No
Transmit Checksum	Decide whether to include the checksum in the data being transmitted. ▸ "Verify Checksum" must be enabled so that the checksum can be left out (= "Transmit Checksum" disabled).	No

Select Length	▸ One or two fixed lengths ▸ Range (1~55)	4~55
Postal Codes		**---**
US Postnet		Enable
US Planet		Enable
Transmit US Postal Checksum	US Postnet or US Planet must be enabled first!	Enable
UK Postal		Enable
Transmit UK Postal Checksum	UK Postal must be enabled first!	Enable
Japan Postal		Enable
Australian Postal		Enable
Dutch Postal		Enable
Composite Codes		**---**
Composite CC-C		Enable
Composite CC-A/B		Disable
Composite TLC-39		Disable
UCC/EAN Code 128 Emulation Mode	Transmit data as if it was encoded in Code 128 barcodes. ▸ Transmit AIM Code Identifier must be enabled first!	Disable
UPC Composite Mode	UPC barcodes can be "linked" with a 2D barcode during transmission as if they were one barcode.	UPC Always Linked
	UPC Never Linked Transmit UPC barcodes regardless of whether a 2D barcode is detected. **UPC Always Linked** Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted. ▸ CC-A/B or CC-C must be enabled! **Auto-discriminate UPC Composites** Transmit UPC barcodes as well as the 2D portion if present.	
2D Symbologies		**---**
PDF417		Enable
MicroPDF417		Disable
MicroPDF417 Code 128 Emulation	Transmit data from certain MicroPDF417 barcodes as if it was encoded in Code 128 barcodes. ▸ Transmit AIM Code Identifier must be enabled first!	Disable

	When applied, the MicroPDF417 barcodes are transmitted with one of these prefixes: **The first codeword of MicroPDF417 is 903-907, 912, 914, 915:** The original Code ID "]L3" will be changed to "]C1". **The first codeword of MicroPDF417 is 908 or 909:** The original Code ID "]L4" will be changed to "]C2". **The first codeword of MicroPDF417 is 910 or 911:** The original Code ID "]L5" will be changed to "]C0".	
Data Matrix		Enable
Maxicode		Enable
QR Code		Enable
2D Symbologies - Macro PDF		**---**
Macro PDF is a special feature for concatenating multiple PDF barcodes into one file, known as Macro PDF417 or Macro MicroPDF417.		
Transmit/Decode Mode	Decide how to handle Macro PDF decoding. **Buffer All Symbols / Transmit Macro PDF When Complete** Transmit all decoded data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. If the decoded data exceeds the limit of 50 symbols, no transmission because the entire sequence was not scanned! **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
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!

Image Capture		**Disable**
Image Capture Illumination	Decide whether to flash illumination on every image capture to aid decoding. ▸ Turn On (Internal LED) ▸ Turn Off	On
Image Capture Autoexposure	Decide whether to manually specify the gain and exposure time (only recommended for advanced users with difficult image capture situations).	On
Gain Time	Only applies when Image Capture Autoexposure is disabled. ▸ Gain is a means of amplifying the raw image data before it is converted into 256 grayscale values. Increasing the gain increases brightness and contrast, but also increases noise (undesired electrical fluctuations in the image) which makes the image less attractive and/or harder to decode. ▸ Set the manual gain time in the range of 79~127.	100
Exposure Time	Only applies when Image Capture Autoexposure is disabled. ▸ Exposure Time controls the amount of time the CCD is allowed to collect light, much like the shutter speed for a camera. Generally, the brighter the environment, the lower the exposure time. Increasing the exposure time past 20 ms in a handheld application increases the risk of blurring the image due to hand jitter. ▸ Set the manual exposure time to one of the following values — 5 ms, 10 ms, 15 ms, 20 ms, 25 ms, or 30 ms.	10 ms
Snapshot Aiming Pattern	Decide whether to project the aim pattern while capturing an image.	On
Image Resolution	Decide how to alter image resolution before compression. Multiple pixels are combined to one pixel, resulting in a smaller image containing the original content with reduced resolution. ▸ 640×480 (Full resolution) ▸ 320×240 (Half resolution) ▸ 212×160 (1/3 resolution) ▸ 160×1420 (1/4 resolution)	640×480
Image Format	Decide in which file format the image is saved. ▸ JPEG file format ▸ BMP file format	JPEG

Optimized for JPEG Quality	Decide whether JPEG images are optimized for quality. ▸ Cancel the check box so that JPEG images are optimized for size.	Enable
Select JPEG Quality	Set a value from 5 to 100, where "100" represents the highest quality image.	65
Select JPEG Size	Set a value from 5 to 150, which represents the file size in multiples of 1024 bytes (1K). For example, setting this value to 8 permits the file size to be as large as 8192 bytes.	40
Bits per Pixel	Select the number of significant bits per pixel (BPP) to use when capturing an image. ▸ 1 bit per pixel (for black and white images) ▸ 4 BPP (to assign 1 of 16 levels of grey to each pixel) ▸ 8 BPP (to assign 1 of 256 levels of grey to each pixel)	8

Note: (1) For JPEG files, these BPP settings are ignored for it always uses 8 bits per pixel!
(2) When the image capture feature is enabled, press the [SCAN] button and it will capture an image instead of reading a barcode.

Miscellaneous Options		**---**
Transmit Code ID	Decide whether to include AIM Code ID in the beginning of data. Each AIM Code ID contains the three-character string "**]cm**" – ▸] = Flag Character (ASCII 93) ▸ c = Code Character (see below) ▸ m = Modifier Character (see below)	Disable

AIM CODE ID – CODE CHARACTERS

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, Coupon (Code 128 portion)
d	Data Matrix
E	UPC/EAN, Coupon (UPC portion)
e	RSS Family
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 25
L	PDF417, Macro PDF417, Micro PDF417
M	MSI
Q	QR Code
S	Discrete 25, IATA 2 of 5
U	Maxicode
X	Code 39 Trioptic, Bookland EAN, US Postnet, US Planet, UK Postal, Japan Postal, Australian Postal, Dutch Postal

AIM CODE ID – MODIFIER CHARACTERS

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Checksum has been verified.
	3	Checksum has been verified and stripped.
	4	Full ASCII conversion has been performed.
	5	Result of option values 1 and 4.
	7	Result of option values 3 and 4.
Code 128	0	Standard data packet. No Function Code 1“FNC1” in the first character position.
	1	Function Code 1“FNC1” in the first character position.
	2	Function Code 1“FNC1” in the second character position.
Interleaved 25	0	No check digit processing.
	1	Checksum has been verified.
	3	Checksum has been verified and stripped.
Codabar	0	No check digit processing.
Code 93	0	Always transmit 0.

MSI	0	Modulo 10 check digit verified and transmitted.
	1	Modulo 10 check digit verified but not transmitted.
Discrete 25	0	Always transmit 0.
UPC/EAN	0	Standard data packet in full EAN country code format, which is 13 digits for UPC-A and UPC-E (not including supplemental data).
	3	Standard data packet with two-digit or five-digit supplemental data.
	4	EAN-8 data packet.
	A UPC-A with Addon 2 barcode, 012345678905-10, is transmitted to the host as a 18-character string, **]E3**001234567890510.	
Bookland EAN	0	Always transmit 0.
Trioptic Code 39	0	Always transmit 0.
Code 11	0	Single check digit (has been verified.)
	1	Two check digits (has been verified.)
	3	Checksum has been verified but not transmitted.
RSS Family	0	Always transmit 0.
	RSS-14 and RSS Limited will be transmitted with an Application Identifier "01". For example, an RSS-14 barcode, 100123456788902, is transmitted as **]e0**0110012345678902.	

Note: In UCC/EAN-128 emulation mode, RSS is transmitted using Code 128 rules (i.e. "]C1").

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

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

PDF417, Micro PDF417	0	Scan engine is set to conform to protocol defined in 1994 PDF417 symbology specifications. ▸ When this option is transmitted, the receiver cannot reliably determine whether ECIs have been invoked or whether data byte 92DEC has been doubled in

		transmission.
	1	Scan engine is set to follow the ECI protocol (Extended Channel Interpretation). All data characters 92DEC are doubled.
	2	Scan engine is set for Basic Channel operation (no escape character transmission protocol). Data characters 92DEC are not doubled. ▸ When decoders are set to this mode, unbuffered Macro symbols and symbols requiring the decoder to convey ECI escape sequences cannot be transmitted.
	3	The barcode contains a UCC/EAN-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The barcode contains a UCC/EAN-128 symbol, and the first codeword is in the range 908-909.
	5	The barcode contains a UCC/EAN-128 symbol, and the first codeword is in the range 910-911.
	A PDF417 barcode, ABCD, with no transmission protocol enabled, is transmitted as]L2ABCD.	
Data Matrix	0	ECC 000-140, not supported.
	1	ECC 200.
	2	ECC 200, FNC1 in first or fifth position.
	3	ECC 200, FNC1 in second or sixth position.
	4	ECC 200, ECI protocol implemented.
	5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented.
	6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented.
Maxicode	0	Mode 4 or 5
	1	Mode 2 or 3
	2	Mode 4 or 5, ECI protocol implemented.
	3	Mode 2 or 3, ECI protocol implemented in secondary message.
QR Code	0	Model 1
	1	Model 2, ECI protocol not implemented.
	2	Model 2, ECI protocol implemented.
	3	Model 2, ECI protocol not implemented, FNC1 implied in first position.
	4	Model 2, ECI protocol implemented, FNC1 implied in first position.
	5	Model 2, ECI protocol not implemented, FNC1 implied in second position.
	6	Model 2, ECI protocol implemented, FNC1 implied in second position