



# **Wireless Barcode Scanner**

## **User Manual**



## Introduction

VW812 series of 1D wireless barcode scanners offer powerful reliability with efficiency. Idea for a wide range of applications from retail to healthcare and post offices.

Various type of interfaces are available for the receiver :

USB (keyboard HID)  
RS232C  
RS485

### Features:

- **Wireless freedom**  
The VW81x series wireless scanners have a 300 meter line-of-sight from the communication stand. When not in the range, use batch mode to record over 260000 scans—that's freedom to roam widely.
- **Advanced data formatting**  
VW81x support advanced customizing data before transmitting to the host. Data can be added/deleted one or multiple characters or appended one or multiple prefix/suffix, etc. The value for prefix/suffix are also customizable. All these can be implemented through simply scanning a related series of barcodes.
- **Easy pairing**  
Pairing can be done in just one scanning. It's easy to setup multiple scanners reporting to one receiver stand, etc.
- **Battery monitoring**  
By scanning a predefined barcode, battery voltage can be checked on the receiver's window. This will give more confident when bring the scanner out for work.
- **Indication of status LEDs**  
Multiple color LEDs are used to indicate the modes of operations, the status of operations, etc.

## Index

<b>1. Characteristics</b> .....	1
<b>2. Shortcut Settings</b> .....	2
2-1: Miscellaneous setting .....	2
2-2: Tx/Rx pairing .....	3
2-3: Check battery .....	3
2-4: Key - multifunction enable/disable .....	3
2-5: Settings for suffix, repeat check and sleep control...	4
2-6: Operating modes .....	5
2-7: Symbologies On/Off .....	6
2-8: Keyboard Layout .....	9
<b>3. Advanced Settings</b> .....	10
3-1: Prefix/append after string: .....	11
3-2: Data Adjustment .....	12
3-3: Suffix .....	13
<b>4. Appendix</b> .....	15
4-1: Command codes .....	15
4-2: Digits .....	15
4-3: Non-visible character .....	15
4-4: Capital codes .....	16
4-5: Other codes .....	17
4-6: Sample barcodes .....	18
4-7: Frequently used shortcuts .....	20

## 1. Characteristics

Laser	Visible laser diode (VLD) @ 650 nm
Scan speed	120±10 scans/second
Decode capacity	Code128, UCC/EAN 128, Code93, UPC-A, UPC -E, EAN-13, EAN-8, ISBN/ISSN, Code39, Code39( full Ascii), Interleaved 2 of 5, Industrial 2 of 5, Matrix 2of 5, CodaBar, CODE11, MSI, China Post code
Scan precision	4mils - 43mils
Memory	4MBytes, can save over 266000 scans (calculated @ when length of barcode <15Bytes)
Frequency band	433MHz ISM band, maximum 100 channels
Linkage Range	300 meters ( Line-of-sight)
Interface	Receiver stand : USB (HID keyboard profile) , RS232C, RS485
Keyboard layout	The United States
Battery	3.7V/1000mAH, polymer li-ion
Current	Sleep: 0.5mA; Scan: 65mA ; RF Transmitting : 135 mA
Standby	3 months
Status indication	Beep, LED
Operation Temp.	-10°C ~ 50°C (32° ~ 120° F)
Storage temp.	-40°C ~ 60°C (-40° ~ 140° F)
Relative Humidity	5% ~ 90% (non condensing)
ESD	+/-8KV air discharge; +/-4KV contact discharge
Material	ABS

## 2. Shortcut Settings:

One scanning of the appropriate barcode below

### 2.1 Shortcut Setting 1: Miscellaneous setting

Firmware version (Tx)



Beep on (Default)



Negative image check on



Default mode



Continuous mode



Reset para. for Tx



Firmware version (Rx)



Buzzer



Negative image



Scan mode



Blink mode



Para. reset



Reset para. for Rx

**Tips:** 1. When scanning Reset para. for Rx barcode, the blue Led on the scanner will blink. To complete the operation, please takeout the USB receiver first, then insert back to the USB port again. At that time, the USB receiver's parameters will be reset to default ( all remote configure operation for the receiver will only be done during its power on ). The LED on the scanner will stop blink indicating a successful remote configuration.

2. After scanning Reset para. for Tx, a new pairing to host operation is required . Please refer to page 3.

## 2.2: Tx/Rx pairing



Pairing barcode:

018881

**Tips:** After scanning Pairing barcode, the blue Led on the scanner will blink. To complete the operation, please takeout or power off the receiver first, then insert back to the USB port or power on again. And now these two devices will be paired. The scanner will beep 3x to indicate a successful operation.

## 2.3: Check battery



018000

**Tips:** When scanning the Check battery barcode, the receiver will display the battery's voltage and the remaining power on the PC terminal (notepad, for example). The scanner will continue monitoring the battery's status. When it's voltage < 3.65V, the scanner will beep 1x every 7s which indicates a low battery condition. The user is encouraged to charge the battery when that happened. When voltage < 3.5V, the scanner will auto off immediately to prevent the battery to be discharged too much.

## 2.4: Key - multifunction enable/disable

Enable multifunction



088088

Multifunction key

Disable multifunction



(default)  
088055

**Tips:** When enable multifunction for the scanner's key, we can toggle different modes by holding the key for a predefined period without scanning appropriate barcodes as normal:

- 1) Normal operation: press the key to scan a barcode, and release it when finished
- 2) To change the operation mode, point the scanner to a blank area, press the key and hold down for about 4s, at that time the laser should off.
- 3) Continue holding down the key till about 7s, a beep will sound. If we release the key at that time, then the scanner will enter resume batch report mode which will resume to report saved barcode during batch mode. (refer page5 for different modes)
- 4) If we didn't release the key at step 3, and hold down the key till about 12s, the scanner will toggle the operate mode between normal\_mode/batch\_mode. A longer beep will sound when it happen. The yellow led will light on/off to indicate the mode status.

## 2.5: Settings for suffix, repeat check and sleep control

Suffix - return (default)



060013

Suffix



060010

Suffix - return+newline



061310

Suffix - TAB



060009

Suffix - right arrow



060018

No suffix



060000

Alarm if within 5s



062105

Repeat code



062110

No repeat code check  
(default)



062100

Auto sleep when idle for  
30s



062202

Sleep control

Auto sleep when idle for  
60s (default)



062203

Auto sleep when idle for  
2min














062205

No auto-sleep mode



062200








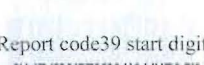
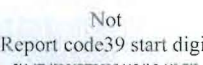
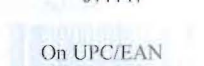
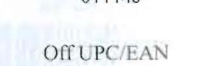
## 2.6: Operating modes

Batch report memory  080801		Resume batch report  080802
Barcode counts  080803		
Batch mode  080811		Normal mode (default)  080822
Batch mode/normal mode auto toggle on  081821		Batch mode/normal mode auto toggle off (default)  081820
Auto clear code when code report ok during batch report  080201		No auto clear code during batch report  080200
Clear memory  080000		Format memory  080099















1. Batch report memory: report the saved barcodes in memory. A press the key will terminate the reporting process during a large report.
2. Resume batch report: report the saved barcodes from the point of last reported code.
3. Barcode counts: report the counts of barcode in the memory.
4. Batch mode: yellow LED will on. The scanning result will be saved to memory instead of reporting to receiver.
5. Batch mode/normal mode auto toggle on/off: when on, then, if report to receiver failed for 3x continuously (out of link range, etc), scanner will auto switch to batch mode.
6. Auto clear code when code report ok during batch report: when enable it, during a batch reporting, if a code is already reported to host successfully, the code will be auto cleared from memory.
7. Clear memory: memory pointer will be reset, counts will reset to 0.
8. Format memory: format the internal memory, all saved codes will be lost.

## 2.7: Symbologies On/Off





Tips: By default, the following symbologies will be enabled: Code128, interleaved Code25, UPC-A/E, EAN, CODE93, CODE39, CODABAR, MSI. For others' decoder, please scan the appropriate barcode to enable/disable it.

On Interleaved Code25  010021	Interleaved 2 of 5 (*)	Off Interleaved Code25  010020
On Industrial Code25  010121	Industrial 2 of 5	Off Industrial Code25  010120
On Matrix25  010031	MATRIX25	Off Matrix25  010030
On Code39  010041	Code39 (*)	Off Code39  010040
On full Ascii mode  011041		Off full Ascii mode  011040
Report code39 start digit  011141		Not Report code39 start digit  011140
On UPC/EAN  010061	UPC/EAN (*)	Off UPC/EAN  010060

2.7: Symbologies On/Off (Cont.)

Enable EAN add-ons check	EAN add-ons check (EAN2,5)	Disable EAN add-ons check
 010161		 010160
Enable Convert UPC-E to UPC-A	UPC/EAN Convert	Disable Convert UPC-E to UPC-A
 010261		 010260
Enable Convert UPC to EAN-13		Disable Convert UPC to EAN-13
 010361		 010360
On MSI	MSI/ PLESSEY (*)	Off MSI
 010051		 010050
On Code93	Code93 (*)	Off Code93
 010091		 010090
On ChinaPost	China Post	Off ChinaPost
 010081		 010080
On CodaBar	CodaBar (*)	Off CodaBar
 010101		 010100

2.7: Symbologies On/Off (Cont.)

Enable report CodaBar start/stop digit	CodaBar (*)	Disable report CodaBar start/stop digit
 011101		 011100
On Code11	Code11	Off Code11
 010131		 010130
Enable Code11 check digit		Disable Code11 check digit
 012131		 012130
Enable report Code11 check digit		Disable report Code11 check digit
 011131		 011130
Enable EAN13 convert to ISSN	ISSN	Disable EAN13 convert to ISSN
 010461		 010460
Enable EAN13 convert to ISBN	ISBN	Disable EAN13 convert to ISBN
 010561		 010560

## 2.8: Keyboard Layout



Keyboard  
Layout



**Tips:** After scanning a keyboard layout setting code, a power off / take-out and then power on / insert back the receiver operation is required.

## 3. Advanced Settings:

Advanced setting can use to customizing data format before reporting to the receiver.

Advanced setting can be implemented through scanning a related series of barcodes.

### 1) Basic steps:

1. Scan Enter Advanced Setting barcode
2. Scan function code 1
3. Scan function code 2 ( opt.)
4. (Opt.)
5. ...
6. Scan Exit Advanced Setting barcode

Function codes are set at the format as `ATSxxxx=xxxxx` or `ATSxxxx`.

All the function codes must be ended with  
END COMMAND code



We can use any barcode printer to print the function code as needed to get the required setting.

Or, we can scan the individual letter code one by one, then scan the the `<END COMMAND>` code, the scanner will auto combine letters to form a full function code.

### 2) Report format

The receiver will report the scanned barcodes to the host by using the following format:

<i>Prefix</i>	<i>Data</i>	<i>Append string</i>	<i>Suffix</i>
---------------	-------------	----------------------	---------------

Original data is the scan result. Normally it will be reported *as is* to the host. But it's allowed to adjust/add/append/delete some characters before reporting to the host

The details will be illustrated in the following sections.

**Advanced setting 3.1 - Prefix/append after string:**

**Prefix:**

Prefix will add to before the code, max length is 12 letters. For example, the code = ABCDEFG, prefix= 123, then the final reporter will be 123ABCDEFG

**Append after string:**





This string will be appended to the end of codes.

For example, the code = ABCDEFG, append\_after\_string= 123, then the final reporter will be ABCDEFG123



Enter  
Advanced Setting Mode

Enter Advanced Setting

Item	Note
 AT51010	Clear the prefix
 AT51011	Set the prefix. Following by max length of 12 letters, and ended by scan the <END> code
 AT51020	Clear the append_after_string.
 AT51021	Set the append_after_string. Following by max length of 12 letters, and ended by scan the <END> code



Exit Advanced  
Setting Mode

Exit advanced setting

Appendix.



END COMMAND



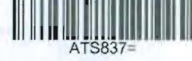

**Advanced setting 3.2 – Data Adjustment:**

The scanned data can be adjusted further before reporting to the host. For example, it can be delete some characters from the beginning or from the end.



Enter  
Advanced Setting Mode

Enter Advanced Setting

Item	Note
 AT5835	Set the delete counts of characters from the beginning. The mostly used counts are list in counts table (page 14)
 AT5836	Set the delete counts of characters from the end. The mostly used counts are list in counts table (page 14)
 AT5837	Set the maximum length of reporter. ( Out range of characters will be deleted )
 AT5837=12	Examples: this will set the maximum length of reporter to be 12 characters. If the code have more than 12 characters, they will be deleted after the 12th character.



Exit Advanced  
Setting Mode

Exit advanced setting

Appendix.



END COMMAND







### Advanced setting 3.3—Suffix

The scanned data can be formatted further before reporting to the host.  
Some ERP application will require some more keys pressed after scanning the barcode. We can use the suffix to complete the job to ease the input for those applications.

The suffix is set to one Return key by default. (refer page 4)

Anyway, it can be set to other keys, like the TAB, arrow keys, etc, and the counts also can be set.

The scanner support 3 stages' suffix, for example, it can be set as: append 3 return keys, then 2 right arrow keys, then 1 down arrow key, etc.

Item	Note
 ATS800=	Set stage 1 suffix key type. Please see normal suffix Table (page 14)
 ATS810=	Set stage 1 suffix key counts. Counts please see counts table (page 14)
 ATS801=	Set stage 2 suffix key type. Please see normal suffix Table (page 14)
 ATS811=	Set stage 2 suffix key counts. Counts please see counts table (page 14)
 ATS802=	Set stage 3 suffix key type. Please see normal suffix Table (page 14)
 ATS812=	Set stage 3 suffix key counts. Counts please see counts table (page 14)










Exit advanced setting















Appendix.



Suffix Table : (More suffix setting can be provided upon request.)

 13 Return	 10 New line
 9 TAB	
 17 ←Left arrow	 18 →Right arrow
 19 ↑ Up arrow	 20 ↓ Down arrow

Counts table:

 1	 2
 3	 4
 5	 6
 7	 8
 9	 10
 11	 12
 13	 0

#### 4. Appendix:

##### 4.1: Command codes



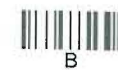
##### 4.2: Digits



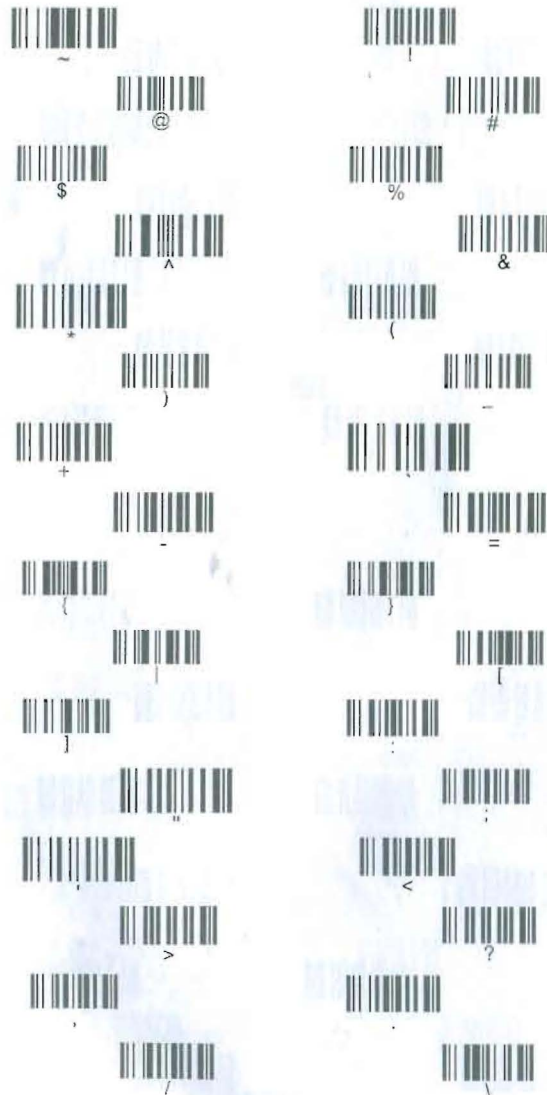
##### 4.3: Non-visible character



##### 4.4: Capital codes



4.5: Other codes



4.6: Sample Barcodes

The following Symbolologies are ON by default.

Code128



Code39



Code93



Interleaved  
2 of 5 (ITF25)



UPC-A



UPC-E



EAN13



EAN8



ISBN



ISMN



ISSN



CODABAR



MSI/Plessey



The following Symbologies are OFF by default, please ON it before scanning.

Matrix 25



Industrial 2 of 5



China Post



Code11



4.7: Frequently used shortcuts

Batch report memory



Resume batch report



Barcode counts



Batch mode



Clear memory



Normal mode ( default )



Check battery



Suffix - return (default)





USER MANUAL V3.58