cino

User's Guide

Bluetooth
Bar Code Imager

MBC6890 Series

Wireless FuzzyScan™

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Regulatory Information

FCC ID: SBC-MBC6890 FCC ID: SBC-ADB100

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Note: 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.

Installation and use of this FuzzyScan device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the users authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

CE

The CE mark as shown above displayed on all FuzzyScan series bar code scanners indicates that this product has been tested in accordance with the procedures given in European Council R&TTE Directive (99/5/EC) and confirmed to comply with the European Standard EN 301 489-17, EN 300 328-2, EN 50371, EN 60950.

ETC093LPD0145 T34291

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第十四條　低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前項合法通信，指依電信規定作業之無線電信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

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International Edition, Rev. B

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Getting Started

Thank you for choosing MBC6890 series Bluetooth Cordless Linear Imager. The MBC6890 series cordless imagers are designed with remarkable optical architecture and innovative functionality. By incorporating Bluetooth® 1.2 wireless technology which operates on the 2.4 GHz ISM band, the MBC6890 series is compatible with most popular Bluetooth-enabled devices, such as PCs, laptops and PDAs, and so on.

Moreover, the MBC6890 series comes with various models to meet diverse application needs and requirements for :

Different Communication Coverage

- Regular Working Range Model
  This model equips the class 2 Bluetooth radio which provided minimum 10 meters wireless operations. Thanks to the optimal RF design, it also is possible to perform farther coverage depending on the actual working environments.
- Long Working Range Model
  This model equips the class 1 Bluetooth radio which provided wireless operations within a range from minimum 75 meters up to 100 meters, even possibly farther by depending on the actual working environments.

Various Reading Performances

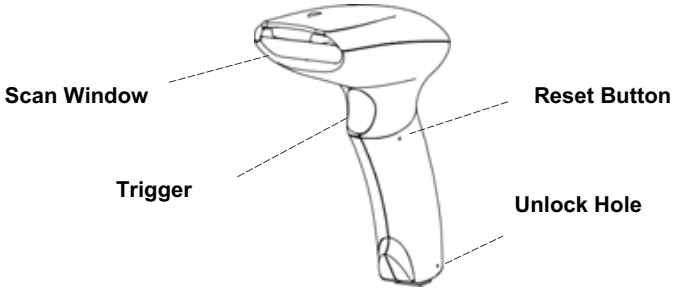
- High Density Model
  The optics and image process algorithm of this model has been optimized to enable reading very high-density bar codes down to 3-mil resolution at least.
- Long Range Model
  The surpassing reading performance enables this model not only to read high-density bar codes, but also capture popular bar codes with superior depths of field up to 12”.

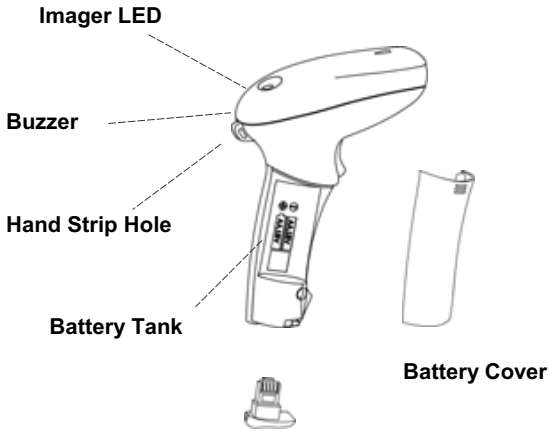
The MBC6890 series delivers the ultimate convenience as well as the freedom of mobility to meet your on-demand bar code scanning, which is the most cost-effective cable replacement solution to empower your business.

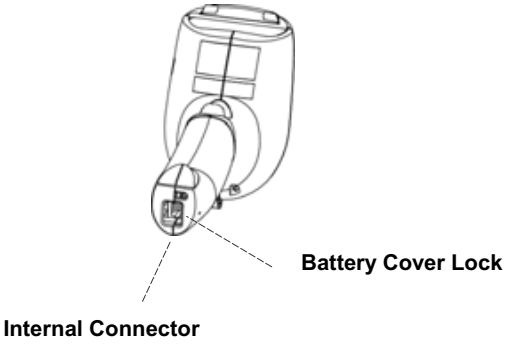
This User’s Guide provides installation and operation instructions for MBC6890 series. If you need more information, please contact your supplier or visit our website.

Getting Familiar with MBC6890 Cordless Imager

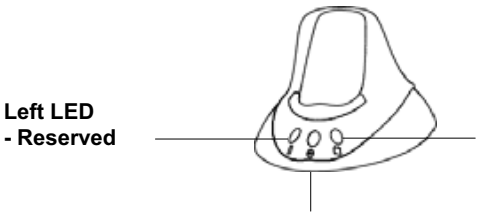
• MBC6890 Bluetooth Cordless Imager

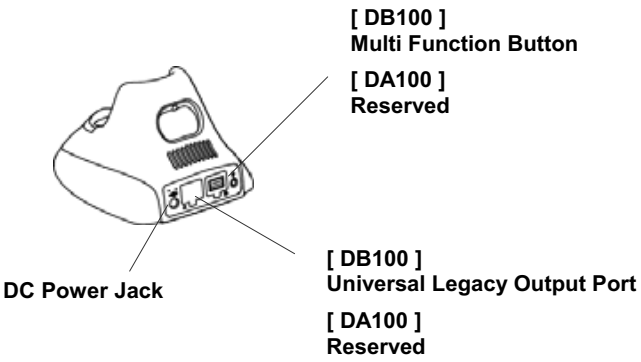






• DB100 Smart Cradle / DA100 Charging Cradle



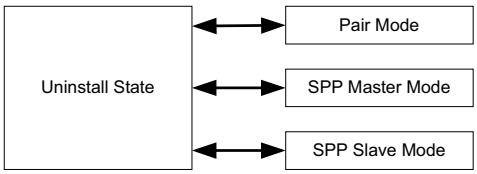


Decide the Radio Link Mode

The MBC6890 provides three (3) different radio link modes including Pair Mode, SPP Slave and Master Modes. You may choose the suitable one to implement your desired cordless scanning solution.

…… Note for Installation Engineer

The factory default setting of MBC6890 is in “Uninstall State” (Radio is inactive.). Please choose one of the three (3) radio link modes for your cordless scanning system before making any further actions. Once the MBC6890 has been set to your desired radio link mode, it is necessary for you to switch it back to “Uninstall State” before changing to different radio link mode.



- **Pair Mode**: This is the simplest “Cable Replacement” solution, if there is no Bluetooth device in your existing system. Using this solution, users will benefit by upgrading the existing tethered scanning platform to the cordless one without any effort. The MBC6890 works with Smart Cradle to perform just as it is directly wire-connected to a host PC through one of various legacy interfaces such as PS/2 keyboard wedge, RS232, USB keyboard and USB Serial.
- **SPP Master Mode**: The MBC6890 is Master when it sends data to a remote Bluetooth slave device such as a PCs, laptops, PDAs, etc. Especially, the **Auto Reconnecting** capability can be performed in this mode, even using the imager under PICONET connection.
- **SPP Slave Mode**: The MBC6890 can be connected as “Slave” when it sends data to a remote Bluetooth master device such as a desktop PCs, laptops, and PDAs, which has to initialize the communication.

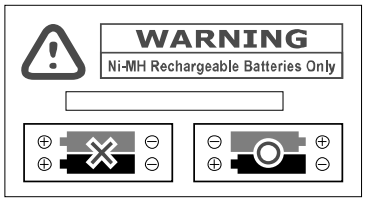
…… Note for Field Operations

Please refer to the Chapter “Operations and Indications”. You will find sufficient instructions for daily field operation of barcode scanning.

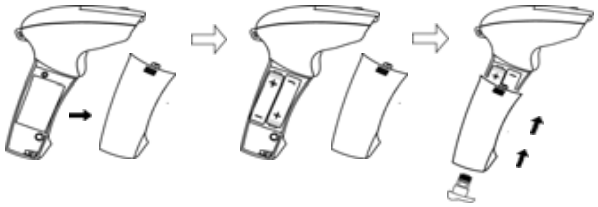
Preparations Before Using

(1) Have a remote Bluetooth system ready to work.

(2) Open the battery cover then place the rechargeable batteries into the battery tank. Please make sure the batteries are placed in correct direction. (Do not charge non-rechargeable batteries, as it may cause explosion.)

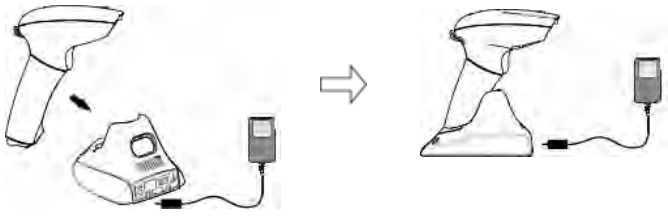


(3) Close the battery cover and insert the end cap.



(4) Connect the power supply unit with an AC outlet. Then, plug the DC plug of the power supply unit into the DB100 smart cradle or DA100 charging cradle.

(5) Placing the imager onto the DB100 smart cradle or DA100 charging cradle for battery charging. Please make sure to hear one short beep for reliable contact. The MBC6890 batteries have to be charged **at least 4-5 hours** for the first time use.



(6) Before you start using MBC6890, please make sure the batteries are fully charged, then initialize the imager by poking the **Reset Button** for the first time use.

Using MBC6890 Cordless Imager

The MBC6890 cordless imager has to establish communication with a host system for data transmission. There are several ways for connecting MBC6890 to the host system:

- By using with the DB100 smart cradle, through one of legacy output interfaces such as PS/2 keyboard wedge, RS232 serial interface, USB keyboard interface and USB serial interface and so on.
- By means of Bluetooth wireless communication via SPP master service or SPP slave service.

To meet different requirements, the MBC6890 provides following two operation modes:

- Normal Mode
  Under normal mode (default setting), when the radio link between the MBC6890 and the host system is built, the MBC6890 transmits each scanned data right after scanning the bar code. However, MBC6890 can not scan any bar code data while losing its connection with the remote host system due to out of range. You might enable the option of "**Out-of-range Scanning**" to have MBC6890 stored the scanned data even the imager is out of range.
- Batch Mode
  Under batch mode, the MBC6890 can store the scanned data without building the radio link with a remote host system.

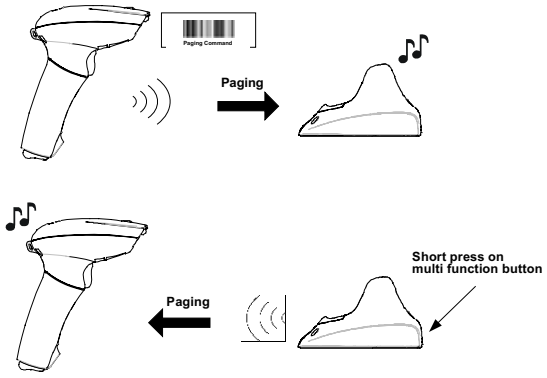
For above-mentioned Out-of-range Scanning and Batch Mode, the MBC6890 can store the scanned data into the buffer on a FIFO basis until transmission is initialized or buffer memory is full. Nominally, the imager will store up to 2,000 EAN-13 labels.

Using MBC6890 with DB100 Smart Cradle

The MBC6890 works with DB100 smart cradle to perform just as it is directly wire-connected to a host PC through one of legacy interfaces such as PS/2 keyboard wedge, RS232 serial, USB keyboard and USB serial. The “Pair Mode” scanning system is the most convenient “**Cable Replacement**” solution, if there is no Bluetooth device in your existing system. Using this solution, users could benefit by instant upgrading the existing tethered scanning platform to the cordless one without any effort.

Moreover, a special-designed **Auto Reconnecting** feature is provided by MBC6890 under pair mode. If the radio link between the imager and its paired smart cradle is lost, the automatic radio re-build process will be activated immediately. It’s no need for user to re-build the radio connection manually.

If several MBC6890 sets have been installed in the same area, users may not be able to easily identify each imager and its paired smart cradle. The paging function will help users to locate or identify the paired imager and smart cradle with ease.

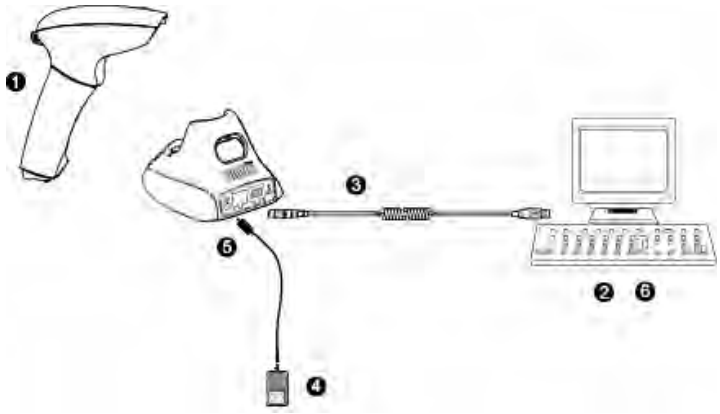


The required parts to form such a scanning system include:

- MBC6890 cordless linear imager x 1
- DB100 smart cradle x 1,
- Power supply unit x 1
- A selected interface cable
  (such as PS/2 keyboard wedge Interface cable, RS232 serial interface cable, USB keyboard interface cable, USB serial Interface cable, or other interface cables)

The Installation Procedure

Please refer to following procedures for connecting MBC6890 to a host system by using with DB100 smart cradle:



(1) Make sure that batteries are fully charged and placed into MBC6890. You may refer to the Section “Preparations Before Using” for details.

(2) Power off the host system.

(3) Connect the desired interface cable (such as: PS/2 keyboard wedge interface cable) with DB100 smart cradle and host PC. You will hear a ‘click’ when the connection is made.

(4) Plug the power supply unit into an AC outlet.

(5) Plug the DC plug of power supply unit into the DB100 smart cradle. The radio link condition between imager and cradle will be presented by the status LED of cradle. Please refer to Section “DB100 Smart Cradle Indications” for details.

(6) Power on the host system.

(7) Check that MBC6890 gives alternating red-green blinks, means it is in “**Uninstall**” state. If the imager has been in “Uninstall” state already, the next step can be skipped.

(8) Scan the “Uninstall” barcode command. The imager gives 4 short beeps. Then imager LED gives alternating red-green blinks.

Uninstall Command

NOTE The imager will automatically switch to “Sleep State” in 30 seconds, if there’s no further operation under “Uninstall State”. Press the imager trigger switch to wake up the imager from the “Sleep State”.

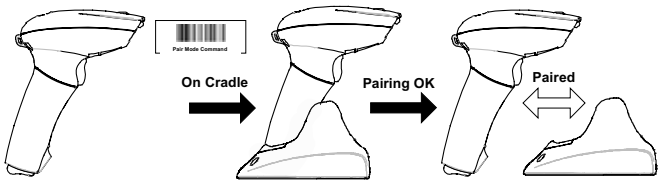
(9) Scan “Pair Mode” barcode command. The imager gives 2 short beeps, and imager LED gives red blinks.

Pair Mode Command

NOTE After scanning the “Pair Mode” barcode command, the imager will enter into “Sleep State”, if the imager is not placed on the cradle within 10 seconds. You can press the trigger switch to revert it to pairing process. If you want to switch it back to “Uninstall State”, please press and hold the trigger switch for 2 seconds.

(10) Place the imager on the cradle within 10 seconds. The pairing process will be automatically starting as below:

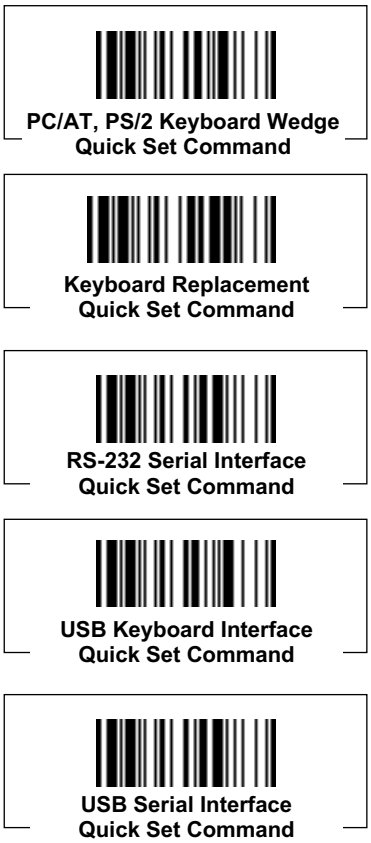
- Imager gives continuous short clicks and red blinks during pairing process.
- You will hear the special 4 beeps in ascending tone. Now the pairing process is completed.
- Finally, the imager LED gives green blinks at regular interval, and the connection status LED of cradle becomes green.



(11) Take MBC6890 off the DB100 smart cradle. To select your desired host interface by scanning one of the corresponding quick set commands listed in next page.

If the host interface setting has been changed, you will hear a special “Configuration OK” sound first. And the imager will give another 4 beeps in ascending tone to indicate the **radio link built**. After that, the imager LED will give green blinks at regular intervals to indicate that the imager is in the **radio-connected state**.

• Host Interface Quickset Command



If the USB serial interface is selected, you have to install the USB virtual COM driver in your host system before using the imager. You may obtain the software driver from your supplier or download it from our web site.

Enable Out-of-Range Scanning

Under normal mode (default setting), when the radio link between the MBC6890 and the host system is built, the MBC6890 transmits each scanned data right after scanning the bar code label. However, the MBC6890 can not scan any bar code data while losing its connection with the remote host system due to out of range. You might enable the option of "**Out-of-range Scanning**" to have MBC6890 stored the scanned data even the imager is out of range. To enable this function, please refer and follow the programming procedures.

When the MBC6890 is out of range, you will hear 4 beeps in descending tone to indicate the radio connection lost. Then, the MBC6890 gives red blinks at regular interval. You still can scan the bar code even the radio connection has been discontinued. When a bar code is saved successfully, a good read beep sounds and the LED flashes green. When the memory buffer is full, the MBC6890 will give a long beep and the LED flashes red.

When the MBC6890 enters into the working range, the data transmission is triggered right after the radio link is rebuilt automatically. You will hear 4 beeps in ascending tone to indicate the radio link built. Following two short beeps, the MBC6890 gives continuous short clicks and red blinks during the transmission process. After data transmission is completed, the imager indicates four short beeps.

Activate Batch Mode

You can activate batch mode to have MBC6890 stored scanned data without building the connection with a remote host system.

To enable this function, please scan "**Enter Batch Mode**" quick set command. When a bar code is saved successfully, a good read beep sounds and the LED flashes green. When the memory buffer is full, the MBC6890 will give a long beep and the LED flashes red.

NOTE Once you scan "**Enter Batch Mode**" quick set command, the pre-connected radio link will be discontinued and the MBC6890 will enter batch mode.

You can trigger the data transmission by scanning "**Exit Batch Mode**" quick set command. After that, the radio link will be rebuilt automatically. You will hear 4 beeps in ascending tone to indicate the radio link built. Following two short beeps, the MBC6890 gives continuous short clicks and red blinks during the transmission process. After data transmission is completed, the imager indicates four short beeps.

Enter Batch Mode
Quick Set Command

Exit Batch Mode
Quick Set Command

Using MBC6890 via Bluetooth SPP Service

Bluetooth wireless technology works on global RF standards, which operates on the 2.4 GHz ISM band. This enables wireless connectivity between the remote Bluetooth devices and the host computer built-in Bluetooth radio, such as PCs, laptops and PDAs, etc.

Usually, all actions between a program installed on your computer and a remote Bluetooth device are carried out by the Bluetooth services. A Bluetooth device can offer one or more services. These popular services include Serial Port (SPP), Dail-Up Networking (DUN), Human Interface Device (HID), Generic Object Exchange (GOEP), Personal Area Networking (PAN), Lan Access (LAP), Generic Access (GAP), and so on.

The MBC6890 supports the Serial Port Service (SPP) which is one of the most popular Bluetooth services providing the serial radio link between Bluetooth master and slave devices. Under Bluetooth SPP, you can establish connection between MBC6890 and a remote Bluetooth host system by using **SPP master service** or **SPP slave service**. That is, MBC6890 can act as either master or slave. The master initiates the radio connection with the slave, whereas the slave only waits for the master initiating a radio connection with him.

Usually, the resident Bluetooth drivers will configure the SPP connection as one of the virtual COM ports in your host system that can be controlled and utilized by user's application programs. If your host system supports the functionality of PICONET which is the Bluetooth device network, the communication can be established with up to 7 imagers simultaneously. Usually, once a PICONET is formed, a desktop or laptop PC equipped with Bluetooth radio will act as the master while the others act as slaves for the duration of the PICONET connection.

Notebook computer with
USB Bluetooth dongle

The required parts to form such a scanning systems include :

- MBC6890 cordless linear imager x 1
- DA100 charging cradle x 1
- Power supply Unit x 1
- A ready-to-use remote Bluetooth host system

Establish SPP Master Connection

While configuring the MBC6890 to be used in SPP Master mode, the Imager will initiate the connection to the remote Bluetooth host system. The special-designed **Auto Reconnecting** feature is provided by MBC6890 under this mode. If the radio link is lost, the automatic radio re-build process will be activated immediately. It's no need for user to re-build the radio connection manually.

Generally speaking, Widcomm provides complete Windows® based Bluetooth software and its stacks have been broadly adopted by the Bluetooth industry. The following procedures of installation example described how to connect MBC6890 to a remote host system in Windows 2000 with Widcomm Bluetooth driver for your reference.

The Installation Procedures

(1) Please prepare a 12-character barcode which contains the MAC address (Bluetooth address) information of remote Bluetooth host system before installation.

(2) Make sure that batteries are fully charged & placed into MBC6890. Please refer to Section "Preparations Before Using" for details.

(3) Power on your remote Bluetooth host system and make sure the virtual COM port is available for connecting to MBC6890. If the virtual COM port is not available, please go to the folder of "**Local Services**" located in Bluetooth advanced setting, then add an additional serial port service by clicking the "**Add Serial Services**" button.

(4) Power on the MBC6890 imager within radio range. Then check that MBC6890 gives alternating red-green blinks, means it is in "**Uninstall**" state. If the imager has been in "Uninstall" state already, the next step can be skipped.

(5) Scan the "Uninstall" barcode command. The imager gives 4 short beeps. Then imager LED gives alternating red-green blinks.

Uninstall
Quick Set Command

The imager will automatically switch to "Sleep State" in 30 seconds, if there's no further operation under "Uninstall State". Press the imager trigger switch to wake up the imager from "Sleep State".

(6) Scan the “SPP Master Mode” barcode command, the imager gives 2 short beeps and imager LED gives red blinks.

SPP Master Mode
Quick Set Command

After scanning the “SPP Master Mode” barcode command, the imager will enter “Sleep State”, if the radio link is not built within 1 minute. You can press the trigger switch to revert it to SPP Master process. If you want to switch it back to “Uninstall State”, please press and hold the trigger switch for 2 seconds.

(7) **<< Set the MAC Address of Remote Bluetooth Device >>**

Scan a 12-character barcode to obtain the MAC address of the remote Bluetooth host system. The imager gives one beep, then the imager LED blinks short red light continuously during the radio building process. If the PIN Code or Passkey is requested for security connection, please enter “**00000000**”.

(8) The MBC6890 imager gives 4 beeps in ascending tone to indicate the **radio link built**. After that, the imager LED gives green blinks at regular interval to indicate that the imager is in **radio-connected state**.

The installation procedures will vary depending on different remote Bluetooth host systems, operating systems and Bluetooth drivers. Please follow the respective procedures to build the connection accordingly.

Enable Out-of-Range Scanning

Under normal mode (default setting), when the radio link between the MBC6890 and the host system is built, the MBC6890 transmits each scanned data right after scanning the bar code label. However, the MBC6890 can not scan any bar code data while losing its connection with the remote host system due to out of range. You might enable the option of "**Out-of-range Scanning**" to have MBC6890 stored the scanned data even the imager is out of range. To enable this function, please refer and follow the programming procedures.

When the MBC6890 is out of range, you will hear 4 beeps in descending tone to indicate the radio connection lost. Then, the MBC6890 gives red blinks at regular interval. You still can scan the bar code even the radio connection has been discontinued. When a bar code is saved successfully, a good read beep sounds and the LED flashes green. When the memory buffer is full, the MBC6890 will give a long beep and the LED flashes red.

When the MBC6890 enters into the working range, the data transmission is triggered right after the radio link is rebuilt automatically. You will hear 4 beeps in ascending tone to indicate the radio link built. Following two short beeps, the MBC6890 gives continuous short clicks and red blinks during the transmission process. After data transmission is completed, the imager indicates four short beeps.

Activate Batch Mode

You can activate batch mode to have MBC6890 stored scanned data without building the connection with a remote host system.

To enable this function, please scan "**Enter Batch Mode**" quick set command. When a bar code is saved successfully, a good read beep sounds and the LED flashes green. When the memory buffer is full, the MBC6890 will give a long beep and the LED flashes red.

NOTE Once you scan "**Enter Batch Mode**" quick set command, the pre-connected radio link will be discontinued and the MBC6890 will enter batch mode.

You can trigger the data transmission by scanning "**Exit Batch Mode**" quick set command. After that, the radio link will be rebuilt automatically. You will hear 4 beeps in ascending tone to indicate the radio link built. Following two short beeps, the MBC6890 gives continuous short clicks and red blinks during the transmission process. After data transmission is completed, the imager indicates four short beeps.

Enter Batch Mode
Quick Set Command

Exit Batch Mode
Quick Set Command

Establish SPP Slave Connection

While configuring the MBC6890 to be used in SPP Slave mode, the imager will only wait for the connection request issued by the remote Bluetooth master system to establish the radio link. Once the pre-built radio link is lost, user has to re-build the radio link manually.

Generally speaking, Widcomm provides complete Windows® based Bluetooth software and its stacks have been broadly adopted by the Bluetooth industry. The following procedures of installation example described how to connect MBC6890 to a remote host system in Windows 2000 with Widcomm Bluetooth driver for your reference.

The Installation Procedures

(1) Make sure that batteries are fully charged and placed into MBC6890. You may refer to Section “Preparations Before Using” for details.

(2) Power on the remote Bluetooth host system and make sure the virtual COM port is available for connecting to MBC6890. If the virtual COM port is not available, please go to the folder of “**Client Applications**” located in Bluetooth advanced setting, then add an additional COM port by clicking the “**Add COM Port**” button.

(3) Power on the MBC6890 imager within radio range. Then check that MBC6890 gives alternating red-green blinks, means it is in “**Uninstall**” state. If the imager has been in “Uninstall” state already, the next step can be skipped.

(4) Scan the “Uninstall” barcode command. The imager gives 4 short beeps. Then imager LED gives alternating red-green blinks.

Uninstall
Quick Set Command

The imager will automatically switch to “Sleep State” in 30 seconds, if there’s no further operation under “Uninstall State”. Press the imager trigger switch to wake up the imager from “Sleep State”.

(5) Scan the “SPP Slave Mode” barcode command, the imager gives 2 short beeps and imager LED gives red blinks.

Your imager is now ready to be discovered by a remote Bluetooth master device.

NOTE After scanning the “SPP Slave Mode” barcode command, the imager will enter “Sleep State”, if the radio link is not built within 1 minute. You can press the trigger switch to revert it to SPP Slave process. If you want to switch it back to “Uninstall State”, please press and hold the trigger switch for 2 seconds.

(6) Execute the Bluetooth Discovery procedure from the host system equipped with the remote Bluetooth master device.

(7) Check whether "MBC6890" is shown among the discovered Bluetooth devices in your host system. For example, the device name “CINO MBC6890” will be shown on “Found Bluetooth Devices”

(8) Establish the radio link between MBC6890 and remote Bluetooth master system. If the PIN Code or Passkey is requested for security connection, please enter “**00000000**”. Double click the “CINO MBC6890” on the found Bluetooth devices. You will see the “CINO SPP” service on the imager. Double click the “CINO SPP” service to establish the connection between MBC6890 and remote Bluetooth master system.

(9) The MBC6890 imager gives 4 beeps in ascending tone to indicate the **radio link built**. After that, the imager LED will give green blinks at regular intervals to indicate that the imager is in the **radio-connected state**.

NOTE The installation procedures will vary depending on different remote Bluetooth host systems, operation systems and Bluetooth drivers. Please follow the respective procedures to build the connection accordingly.

Enable Out-of-Range Scanning

Under normal mode (default setting), when the radio link between the MBC6890 and the host system is built, the MBC6890 transmits each scanned data right after scanning the bar code label. However, the MBC6890 can not scan any bar code data while losing its connection with the remote host system due to out of range. You might enable the option of "**Out-of-range Scanning**" to have MBC6890 stored the scanned data even the imager is out of range. To enable this function, please refer and follow the programming procedures.

When the MBC6890 is out of range, you will hear 4 beeps in descending tone to indicate the radio connection lost. Then, the MBC6890 gives red blinks at regular interval. You still can scan the bar code even the radio connection has been discontinued. When a bar code is saved successfully, a good read beep sounds and the LED flashes green. When the memory buffer is full, the MBC6890 will give a long beep and the LED flashes red.

When the MBC6890 enters into the working range, the data transmission is triggered right after the radio link is rebuilt manually. You will hear 4 beeps in ascending tone to indicate the radio link built. Following two short beeps, the MBC6890 gives continuous short clicks and red blinks during the transmission process. After data transmission is completed, the imager indicates four short beeps.

Activate Batch Mode

You can activate batch mode to have MBC6890 stored scanned data without building the connection with a remote host system.

To enable this function, please scan "**Enter Batch Mode**" quick set command. When a bar code is saved successfully, a good read beep sounds and the LED flashes green. When the memory buffer is full, the MBC6890 will give a long beep and the LED flashes red.

NOTE Once you scan "**Enter Batch Mode**" quick set command, the pre-connected radio link will be discontinued and the MBC6890 will enter batch mode.

You can trigger the data transmission by scanning "**Exit Batch Mode**" quick set command. After that, please establish the radio link between MBC6890 and remote host system. You will hear 4 beeps in ascending tone to indicate the radio link built. Following two short beeps, the MBC6890 gives continuous short clicks and red blinks during the transmission process. After data transmission is completed, the imager indicates four short beeps.

Enter Batch Mode
Quick Set Command

Exit Batch Mode
Quick Set Command

Operations and Indications

The MBC6890 has two indicators, LED and buzzer. They will provide various indications depending on the actual operating conditions and states. you may obtain necessary information to understand all details by referring to following sections described in this Chapter, including:

- Useful Tips for Field Operation
- MBC6890 Major Sates During Operation
- MBC6890 Indications
- Cradle Indications

Useful Tips for Field Operation

Please refer following four useful tips for your field operation :

- **4 descending-tone beeps**
  When you heard the special 4 descending-tone beeps, it means the imager has lost the radio link already. This condition mostly happens when you go out of the radio covering range. And the imager LED will give red blinks at regular interval to indicate **Radio Disconnected** state.

- **4 ascending-tone beeps**
  When you heard the special 4 ascending-tone beeps, it means the radio link between imager and remote Bluetooth device has been re-built already. This condition mostly happens when you re-enter the radio covering range. And the imager LED will give green blinks at regular interval to indicate **Radio Connected** state.

- **Paging command**
  Occasionally you may not be able to locate your MBC6890, especially in a job session which requires constant moving around. The “Page” function (only available for “Pair Mode” Connection) will help you to locate the imager.

- **Battery charging**
  The batteries inside the imager will be charged when imager is placed on the cradle. If the imager indicates “Battery Power Low” or “Battery Power Extremely Low”, please charge the batteries as soon as possible.

DO NOT CHARGE NON-RECHARGEABLE BATTERIES, AS IT MAY CAUSE EXPLOSION.

MBC6890 Major States During Operation

Once the scanning system is properly set up, MBC6890 will always be under one of the following Operational States:

State & Actions	Indications	
	LED	Beeper
1. Radio Uninstall State → Radio link not installed → Install the radio link	R/G... alternating red & green blinks	Off
2. Radio Connected State → Radio link installed already, the imager is connected to a remote Bluetooth device → Ready to scan a regular barcode	G... 1 green blink at regular interval	Off
3. Radio Disconnected State → Radio link has been installed already, but the imager is not connected by any remote Bluetooth device → Re-enter radio covering range	R... 1 red blink at regular interval	Off
4. Imager Sleep State → Imager is in “Sleep State” → Press trigger to wake imager up	Off	Off
5. Under-configuration State → Imager is under configuration procedure → Complete configuration procedure	R steady red	Off
6. Battery Power Low State → Batteries power low → Charge or change batteries	R... 1 red blink at regular interval	 1 beep at regular interval
7. Battery Power Extremely Low State → Batteries power extremely low → Charge or change batteries	R x 8 8 red blinks	x 8 8 beeps
8. Battery No Power State → Batteries lost power completely → Charge or change batteries	Off	Off

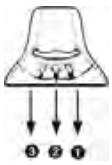
MBC6890 Indications

No	Indications		Descriptions
	LED	Beeper	
1	Off	Off	“Sleep State”, or “Batteries no power”, or No batteries inside
2	R steady red	Off	“Under Configuration”
3	R/G... alternating red & green blinks	Off	“Radio Uninstall State”
4	G... 1 green blink at regular interval	Off	“Radio Connected” (Ready to scan barcode)
5	R... 1 red blink at regular interval	Off	“Radio Disconnected”
6	R... 1 red blink at regular interval	1 beep at regular interval	“Battery power low”
7	R x 8 8 red blinks	x 8 8 beeps	“Power extremely low”
8	R 1 red blink	1 beep	Time out warning
9	R x 2 2 red blinks	2 beeps	Receiving the NAK signal from smart cradle or host PC

MBC6890 Indications (Continued)

No	Indications		Descriptions
	LED	Beeper	
10	R x 3 3 red blinks	 3 beeps	Configuration fail
11	G 1 green blink	 1 good read beep	“Good Read” beep
12	G 1 green blink	 1 ACK beep	Receiving ACK signal from smart cradle or host PC
13	G 1 green blink	 power-on reset beeps	Power on indication
14	G 1 green blink	 4 beeps in ascending tone	Radio connection built
15	R 1 red blink	 4 beeps in descending tone	Radio connection lost
16	R x 10 10 red blinks	 page beeps	Cradle paging Imager
17	R x 10 10 red blinks	 page beeps	Imager paging Cradle
18	G 1 green blink	 configuration OK beeps	Configuration successful

Cradle Indications



❶ Right LED : Reserved

❸ Left LED : Reserved

❷ Middle LED : DB100 - Connection status indication
DA100 - Power on Indication

■ **Middle LED of DB100 Smart Cradle**

No	Indications		Descriptions
	LED	Beeper	
1	R Steady red	Off	"Sleep State", or "Battery no power", or No battery inside
2	G Steady green	Off	"Under Configuration"
3	G Steady green	Off	Configuration successful
4	R/G... red & green blinks	Off	"Radio Uninstall State"
5	G Steady green	Off	"Radio Connected"
6	R... Steady red	Off	"Radio Disconnected"
7	G Steady green	4 beeps in ascending tone	Radio connection built
8	R Steady red	4 beeps in descending tone	Radio connection lost

■ **Middle LED of DA100 Charging Cradle**

No	Indications		Descriptions
	LED	Beeper	
1	G Steady green	Off	Cradle ready (Power On)

Configure MBC6890 Cordless Imager

The FuzzyScan bar code commands are specially designed for field programming convenience. All MBC6890 series cordless linear imagers can take this way to make detailed configuration.

Before configuring your imager, please understand the command structure and programming procedures in advance. The bar code commands include System Command, Family Code and Option Code for programming purpose.

System Command

The System command is the highest level bar code command which directs the imager to perform immediate operations, such as entering/exiting programming mode, listing system information, recovering to factory preset configurations, quick setting popular configuration, and so on. Please note that all system commands will take a few seconds to complete the desired operation. You must wait for the completion sound before scanning another bar code.

Family Code

The Family Code is scanned to select the user desired programming family. FuzzyScan MBC6890 codeless imager provide more than 100 programming family to meet any specific requirements.

Option Code

The Option Code is a set of bar code commands represented by “0-9”, “A-F” and finishing selection (FIN). For most setting, you have to select at least one option code following the family code selection to set your desired configuration for the selected programming family.

This Chapter provides access to all the configuration setting for MBC6890 series, including :

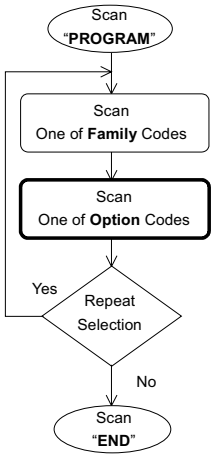
- Programming Procedures
- Host Interface Selection
- Acknowledgement Setting
- Operation Control
- Symbology Reading Control
- Keyboard Interface Control
- Serial Interface Control
- Condensed DataWizard

Programming Procedures

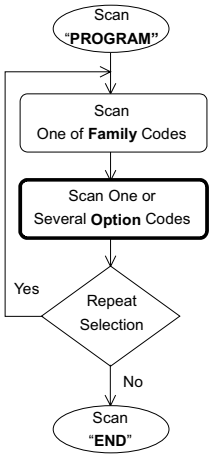
As you scan the bar code command to select the desired parameters, all the final selected configurations will be stored in the FuzzyScan's internal non-volatile memory. If you power off the unit, the imager retains all programming options. You need not re-program the FuzzyScan if you want to keep the existing configurations for the next power on.

The programming procedures of FuzzyScan are designed as simple as possible for ease of setting. Most programming families take the simplest Single Scan Selection (SS) programming procedure. But several programming families have more complex and flexible programmable options, and you must take Multiple Scans Selection (MS), Cycling Scan Selection (CS) or Dual Level Selection (DS) to complete their programming procedures.

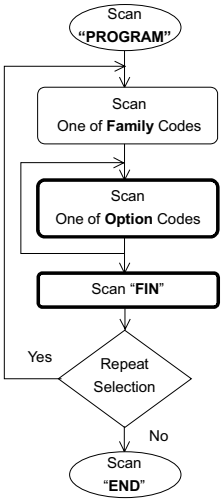
Single scan selection



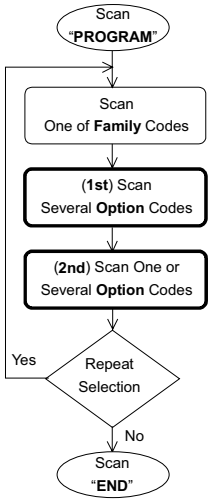
Multiple scans selection



Cycling scan selection



Dual level selection



Host Interface Selection

Command	P.C.	Parameter Selection	Option
Host Interface Selection	MS	IBM PC/XT keyboard wedge	00
	MS	IBM PC/AT, PS/2 series keyboard wedge ◆	01
	MS	Compaq, HP Vectra PC keyboard wedge	04
	MS	Apple ADB keyboard wedge	05
	MS	Standard/TTL RS232 peer-to-peer serial interface	06
	MS	Standard/TTL RS232 serial wedge interface	07
	MS	Wand emulation interface	08
	MS	Pseudo RS232 serial interface (3-wire **TTL** level)	09
	MS	PC/AT, PS/2 keyboard replacement	10
	MS	General Notebook PC keyboard wedge interface	13
	MS	General Notebook PC keyboard direct-link interface	14
	MS	IBM SureOne keyboard wedge interface	15
	MS	IBM SureOne standard RS232 serial interface	16
	MS	Laser emulation interface	17
	MS	USB keyboard (for Windows 98, XP, 2000 and iMac)	18
	MS	USB keyboard (for Windows XP, 2000)	19
	MS	IBM 5550 series keyboard wedge (6p)	1A
	MS	SUN Microsystems Ultra 10 Workstation	1B
	MS	IBM ThinkPad keyboard direct-link interface	84
	MS	IBM ThinkPad keyboard wedge interface	87
	MS	IBM PS/55 5576-001 (set 81) keyboard wedge interface	70
	MS	IBM PS/55 5576-002 (set 81) keyboard wedge interface	71
	MS	IBM PS/55 5576-003 (set 81) keyboard wedge interface	72
	MS	IBM PS/55 5576-A01 (set 1) keyboard wedge interface	73
	MS	IBM PS/55 5576-001 (set 8A) keyboard wedge interface	74
	MS	IBM PS/55 5576-002 (set 8A) keyboard wedge interface	75
	MS	IBM PS/55 5576-003 (set 8A) keyboard wedge interface	76
	MS	IBM PS/V PC, 5576-001 (set 82) keyboard wedge	77
	MS	IBM PS/V PC, 5576-002 (code set 82) keyboard wedge	78
	MS	IBM PS/V PC, 5576-003 (code set 82) keyboard wedge	79
	MS	IBM PS/V PC, 5576-A01 (code set 2) keyboard wedge	80
	MS	Hitachi Flora KB1100 keyboard wedge	81
	MS	Hitachi Flora KB3100 keyboard wedge	82
	MS	Compaq Desktop PC keyboard wedge	83
	MS	DOS/V keyboard direct link	85
	MS	Fujitsu FMV keyboard wedge	86
	MS	NEC NX Notebook direct link	89
	MS	NEC PC-98 keyboard wedge	87

Acknowledgement Setting

Command	P.C.	Parameter Selection	Option
ACK Setting	SS	Bluetooth Acknowledgement ◆	0
	SS	Receiving Acknowledgement	1

Bluetooth Acknowledgement
While taking this setting, the receiving confirmation will be performed by the Bluetooth handshaking mechanism. The MBC6890 will give a “Good Read” beep after receiving the confirmation issued by the internal Bluetooth module to identify the scanned data transmitted successfully.

Receiving Acknowledgement (Pair Mode only)
While taking this setting in pair mode, the receiving confirmation will be performed by the paired smart cradle. The MBC6890 will take the special handshaking protocol to communicate with smart cradle. Once reading a bar code, the imager will give a “Good Read” beep after receiving the confirmation issued by the internal Bluetooth module first. If the smart cradle successfully received the scanned data, MBC6890 will give **an additional Acknowledgement (ACK) beep** after receiving the confirmation issued by the smart cradle. In case of MBC6890 didn’t receive the confirmation after time out duration or received a NAK signal from the smart cradle, MBC6890 will give the **NAK beeps** to remind user. Furthermore, the acknowledgement beeping tone can be set by the user. Please refer to the “Buzzer Tone Adjustment” for details.

Operation Control

1Command	P.C.	Parameter Selection	Option
Buzzer Tone Adjustment	SS	Buzzer tone - mute	0
	SS	Buzzer tone - low	1
	SS	Buzzer tone - medium ◆	2
	SS	Buzzer tone - high	3
	SS	Buzzer tone - extremely high	4
	SS	Good-read beep before data transmission ◆	5
	SS	Good-read beep after data transmission	6
	SS	Power-on beep ◆	7
	SS	No power-on beep	8
	SS	Acknowledgement beeping tone - mute	9
	SS	Acknowledgement beeping tone - low	A
	SS	Acknowledgement beeping tone - medium ◆	B
	SS	Acknowledgement beeping tone - high	C
	SS	Acknowledgement beeping tone - extremely high	D
Scanning Tolerance	SS	Regular (standard) printing quality	0
	SS	Poor (critical) printing quality ◆	1
		If you select the “Poor printing quality” option, please limit the “Readable bar code symbologies” and “Minimum and Maximum reading length” of each symbology to avoid error reading.	
Double Scan Verification	SS	Disable	0
	SS	Immediate time out duration	1
	SS	Short time out duration ◆	2
	SS	Medium time out duration	3
	SS	Long time out duration	4
	SS	Force Verification	5
Redundancy (Scan Voting)	SS	None	0
	SS	1 time ◆	1
	SS	2 times	2
	SS	3 times	3
	SS	4 times	4
	SS	5 times	5
Auto Power Off Duration	SS	Short (around 2 seconds)	0
	SS	Medium (around 3-4 seconds)	1
	SS	Long (around 5-6 seconds)	2
	SS	Extremely long (around 7-8 seconds) ◆	3
Inverse Reading	SS	Disable ◆	0
	SS	Enable	1
Dollar Sign Control	SS	Dollar sign output as "$" ◆	0
	SS	Dollar sign output as “¥”	1
Sleep Time Out Control (Radio Off)	SS	None (Disable automatic sleep function)	0
		For Connected State (On Line)	
	SS	1 Minutes	1
	SS	3 Minutes	2
	SS	5 Minutes	3
	SS	User defined duration: 1-99 minutes (20 minutes) ◆	4, (2 digits)
		For Disconnected State (Off Line)	
	SS	1 Minute	5
	SS	3 Minutes	6
	SS	5 Minutes ◆	7
	SS	10 Minutes	8
Low Power Warning	SS	Disable	0
	SS	Enable ◆	1
Out-of-range Scanning	SS	Disable ◆	0
	SS	Enable	1

- **Sleep Time Out Control**
  If the imager has not been used within the preset time out duration, it will automatically enter “Sleep State” for power saving purpose. User may disable this function by setting the time out duration to “None”.

  On-cradle state
  While the imager is placed on the cradle, the sleep time out duration for both Disconnected and Connected state will be changed to 60 minutes automatically.

Symbology Reading Control

User Defined Symbol ID

Command	P.C.	Parameter Selection	Option	2nd Option
Symbol ID - 1 character -	DS	Code 128 (default=B)	00	(1 Character)
	DS	UCC/EAN-128 (default=C)	01	(1 Character)
	DS	UPC-A (default=A)	02	(1 Character)
	DS	EAN/JAN/CAN-13 (default=F)	03	(1 Character)
	DS	Codabar/NW-7 (default=D)	04	(1 Character)
	DS	Code 39/Code 32 (default=G)	05	(1 Character)
	DS	Code 93 (default=H)	06	(1 Character)
	DS	Standard/Industrial 2 of 5 (default =1)	07	(1 Character)
	DS	Interleaved 2 of 5 (default=J)	08	(1 Character)
	DS	Matrix 2 of 5 (default=K)	09	(1 Character)
	DS	China Postal Code (default=L)	10	(1 Character)
	DS	German Postal Code (default=M)	11	(1 Character)
	DS	IATA (default=O)	12	(1 Character)
	DS	Code 11 (default=P)	13	(1 Character)
	DS	MSI/Plessey (default=R)	14	(1 Character)
	DS	UK/Plessey (default=S)	15	(1 Character)
	DS	Telepen (default=T)	16	(1 Character)
Symbol ID - 2 character -	DS	UPC-E (default=E0)	00	[1-2 chars], [FIN]
	DS	EAN-8 (default=FF)	01	[1-2 chars], [FIN]

Readable Symbology Setting

Command	P.C.	Parameter Selection	Option
Readable Symbology Setting	SS	Automatic discrimination ◆	00
	CS	Code 128, UCC/EAN-128	01
	CS	UPC-A	02
	CS	UPC-E	03
	CS	EAN/CAN/JAN-13	04
	CS	EAN/CAN/JAN-8	05
	CS	Codabar/NW-7	06
	CS	Code 39/Code 32, HIBC	07
	CS	Code 25 Family, IATA	08
	CS	Code 93	09
	CS	Code 11	10
	CS	MSI/Plessey	11
	CS	UK/Plessey	12
	CS	Telepen	13

Code 39 & Code 32 Setting

Command	P.C.	Parameter Selection	Option
Code 39 Family Setting	SS	Select Standard Code 39 format ◆	0
	SS	Select Full ASCII Code 39 format	1
	SS	Select Code 32 (Italian Pharmaceutical) format	2
	SS	Disable start/stop symbol transmission ◆	3
	SS	Enable start/stop symbol transmission	4
	SS	Disable Code 32 leading A transmission ◆	5
	SS	Enable Code 32 leading A transmission	6
	SS	Disable MOD 43 check digit verification ◆	7
	SS	Enable MOD 43 check digit verification	8
	SS	Disable check digit transmission	9
	SS	Enable check digit transmission ◆	A
Code 39 Min. Length	SS MS	Default (04) ◆ 01-Maximum	FIN (2 digits)
Code 39 Max. Length	SS MS	Default (98) ◆ 98-Minimum	FIN (2 digits)

Codabar & NW-7 Setting

Command	P.C.	Parameter Selection	Option
Codabar Setting	SS	Select Codabar standard format ◆	0
	SS	Select Codabar ABC format	1
	SS	Select Codabar CLSI format	2
	SS	Select Codabar CX format	3
	SS	Disable start/stop symbol transmission ◆	4
	SS	Enable ABCD/ABCD start/stop symbol transmission	5
	SS	Enable abcd/abcd start/stop symbol transmission	6
	SS	Enable ABCD/TN*E start/stop symbol transmission	7
	SS	Enable abcd/tn*e start/stop symbol transmission	8
	SS	Disable check digit verification ◆	9
	SS	Enable check digit verification	A
	SS	Disable check digit transmission	B
	SS	Enable check digit transmission ◆	C
Codabar Min. Length	SS MS	Default (04) ◆ 01-Maximum	FIN (2 digits)
Codabar Max. Length	SS MS	Default (98) ◆ 98-Minimum	FIN (2 digits)

UPC Setting

Command	P.C.	Parameter Selection	Option
UPC Family Setting	SS	Select UPC without supplement digits ◆	0
	SS	Select UPC with only 2 supplement digits	1
	SS	Select UPC with only 5 supplement digits	2
	SS	Select UPC with 2/5 supplement digits	3
	SS	Disable UPC-E expansion ◆	4
	SS	Enable UPC-E expansion	5
	SS	Disable UPC standardization ◆	6
	SS	Enable UPC standardization	7
	SS	Disable UPC numeric system	8
	SS	Enable UPC numeric system ◆	9
	SS	Disable UPC-A check digit transmission	A
	SS	Enable UPC-A check digit transmission ◆	B
	SS	Disable UPC-E check digit transmission	C
	SS	Enable UPC-E check digit transmission ◆	D
	SS	Disable UPC “leading 1” portion ◆	E
	SS	Enable UPC “leading 1” portion	F

EAN/JAN/CAN Setting

Command	P.C.	Parameter Selection	Option
EAN/CAN/JAN Setting	SS	Select EAN without supplement digits ◆	0
	SS	Select EAN with only 2 supplement digits	1
	SS	Select EAN with only 5 supplement digits	2
	SS	Select EAN with 2/5 supplement digits	3
	SS	Disable EAN-8 expansion ◆	4
	SS	Enable EAN-8 expansion	5
	SS	Disable EAN-13 check digit transmission	6
	SS	Enable EAN-13 check digit transmission ◆	7
	SS	Disable EAN-8 check digit transmission	8
	SS	Enable EAN-8 check digit transmission ◆	9
	SS	Disable ISBN/ISSN Conversion reading check ◆	A
	SS	Enable ISBN/ISSN Conversion reading check	B
	SS	Enable ISBN Conversion reading check	C
	SS	Enable ISSN Conversion reading check	D
	SS	Set EAN/UPC supplement digits as optional ◆	E
	SS	Set EAN/UPC supplement digits as necessary	F

Code 25 & German Post Setting

Command	P.C.	Parameter Selection	Option
Code 25 Setting	SS	Select any Code 25 ◆	0
	SS	Select Standard/Industrial 2 of 5 only	1
	SS	Select Matrix 2 of 5 only	2
	SS	Select Interleaved 2 of 5 only	3
	SS	Select Interleaved 2 of 5 S Code only	4
	SS	Select IATA only	5
	SS	Select China Postal Code only	6
	SS	Disable check digit verification ◆	7
	SS	Enable check digit verification	8
	SS	Disable check digit transmission	9
	SS	Enable check digit transmission ◆	A
Code 25 Min. Length	SS	Default (04) ◆	FIN
	MS	01-Maximum	(2 digits)
Code 25 Max. Length	SS	Default (98) ◆	FIN
	MS	98-Minimum	(2 digits)
German Postal Setting	SS	Disable ◆	0
	SS	Enable	1

IATA Setting

Command	P.C.	Parameter Selection	Option
IATA Setting	SS	Select 15-digit fixed length IATA checking ◆	0
	SS	Select variable length IATA	1
	SS	Disable check digit verification ◆	2
	SS	Enable check digit automatic verification	3
	SS	Enable S/N checking digit verification only	4
	SS	Enable CPN checking digit verification only	5
	SS	Enable CPN, Airline and S/N check digit verification	6
	SS	Disable start/stop symbol transmission ◆	7
	SS	Enable start/stop symbol transmission	8
	SS	Disable check digit transmission	9
	SS	Enable check digit transmission ◆	A

Code 11 Setting

Command	P.S.	Parameter Selection	Option
Code 11 Setting	SS	Select 1-check digit verification	0
	SS	Select 2-check digit verification ◆	1
	SS	Disable check digit transmission ◆	2
	SS	Enable 1-check digit transmission	3
	SS	Enable 2-check digit transmission	4
Code 11 Min. Length	SS	Default (04) ◆	FIN
	MS	01-Maximum	(2 digits)
Code 11 Max. Length	SS	Default (98) ◆	FIN
	MS	98-Minimum	(2 digits)

Code 93 Setting

Command	P.C.	Parameter Selection	Option
Code 93 Setting	SS	Disable check digit transmission ◆	0
	MS	Enable check digit transmission	1
Code 93 Min. Length	SS	Default (03) ◆	FIN
	MS	01-Maximum	(2 digits)
Code 93 Max. Length	SS	Default (98) ◆	FIN
	MS	98-Minimum	(2 digits)

MSI/Plessey Setting

Command	P.C.	Parameter Selection	Option
MSI/Plessey Setting	SS	Select MOD 10 check digit ◆	0
	SS	Select MOD 10-10 check digit	1
	SS	Select MOD 11-10 check digit	2
	SS	Disable check digit transmission	3
	SS	Enable 1-check digit transmission ◆	4
	SS	Enable 2-check digit transmission	5
MSI/Plessey Minimum Length	SS	Default (04) ◆	FIN
	MS	01-Maximum	(2 digits)
MSI/Plessey Maximum Length	SS	Default (98) ◆	FIN
	MS	98-Minimum	(2 digits)

UK/Plessey Setting

Command	P.C.	Parameter Selection	Option
UK/Plessey Setting	SS	Select UK/Plessey Standard Format ◆	0
	SS	Select UK/Plessey CLSI Format	1
	SS	Disable Convert X to A-F ◆	2
	SS	Enable Convert X to A-F	3
	SS	Disable check digit transmission ◆	4
	SS	Enable check digit transmission	5
UK/Plessey Minimum Length	SS	Default (04) ◆	FIN
	MS	01-Maximum	(2 digits)
UK/Plessey Maximum Length	SS	Default (98) ◆	FIN
	MS	98-Minimum	(2 digits)

Code 128 & UCC/EAN 128 Setting

Command	P.C.	Parameter Selection	Option
Code128/EAN-128 Setting	SS	Disable function code conversion ◆	0
	SS	Enable function code conversion	1
Code128/EAN-128 Minimum Length	SS	Default (04) ◆	FIN
	MS	01-Maximum	(2 digits)
Code128/EAN-128 Maximum Length	SS	Default (98) ◆	FIN
	MS	98-Minimum	(2 digits)

Telepen Setting

Command	P.C.	Parameter Selection	Option
Telepen Setting	SS	Select Telepen Numeric mode ◆	0
	SS	Select Telepen Full ASCII mode	1
	SS	Disable check digit transmission ◆	2
	SS	Enable check digit transmission	3
Telepen Min. Length	SS	Default (04) ◆	FIN
	MS	01-Maximum	(2 digits)
Telepen Max. Length	SS	Default (98) ◆	FIN
	MS	98-Minimum	(2 digits)

Keyboard Interface Control

Command	P.C.	Parameter Selection	Option
Language Setting	MS	USA (QWERTY) ◆	00
	MS	France (AZERTY)	01
	MS	Germany (QWERTZ)	02
	MS	United Kingdom - UK (QWERTY)	03
	MS	Canadian French (QWERTY)	04
	MS	Spain (QWERTY)	05
	MS	Sweden/Finland (QWERTY)	06
	MS	Portugal (QWERTY)	07
	MS	Norway (QWERTY)	08
	MS	Latin America (QWERTY)	09
	MS	Italy (QWERTY)	10
	MS	Netherlands (QWERTY)	11
	MS	Denmark (QWERTY)	12
	MS	Belgium (AZERTY)	13
	MS	Switzerland-Germany (QWERTY)	14
	MS	Iceland (QWERTY)	15
	MS	Japan (DOS/V)	16
	MS	Universal * (see note)	99
Record Suffix	SS	None ◆	0
	SS	RETURN	1
	SS	TAB	2
	SS	SPACE	3
	SS	ENTER (Numeric Key Pad)	4
	MS	User defined character (1 character)	5, (00 ~ 7F)
Character Frame Control	SS	None ◆	FIN
	MS	1-99 msec.	(2 digits)
Intercharacter Delay	SS	None ◆	FIN
	MS	1-99 msec.	(2 digits)
Intermessage Delay	SS	None ◆	FIN
	MS	1-99 (X 5) msec.	(2 digits)
Caps Lock Control	SS	“Caps Lock Off” State ◆	0
	SS	“Caps Lock On” State	1
	SS	Auto Detect (PC/AT, PS/2, DOS/V KB interface only)	2
Function Key Emulation	SS	Enable ASCII 00-31 as KB function code output ◆	0
	SS	Enable ASCII 00-31 as Ctrl-xx output	1
		Refer to Keyboard Function Code Table for details	
Keypad Emulation	SS	Disable keypad emulation ◆	O
	SS	Enable numeric keypad output (Num Lock On)	1
Upper/Lower Case Control	SS	Normal (neglect the upper/lower case control) ◆	0
	SS	Inverse (change all outputs to inverse case)	1
	SS	Upper (force all outputs as upper case)	2
	SS	Lower (force all outputs as lower case)	3

- **Language Setting**
  The “Universal” option of language setting is only valid for PC/AT and PS/2 related keyboard interfaces working under DOS or Windows environments. This option can perform unique output without Caps Lock on/off (Output Style) concern. All transmitted data will follow the original full ASCII form. You also need not worry about the upper/lower case control.

Serial Interface Control

Command	P.C.	Parameter Selection		Option	
STX/ETX Control	SS SS	Disable STX/ETX transmission ◆ Enable STX/ETX transmission		0 1	
Record Suffix	SS SS SS SS SS	None CR (0DH) ◆ LF (0AH) CRLF (0D0AH)	TAB (09H) SPACE (20H) EOT (04H) User defined character (1 character : 00~7F)	0 1 2 3 4	5 6 7
Handshaking Protocol	SS SS SS SS	None (free running mode) ◆ RTS/CTS (hardware handshaking) ACK/NAK (software handshaking) Xon/Xoff (software handshaking)		0 1 2 3	
Boundary Check	SS SS	Disable Enable ◆		0 1	
Intercharacter Delay	SS MS	None ◆ 1-99 msec.		FIN (2 digits)	
Intermessage Delay	SS MS	None ◆ 1-99 (X 5) msec.		FIN (2 digits)	
Baud Rate (BPS)	SS SS SS SS SS	38.4K BPS 19.2K BPS 9600 BPS ◆ 4800 BPS 2400 BPS	1200 BPS 600 BPS 300 BPS 115.2K BPS	0 1 2 3 4	5 6 7 8
Data Frame	SS SS SS SS SS SS SS SS	8, None, 1 ◆ 8, Odd, 1 8, Even, 1 8, Space, 1 8, Mark, 1 8, None, 2 7, Odd, 1 7, Even, 1	7, Space, 1 7, Mark, 1 7, None, 2 7, Odd, 2 7, Even, 2 7, Space, 2 7, Mark, 2	0 1 2 3 4 5 6 7	8 9 A B C D E
Time Out Control	SS SS SS SS SS SS MS	None 200 mseconds 500 mseconds ◆ 1 second 2 seconds 5 seconds User defined duration (seconds)		0 1 2 3 4 5 6, (2 digits)	

- **Boundary Check**
  When enabling this function, the smart cradle will take more time to perform the boundary check to ensure the reliable transmission. Please note that this will prolong the acknowledgement response.

Wand Emulation Control

Command	P.C.	Parameter Selection		Option	
Output Polarity	SS SS	High level (5Vdc) on Bar (low level on Space) ◆ Low level (0Vdc) on Bar (high level on Space)		0 1	
Initial Signal State	SS SS	High Level (5 Vdc) ◆ Low Level (0 Vdc)		0 1	
Margin Time	SS SS SS SS	10 mseconds 15 mseconds 20 mseconds ◆ 25 mseconds	30 mseconds 50 mseconds 100 mseconds	0 1 2 3	4 5 6
Module Time	SS SS	Extremely Short Short	Medium ◆ Long	0 1	2 3
Narrow/Wide Ratio	SS SS SS	1:2 ◆ 1:2.5 1:3		0 1 2	
Code 39 Emulation	SS SS SS	Disable standard Code 39 emulation ◆ Enable standard Code 39 skip emulation Enable standard Code 39 replace emulation		0 1 2	

Condensed DataWizard

DataWizard is a powerful, artificial intelligence based data editing expert system provided specially for the FuzzyScan family bar code readers. Through DataWizard, you can process the scanned data prior to the transmissions in many ways, such as: **Insert, Delete, Match, Verify, Substitute, Reorganize**, and **Repeat Transmission**. It will help you to transmit the scanned data to any specific format without software modifications. Please refer to below for details.

Data Formatting and Editing

- **Preamble, Postamble, Data Length Transmission**
  There are maximum 15 characters can be added as Preamble or Postamble. To enable the Data Length Transmission, a 2-digit data length will be added after Preamble.

- **Symbology ID Transmission**
  To enable the Symbology ID Transmission, the “CINO Symbology ID” or “AIM Symbology ID” will be added into the transmitted data. It is very helpful for applications to identify the specific bar code by symbology ID.

- **Data Formatter**
  The Data Formatter is used to edit the scanned raw data prior to the transmission to the host computers. It allows you to select desired bar code symbologies for formatter control, and provides Multiple-position Insertion and Multiple-character Insertion (maximum three characters) in the identified position.

- **Data Verifier**
  The Data Verifier is used to provide advanced verification for error-free scanning and working as an **Embedded Data Transmitting Filter**. All scanned raw data must conform to the Identified Bar Code Symbologies, Identified Data Length, and 1 to 3 Identified Characters in the checking position. Otherwise, the FuzzyScan will not transmit the data to the host computers or terminals, but will issue 3 long beeps instead for error verification and skip the scanned data.

- **Data Changer**
  The Data Changer is used to edit the scanned raw data prior to the transmission to the host computers or terminals. It allows you to select desired bar code symbologies for changer control, and provides Multiple-position Substitute in the identified position.

- **Data Organizer**
  The Data Organizer is used to edit the scanned raw data prior to the transmission to the host computers or terminals. It allows you to select desired bar code symbologies for organizer control, and provides maximum two identified positions to send the data forward or backward. It also allows you to control the transmitted data including or excluding the data of identification position.

Preamble, Postamble, Data Length Setting

Command	P.C.	Parameter Selection	Option
Preamble	SS MS	None ◆ 1-15 characters	FIN [00-7F], [FIN]
Postamble	SS MS	None ◆ 1-15 characters	FIN [00-7F], [FIN]
Data Length Transmission	SS SS	Disable ◆ Enable 2-digits data length transmission If data length exceeds 99, 3-digit data length will be transmitted	0 1

Data Formatter Setting

Command	P.C.	Parameter Selection	Option	2nd Option
Formatter Control	SS MS MS	Disable ◆ Select one bar code symbology Select all bar code symbologies	FIN (2 digits) 00	
1st Insertion	SS DS	Disable ◆ Enable	FIN (2 digits)	[1-3 chars], [FIN]
2nd Insertion	SS DS	Disable ◆ Enable	0 1	[1-3 chars], [FIN]
3rd Insertion	SS DS	Disable ◆ Enable	0 1	[1-3 chars], [FIN]
4th Insertion	SS DS	Disable ◆ Enable	0 1	[1-3 chars], [FIN]

Data Verifier Setting

Command	P.C.	Parameter Selection	Option	2nd Option
Verifier Control	SS MS MS	Disable ◆ Select one bar code symbology Select all bar code symbologies	FIN (2 digits) 00	
Identified Data Length	SS MS	Disable ◆ Enable	FIN (2 digits)	
1st Identified Character	SS DS	Disable ◆ Enable	FIN (2 digits)	[00-7F]
2nd Identified Character	SS DS	Disable ◆ Enable	FIN (2 digits)	[00-7F]
3rd Identified Character	SS DS	Disable ◆ Enable	FIN (2 digits)	[00-7F]

Data Changer Setting

Command	P.C.	Parameter Selection	Option	2nd Option
Changer Control	SS MS MS	Disable ◆ Select one bar code symbology Select all bar code symbologies	FIN (2 digits) 00	
1st Substitute	SS DS	Disable ◆ Enable	FIN (2 digits)	[00-7F]
2nd Substitute	SS DS	Disable ◆ Enable	FIN (2 digits)	[00-7F]
3rd Substitute	SS DS	Disable ◆ Enable	FIN (2 digits)	[00-7F]

Data Organizer Setting

Command	P.C.	Parameter Selection	Option	2nd Option
Organizer Control	SS MS MS	Disable ◆ Select one bar code symbology Select all bar code symbologies	FIN (2 digits) 00	
1st Organization	SS DS	Disable ◆ Enable	FIN (2 digits)	0 (Forward) 1(Backward)
2nd Organization	SS DS	Disable ◆ Enable	FIN (2 digits)	0 (Forward) 1(Backward)
Include/Exclude Control	SS DS	Excluded the identified position ◆ Included the identified position	0 1	

Symbology ID Transmission

Command	P.C.	Parameter Selection	Option
Symbology ID Transmission	SS	Disable all symbology ID ◆	0
	SS	Enable prefix CINO symbology ID	1
	SS	Enable suffix CINO symbology ID	2
	SS	Enable both prefix and suffix CINO symbology ID	3
	SS	Enable prefix AIM symbology ID	4
	SS	Enable suffix AIM symbology ID	5
	SS	Enable both prefix and suffix AIM symbology ID	6

Symbology ID Table :

Symbology	CINO ID	AIM ID	Symbology	CINO ID	AIM ID
UPC-A	A	E	Interleaved 2 of 5	J	I
Code 128	B	C	Matrix 2 of 5	K	S
UCC/EAN-128	C	C	China Postal Code	L	R
Codabar/NW-7	D	F	German Postal Code	M	X
UPC-E	E0	E	IATA	O	R
EAN/JAN/CAN-13	F	E	Code 11	P	H
EAN-8	FF	E	MSI/Plessy	R	M
Code 39/Code 32	G	A	UK/Plessy	S	P
Code 93	H	G	Telepen	T	B
Standard/2 of 5	I	S	Industrial 2 of 5	I	S

Select a Bar Code Symbology

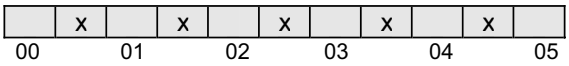
You can select one or all types of bar code symbologies to use Condensed DataWizard for advanced transmission arrangement. If you scan “00” to select all types, the MBC6890 will arrange all incoming data to meet your pre-defined format. If you want to select only one type bar code, please select one of the option code listed below.

UPC-E : 03	Code 128 : 01	Code 11 : 10
Codabar/NW-7 : 06	Code 39 : 07	UPC-A : 02
EAN/CAN/JAN-8 : 05	Telepen : 13	UK/Plessey : 12
EAN/CAN/JAN-13 : 04	Code 32 : 07	MSI/Plessey : 11
UCC/EAN 128 : 01	Code 93 : 09	Code 25 Family : 08

Position Calculation

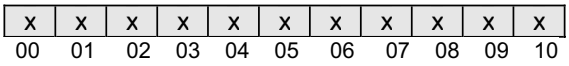
【Data Formatter】

If there is a 5-character input data string, please refer to the following to calculate the actual position for insertion :



【Data Verifier, Data Replacer, Data Organizer】

If there is a 11-character data string, please refer to the following to calculate the actual position for identification :



Application Example

If your bar code label is a 16-digit interleaved 2 of 5 which includes the information of 6-digit date code, 6-digit serial number and 4-digit unit price, you want MBC6890 to do the following for you without software modification :

- Apply only Interleaved 2 of 5 to the condensed DataWizard.
- Check bar code is actually with 16-digit length.
- Allow bar code output whose date code is leading with “9”.
- Three outputs with “TAB” suffix.
- The date code output should skip “9” and replaced it by “A”.
- The serial number output should be led with “SN”.
- The unit price output should be skipped the first 2 digits.
- Test Bar Code : **981025 123456 9876**
- Actual Output : **A81025【TAB】SN123456【TAB】76【TAB】**

Please refer to following “Programming Procedure” for details.

Programming Procedure

【Data Verifier】

- Scan “Program” to enter the programming mode.
- Scan “Verifier Control” and set bar code symbology to “**08**” (Interleaved 2 of 5).
- Scan “Identified Data Length” and set the length to “**16**”.
- Scan “1st Identified Character” and set the Identified position to “00”, then set the identified character to “**39**” (Hex Code of 9).

【Data Formatter】

- Scan “Formatter Control” and set bar code symbology to “**08**”.
- Scan “1st Insertion” and set the identified position to “**06**”, then inserted characters to “**09**” (Hex Code of TAB), “**53**” (Hex Code of S), “**4E**” (Hex Code of N).
- Scan “2nd Insertion” and set the identified position to “**12**”, then inserted character to “**09**”. In the final, you must scan “**FIN**” (Finish) code to terminate this selection.
- Scan “3rd Insertion” and set the identified position to “**16**”, then inserted character to “**09**”. In the final, you must scan “**FIN**” (Finish) code to terminate the selection.

【Data Changer】

- Scan “Changer Control” and set bar code symboloby to “**08**”.
- Scan “1st substitute” and set the identified position to “**00**”, then replaced character to “**41**” (Hex code of A).

【Data Organizer】

- Scan “Organizer Control” and set bar code symboloby to “**08**”.
- Scan “1st Organization” and set the identified position to “**16**”, then set the data transmission to “**0**” (forward).
- Scan “2nd Organization” and set the identified position to “**17**”, then set the data transmission to “**1**” (backward).
- Scan “**END**” (Exit) to terminate the programming.

【Important Notice】

Please note that Condensed DataWizard will follow the preset working flow as below :

Verifier → **Formatter** → **Changer** → **Organizer**

So when you set the identified position in Data Organizer, you must consider the inserted data which you already set via Data Formatter.

Appendix

This appendix provides most useful supplementary information for following topics:

- Keyboard Function Code Table
- HEX/ASC Input Shortcut
- Barcode System Commands
- Option Codes and System Commands

Keyboard Function Code Table

No.	ANSI	ASCII	Key Function	No.	ANSI	ASCII	Key Function
00	NUL	00H	RESERVED	16	DLE	10H	F7
01	SOH	01H	CTRL (Left)	17	DC1	11H	F8
02	STX	02H	ALT (Left)	18	DC2	12H	F9
03	ETX	03H	SHIFT	19	DC3	13H	F10
04	EOT	04H	CAPS LOCK	20	DC4	14H	F11
05	ENQ	05H	NUM LOCK	21	NAK	15H	F12
06	ACK	06H	ESC	22	SYN	16H	INS (Insert) (Edit)
07	BEL	07H	F1	23	ETB	17H	DEL (Delete) (Edit)
08	BS	08H	BACK SPACE	24	CAN	18H	HOME (Edit)
09	HT	09H	TAB	25	EM	19H	END (Edit)
10	LF	0AH	F2	26	SUB	1AH	PAGE UP (Edit)
11	VT	0BH	F3	27	ESC	1BH	PAGE DOWN (Edit)
12	FF	0CH	F4	28	FS	1CH	UP (Edit)
13	CR	0DH	ENTER (Carriage Return)	29	GS	1DH	DOWN (Edit)
14	SO	0EH	F5	30	RS	1EH	LEFT (Edit)
15	SI	0FH	F6	31	US	1FH	RIGHT (Edit)

To emulate the key function Code above, user has to configure the imager with the corresponding ASCII hex value and enable the “Function Key Emulation”. Please refer to the above Keyboard Function Code Table which is used for PC/XT/AT, PS/2, PS/VP, Notebook PC, and so on.

ASCII Input Shortcut

To set the user definable configurations of MBC6890 via programming menu, the MBC6890 may ask you to scan your desired ASCII value in **HEX** form. You have to refer to the "**HEX/ASCII Reference Table**" for details.

Example :

If you want the scanned data output leading with a Dollar Sign, you have to set the "Preamble" to "$". The configuration procedure is listed below for reference.

- Scan **PROGRAM** command from "Option Codes and System Commands" to enter programming mode.
- Scan **Preamble** command from "Preamble, Postamble, Data Length Setting".
- Refer to the **Hex/ASCII Reference Table**, you will find the HEX value of "**$**" is **24**.
- Scan the option code – **2** listed on "Option Codes and System Commands".
- Scan the option code – **4** listed on "Option Codes and System Commands".
- Scan **FIN (Finish)** command from "Option Codes and System Commands" to terminate Preamble setting.
- Scan **END (Exit)** command from "Option Codes and System Commands" to exit the programming mode.

HEX/ASCII Reference Table

	0	1	2	3	4	5	6	7
0	NUL	DLE	SPACE	0	@	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	[	k	{
C	FF	FS	,	<	L	\	l	|
D	CR	GS	-	=	M	]	m	}
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

■ : High Byte of HEX Value;

□ : Low Byte of HEX Value

Barcode System Commands

PROGRAM

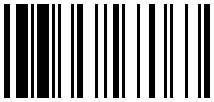
END (EXIT)

System Information List

Factory Default Setting

PowerTool Host Link

Enter Batch Mode



Exit Batch Mode

Barcode System Commands

Host Interface Setting

PC/AT, PS/2 Keyboard Wedge
Quick Set Command

Keyboard Replacement
Quick Set Command

RS232 Serial Interface
Quick Set Command

USB Keyboard Interface
Quick Set Command

USB Serial Interface
Quick Set Command

Radio Link Setting

Uninstall

Pair Mode

SPP Slave Mode

SPP Master Mode

Paging Command

Radio Off

Sleep Command

Barcode Option Codes

0

1

2

3

4

5

6

7

8

9

A

B

C

D

E

F

PROGRAM

FIN (Finish)

END (Exit)

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