



# **Programming User's Manual**

**For Virtuos HT-10, HT-900A**

**VIRTUOS**

**Ver1.4.1**

Start Configuration((+SETF))



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## Chap.1 System Information



Set All default((+RETF))



S/W Version((+SFVR))

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## Chap.2 System Installation

### 2.1 Interface Selection



<Keyboard>((+A1A))



RS-232((+A1B))



USB\_Keyboard((+A1C))



USB\_COM((+A1D))

---

### 2.2.1 Keyboard Language



<U.S.A>((+B2A))



Italian((+B2B))



Spanish((+B2C))



French((+B2D))



Germany((+B2G))



Japan((+B2F))



Portugal((+B2G))



Česko((+B2P))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



## 2.2.1 Language



Swedish((+B2I))



Hungary((+B2H))



Denmark((+B2K))



Norwegian((+B2J))



Turkey((+B2M))



Netherland((+B2L))



Belgium((+B2O))



UK((+B2N))

## 2.2.2 Keyboard Wedge function

### Function Key Emulation



<OFF>((+B3A))



ON((+B3B))

### KB Emulation



<OFF>((+B4A))



ON((+B4B))

### ALT Mode



<OFF>((+BCB))



ON((+BCA))

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### Caps Lock



<OFF>((+B5A))



ON((+B5B))

### Num Lock



<OFF>((+B6A))



ON((+B6B))

---

### 2.2.3 Inter-character Delay (Default: 00)



Appendix A (00H – 64H)((+B7A))

---

### 2.2.4 Message Terminator for keyboard &USB interface



None((+B9A))



<CR>((+B9B))



Tab((+B9C))



ESC((+B9D))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



## 2.3.1 RS-232 Parameters

### BAUD Rate



2400((+C8B))



<9600>((+C8D))



4800((+C8C))



38400((+C8F))



19200((+C8E))

### Data bits



7 ((+C7B))



<8>((+C7A))

### Stop Bit



<1>((+C6A))



2((+C6B))

### Parity



<None>((+C5A))



Odd((+C5B))



Even((+C5C))

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 2.3.2 Message Terminator for RS232 interface



None((+C9A))



<CR+LF>((+C9B))



CR((+C9C))



LF((+C9D))



TAB((+C9E))



STX/ETX((+C9F))



EOT((+C9G))

---

### RS-232 Function Installation

#### Inter-character Delay (Default:00)



Appendix A (00H-64H)((+C2A))

Delay time=set up data\*100(ms)

#### Handshaking Protocol Delay (Default:00)



Appendix A (00H-0AH)((+C4A))

---

### Handshaking Protocol



<None>((+C1A))



RTS/CTS((+C1B))



ACK/NAK((+C1C))



Xon/Xoff((+C1D))

---

End Configuration((+ENDF))





## 2.4 Scan Mode

Time out set up

1. Scan the barcode of “Continuous/Timeout OFF”
2. Scan 2 digits of the ASCII code of the Appendix A
3. Scan the “End” of the Appendix A
4. Scan the End Configuration to end the procedure
5. The settings unit is a second. Ex:0\*39 stands for 1 minute



Trigger On/Off  
((+E1A))



<Trigger On/Good read off>  
((+E1B))



Continuous/Trigger Off  
((+E1C))



Testing  
((+E1D))



Continuous/LED always On  
((+E1E))



Continuous/Timeout Off  
((+E1F))



Flash On **(CCD only)**  
((+E1G))



Continuous/No Trigger  
((+E1H))



Auto Scan  
((+E1J))



Start Configuration((+SETF))



**Blinking mode(Option)**



<OFF>((+EFA))



10 sec((+EFC))



5 sec((+EFB))



20 sec((+EFE))



15 sec((+EFD))



30 sec((+EFF))



60 sec((+EFG))



Always ON((+EFH))

VIRTOOLS

End Configuration((+ENDF))





Start Configuration((+SETF))



## 2.5 Buzzer Set-up

You can pitch the buzzer tone and adjust the buzzer time. Besides, you can set the voice of boot and decoding..

### Frequency (Default: 09H)



Appendix A(00-10H)((+E2A))

### Adjust Buzzer Tone (Default: 04H)



Appendix A(00-10H)((+E3A))

### Power On Tone



<ON>((+EBA))

### Good read Beep



<ON>((+ECA))



OFF((+EBB))



OFF((+ECB))

## 2.6 Character Installation

The preamble and postamble character: You can put 10 ASCII at most in front of the barcode data. When the installation is "0" that means you don't need to add the first and last character. Please find the format as below:

Preamble Character	Barcode	Postamble Character
--------------------	---------	---------------------

The process for adding the first and last character to the barcode:

1. Scan the barcode of "Start Configuration" and "The Preamble Character Installation".
2. Check the ASCII table to get the ASCII code of the first and last character.
3. Scan the barcode of ASCII in the Appendix.
4. Scan the "End Configuration".

G1/G2 character Insertion: You can put 10 ASCII at most in

End Configuration((+ENDF))



Start Configuration((+SETF))



front of the barcode data. When the installation is “0” that means you don’t need to add the first and last character.

1. Scan the barcode of the “Start Configuration” and “G1 Insert Character”.
2. Check the ASCII table to get the ASCII code of the first and last character.
3. Scan the barcode of ASCII in the Appendix.
4. Scan the “End Configuration”.
5. Repeat the same process to the G2 insertion.
6. Scan the “End Configuration”.

The position of G1/G2 character insertion: To select a character insert to the barcode. You can’t insert any character while the installation is “0”

1. Scan the barcode of the “Start Configuration” and “G1 character insertion position”
2. Check the ASCII table to get the corresponding ASCII code of the insertion position.
3. Scan the “End Configuration”.
4. Repeat the same process to the G2 character insertion position.
5. Scan the “End Configuration”.

Code Transmission: If your application needs to transmit the code (barcode type ID), you have to set “ON” for this feature and the format is ID + Barcode data.

#### The Preamble Installation (Default:00)



Appendix A((+E4A))

#### The Postamble Installation (Default:00)



Appendix A((+E5A))

#### G1 Character Insertion (Default:00)



Appendix A((+E6A))

#### G2 Character Insertion (Default:00)



Appendix A((+E7A))

End Configuration((+ENDF))



Start Configuration((+SETF))



---

**G1 Character Insertion Position (Default: 00)**



Appendix A((+E8A))

---

**G2 Character Insertion Position (Default: 00)**



Appendix A((+E9A))

---

**Code ID Transmission**



ON((+EAA))



<OFF>((+EAB))

---

**2.7 Other Installation**

Scanning Precision: You can set to scan once or twice and then transfer the bar code data. The twice will reduce the error reading.

Bar Reverse Output Installation: This feature can read the highlight barcode.

**Scanning Verify**



<Single>((+EDA))



Multi-verify(Max:2)  
((+EDB))

---

**Laser Data Speed Up(For Laser)**



<ON>((+EFA))



OFF((+EFB))

---

End Configuration((+ENDF))





---

### Chap.3 BAR-CODE INSTALLATION

#### 3.1 UPC-A

##### Reading



OFF((+F1A))



<ON>((+F1B))

##### Code ID (Default:F)



<20H-7EH>((+F2A))

##### UPC-A convert to EAN-13



<OFF>((+F3A))



ON((+F3B))

##### Transmit Check Character



OFF((+F4A))



<ON>((+F4B))

##### Truncate Leading Zero



<OFF>((+F5A))



ON((+F5B))

---

##### Truncate Leading Digit(Default:00)



<00H-0DH>((+F6A))

---

##### Truncate Last Digit(Default:00)



<00H-0DH>((+F7A))

---

##### Select Insertion(Default:00)



<00H-02H>((+F9A))



Start Configuration((+SETF))



### 3.1 UPC-A

#### Add-On 2/5



<None>((+F8A))



2 digit((+F8B))



5 digit((+F8C))



2 or 5 digit((+F8D))



AUTO\_Enable  
((+F8E))



# VIRTUOS



End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.2 UPC-E

#### Reading



OFF((+G1A))



<ON>((+G1B))

#### Code ID (Default: G)



<20H-7EH>((+G2A))

#### UPC-E Convert to UPC-A



<OFF>((+G3A))



ON((+G3B))

#### Transmit Check Character



OFF((+G4A))



<ON>((+G4B))

#### Truncate Leading Zero



<OFF>((+G7A))



ON((+G7B))

---

#### Truncate Leading Digit(Default:00)



<00H-08H>((+G5A))

---

#### Truncate Last Digit(Default:00)



<00H-08H>((+G6A))

---

#### Select Insertion(Default:00)



<00H-02H>((+G9A))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



### 3.2 UPC-E

#### Add-On 2/5



<None>((+G8A))



2digit((+G8B))



5digit((+G8C))



2 or 5 digit((+G8D))



AUTO\_Enable

((+G8E))



# VIRTUOS



End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.3 EAN-13

#### Reading



OFF((+H1A))



<ON>((+H1B))

#### Code ID (Default: H)



<20H-7EH>((+H2A))

#### Transmit Check Character



OFF((+H3A))



<ON>((+H3B))

---

#### Truncate Leading Digit (Default:00)



<00H-0DH>((+H4A))

---

#### Truncate Last Digit (Default:00)



<00H-0DH>((+H5A))

---

#### Select Insertion (Default:00)



<00H-02H>((+H8A))

---

End Configuration((+ENDF))





Start Configuration((+SETF))



---

### 3.3 EAN-13

#### Add-On 2/5



<None>((+H6A))



2 Digit((+H6B))



5 Digit((+H6C))



2 or 5 Digit((+H6D))



AUTO\_Enable  
((+H6E))

---

### ISBN/ISSN Convert



<OFF>((+H7A))



ON((+H7B))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.4 EAN-8

#### Reading



OFF((+I1A))



<ON>((+I1B))

#### Code ID (Default: 1)



<20H-7EH>((+I2A))

#### Transmit Check Character



OFF((+I3A))



<ON>((+I3B))

---

#### Truncate Leading Digit (Default:00)



<00H-08H>((+I4A))

---

#### Truncate Last Digit (Default:00)



<00H-08H>((+I5A))

---

#### Select Insertion (Default:00)



<00H-02H>((+I7A))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



**Add-On 2/5**



<None>((+I6A))



2 digit((+I6B))



5 digit((+I6C))



2 or 5 digit((+I6D))



AUTO\_Enable

((+I6E))



# VIRTUOS



End Configuration((+ENDF))



Start Configuration((+SETF))



### 3.5 Code 39

#### Reading



OFF((+J1A))



<ON>((+J1B))

#### Code ID (Default: J)



(20H-7EH)((+J2A))

#### Verification



<OFF>((+J3A))



ON((+J3B))

#### Transmit Check Character



OFF((+J4A))



<ON>((+J4B))

#### Min. Length (Default:01)



<01H-50H>((+J6A))

#### Max. Length

(Default:50H)



<01H-50H>((+J7A))

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.5 Code 39

#### Format



<Standard Code39> ((+J9A))



Full ASCII Code39  
((+J9B))



Trioptic CODE39  
((+J9C))

---

#### Transfer Start / End Character



<OFF>((+JDA))



ON((+JDB))

---

#### Code 39 Concatenation



<OFF>((+JFA))



ON((+JFB))

---

#### Truncate Leading Digit(Default:00)



<00H-32H>((+JAA))

---

#### Truncate Last Digit(Default:00)



<00H-32H>((+JBA))

---

#### Select Insertion(Default:00)



<00H-02H>((+JCA))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.6 Codabar

#### Reading



OFF((+K2A))



<ON>((+K1B))

#### Code ID (Default: K)



<20H-7EH>((+K2A))

#### Verification



<OFF>((+K3A))



ON((+K3B))

#### Transmit Check Character



<OFF>((+K4A))



ON((+K4B))

---

#### Truncate Leading Digit(Default:00)



<00H-7EH>((+K6A))

---

#### Truncate Last Digit(Default:00)



<00H-7EH>((+K7A))

---

#### Select Insertion (Default:00)



<00H-02H>((+KCA))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.6 Codabar

#### Start / End Character Type



<ABCD/ABCD>((+K8A))



abcd/abcd((+K8B))



abcd/tn\*e((+K8C))

---

#### Transmit Start / End Character



OFF((+K9A))



<ON>((+K9B))

#### Min. Length (Default:06)



<01H-50H>((+KAA))

#### Max. Length (Default:50H)



<01H-50H>((+KBA))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



### 3.7 Code93

#### Reading



OFF((+L1A))



#### Code ID (Default: L)



<20H-7EH>((+L2A))

<ON>((+L1B))

#### Verification



OFF((+L3A))



<ON>((+L3B))

#### Transmit Check Character



<OFF>((+L4A))



ON((+L4B))

#### Select Insertion (Default:00)



<00H-02H>((+L9A))

#### Truncate Leading Digit (Default:00)



<00H-7EH>((+L7A))

#### Truncate Last Digit (Default:00)



<00H-7EH>((+L8A))

#### Min. Length(Default:03)



<01H-50H>((+L5A))

#### Max. Length(Default:50H)



<01H-50H>((+L6A))

End Configuration((+ENDF))





Start Configuration((+SETF))



---

### 3.8 Code 128

#### Reading



OFF((+M1A))



#### Code ID (Default: M)



<20H-7EH>((+M2A))

<ON>((+M1B))

#### Verification



OFF((+M3A))



#### Transmit Check Character



<OFF>((+M4A))

<ON>((+M3B))



ON((+M4B))

---

#### Truncate Leading Digit(Default:00)



<00H-7FH>((+M8A))

---

#### Truncate Last Digit(Default:00)



<00H-7FH>((+M9A))

---

#### Select Insertion(Default:00)



<00H-02H>((+MCA))

---

#### Min. Length(Default:03)



<01H-50H>((+MAA))

#### Max. Length(Default:50H)



<01H-50H>((+MBA))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



**UCC/EAN128**



<OFF>((+M6A))

**FNC1 Transmit**



<OFF>((+M7A))

**FNC2 Concatenation**



<OFF>((+M5A))



ON((+M6B))



ON((+M7B))



ON((+M5B))

**IATA Code**



<OFF>((+V1A))



ON((+V1B))

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.9 Interleaved 2 of 5

#### Reading



OFF((+N1A))



#### Code ID (Default: N)

<ON>((+N1B))



<20H-7EH>((+N2A))

#### Verification



<OFF>((+N3A))



#### Transmit Check Character

ON((+N3B))



OFF((+N4A))



<ON>((+N4B))

---

#### Truncate Leading Digit(Default:00)



<00H-7EH>((+N5A))

---

#### Truncate Last Digit(Default:00)



<00H-7EH>((+N6A))

---

#### Select Insertion(Default:00)



<00H-02H>((+N9A))

---

#### Min. Length(Default:06)



<01H-50H>((+N7A))

#### Max. Length(Default:50H)



<01H-50H>((+N8A))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.10 Industrial 2 of 5

#### Reading



<OFF>((+O1A))



ON((+O1B))

#### Code ID (Default: 0)



<00H-7EH>((+O2A))

#### Verification



<OFF>((+O7A))



ON((+O7B))

#### Transmit Check Character



<OFF>((+O8A))



ON((+O8B))

---

#### Truncate Leading Digit(Default:00)



<00H-32H>((+O5A))

---

#### Truncate Last Digit(Default:00)



<00H-32H>((+O6A))

---

#### Select Insertion (Default:00)



<00H-02H>((+O9A))

---

#### Min. Length (Default:06)



<01H-50H>((+O3A))

#### Max. Length(Default:50H)



<01H-50H>((+O4A))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.11 Matrix 2 of 5

#### Reading



<OFF>((+P1A))



ON((+P1B))

#### Code ID (Default: P)



<20H-7EH>((+P2A))

#### Verification



<OFF>((+P3A))



ON((+P3B))

#### Transmit Check Character



<OFF>((+P4A))



ON ((+P4B))

---

#### Truncate Leading Digit(Default:00)



<00H-50H>((+P5A))

---

#### Truncate Last Digit(Default:00)



<00H-50H>((+P6A))

---

#### Select Insertion(Default:00)



<00H-02H>((+P9A))

---

#### Min. Length(Default:06)



<01H-50H>((+P7A))

#### Max. Length(Default:50H)



<01H-50H>((+P8A))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.12 China Post Code

#### Reading



<OFF>((+Q1A))



ON((+Q1B))

#### Code ID (Default: Q)



<20H-7EH>((+Q2A))

#### Verification



<OFF>((+Q3A))



ON((+Q3B))

#### Transmit Check Character



<OFF>((+Q4A))



ON((+Q4B))

---

#### Truncate Leading Digit(Default:00)



<00H-50H>((+Q5A))

---

#### Truncate Last Digit(Default:00)



<00H-50H>((+Q6A))

---

#### Select Insertion(Default:00)



<<00H-02H>((+Q9A))

---

#### Min. Length(Default:06)



<01H-50H>((+Q7A))

#### Max. Length(Default:50H)



<01H-50H>((+Q8A))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.13 MSI / Plessey

#### Reading



<OFF>((+R1A))



ON((+R1B))

#### Code ID (Default: R)



<20H-7EH>((+R2A))

#### Verification



<OFF>((+R3A))



MOD 11/10((+R3D))



MOD 10((+R3B))



MOD 10/10((+R3C))

#### Transmit Check Character



OFF((+R4A))



<ON>((+R4B))

---

#### Truncate Leading Digit (Default:00)



<00H-3CH>((+R5A))

---

#### Truncate Last Digit (Default:00)



<00H-3CH>((+R6A))

---

#### Select Insertion (Default:00)



<00H-02H>((+R9A))

---

End Configuration((+ENDF))



Start Configuration((+SETF))



---

### 3.13 MSI / Plessey

**Min. Length (Default:06)**



<01H-50H>((+R7A))

**Max. Length (Default:50H)**



<01H-50H>((+R8A))



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---

End Configuration((+ENDF))





---

### 3.14 CODE32

#### Reading



<OFF>((+S1A))



ON((+S1B))

#### Code ID (Default: S)



<20H-7FH>((+S2A))

#### Verification



<OFF>((+S3A))



ON((+S3B))

#### Transmit Check Character



<OFF>((+S4A))



ON((+S4B))

---

#### Truncate Leading Digit( Default:00)



<00H-0AH>((+S5A))

---

#### Truncate Last Digit(Default:00)



<00H-0AH>((+S6A))

---

#### Select Insertion (Default:00)



<00-02H>((+S7A))

---

#### Transmit "A"



<OFF>((+S8A))



ON((+S8B))

---

End Configuration((+ENDF))



---

### 3.15 Code 11

#### Reading



<OFF>((+T1A))



ON((+T1B))

#### Code ID (Default: T )



<20H-7EH>((+T2A))

#### Verification



<OFF>((+T3A))



ON((+T3B))

#### Transmit Check Character



<OFF>((+T4A))



ON((+T4B))

---

#### Truncate Leading Digit (Default:00)



<00H-50H>((+T5A))

---

#### Truncate Last Digit (Default:00)



<00H-50H>((+T6A))

---

#### Select Insertion(Default:00)



<00H-02H>((+T9A))

---

#### Min. Length (Default:06)



<01H-50H>((+T7A))

#### Max. Length (Default:50H)



<01H-50H>((+T8A))

---

End Configuration((+ENDF))



---

### 3.16 RSS Code (Option)

#### RSS-14

##### Reading



<OFF> ((+U1B))



##### Application ID transmit



OFF((+UAA))

ON ((+U1A))



<ON>((+UAB))

---

#### RSS-14 Limited

##### Reading



<OFF> ((+U2B))



ON ((+U2A))

##### Application ID transmit



OFF((+UBA))



<ON>((+UBB))

---

#### RSS-14 Expanded

##### Reading



<OFF> ((+U3B))



ON ((+U3A))

---

#### RSS code To UPC/EAN

##### Reading



<OFF> ((+U4B))



ON ((+U4A))

---

End Configuration((+ENDF))



---

#### 4.1 Wand type(Optional)

##### Output polarity



<Bar = High>((+D1A))



Bar =Low((+D1B))

##### Output data format



<Transmit in Normal format>

((+D2A))



Transmit in Code 39 format

((+D2B))



Transmit in Code 128 format

((+D2C))

##### Scan speed



Low(5ms)

((+D3A))



Medium(2ms)

((+D3B))



High(0.5ms)

((+D3C))

---

End Configuration((+ENDF))



---

APPENDIX A -- ASCII  
CODE



0



1



2



3



4



5



6



7



8



9



A



B



C



D



E



F



Y



N

VIRTUOS



## ASCII Table

	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	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



APPENDIX B -- Function Key Table

	0	1
0	NULL	CTRL
1	UP	F1
2	DOWN	F2
3	LEFT	F3
4	RIGHT	F4
5	PAGE UP	F5
6	PAGE DOWN	F6
7		F7
8	BS	F8
9	TAB	F9
A		F10
B	HOME	ESC
C	END	F11
D	ENTER	F12
E	INSERT	ALT
F	DELETE	SHIFT

---

Function Key Code

---

End Configuration((+ENDF))



---

Before scanning, please turn on the Full CODE 39.

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UP(\$A)



F10(\$Z)



F5(\$U)



CTRL-L(\$G)



F1(\$Q)



HOME(\$K)



ALT-L(\$J)



DOWN(\$B)



PAGE  
DOWN(\$F)



ESC(%A)



SHIFT-L(\$P)



F2(\$R)



F6(\$V)



END(\$L)



LEFT(\$C)



F11(%B)



F3(\$S)



F7(\$W)



F12(%C)



RIGHT(\$D)



BS(\$H)



INSERT(\$N)



F4(\$T)



F8(\$X)



DELETE(\$O)



PAGE  
UP(\$E)



TAB(\$I)



ENTER(\$M)



F9(\$Y)

---

End Configuration((+ENDF))

