

KEYBOARD SIMULATION STRINGS SYNTAX

The keyboard simulation strings, commands from the HOST SYSTEM or responses from the ECR, are variable length strings, according to the following format:

Keyboard simulation commands

“KX” is the default prefix for all commands

`` K `` = Keyboard
Key = Operator Key (X)

command	comments	example
`` CL ``	Clear	“KXCL” clears the display
`` RF ``	Receipt Feed	“KXRF”
`` _ ``	Negative Modifier (*)	“KX- “
`` ST ``	Subtotal	“KXST”
“R<n><descriptor>”	<n> Department number n=(1:10) Dept.10=R0, descr max printed 21 char only the 16 char appears on display	: “KX100R1COCACOLA
`` . ``	Decimal point (*)	“KX2. “
`` * ``	Multiplier (*)	“KX2* “
`` AC ``	Open cash drawer/No sale	
`` GE ``	General Modifier	“KX100GE”
`` % ``	Percentage Modifier (*)	«KX10% »
`` T<amount><n> ``	n=Tender key (1:4)	“KXT1“ close a receipt with 1 st Payment
“RE “	Return the receipt number	“KXRE”
“ CO<comments> “	Print comments on receipt max-20 characters	“KXCOLUMN1COMMENTS
“SN”	Return the serial number	“KXSN”

*** The character must be always followed by a space (20h).**

`` 0T1 `` Daily X Report “KX0T1“ X Report
``021 T1`` Fiscal Daily Report “KX021T1“ Z Report

HOST SYSTEM/ECR PROTOCOL

Definitions:

The ECR standard input is the keyboard.

The ECR standard output is the ECR printer and the cashier/customer display.

A string is a sequence of characters followed by " carriage return" (13 dec.,0D hex).

The protocol between the HOST SYSTEM and the ECR is HALF - DUPLEX.

When a correct keyboard simulation string(a correct string has only a terminator character) the ECR executes the received command and transmit the standard output on the serial channel followed by an end of transmission character " EOT " (4 dec.,4 hex) and a carriage return " CR " (13 dec.,0D hex); in the following this sequence will be defined as " EOT ". The standard output string can contain the authorization request instead of EOT sequence. Only after receiving the " EOT " string the HOST SYSTEM can send the next command ; then, before sending a remote command the Host System must check that no data are received from the local ECR keyboard.

When the connection is enabled with the sequence [7][9][3] [SUBTOTAL], the ECR send to the HOST SYSTEM through the RS232 only the errors and synchronization (EOT) strings.

When the connection is enabled the ECR send an " EOT " string.

If the " EOT " string is missing, the ECR can be disconnected for:

- main power missing,
- no paper on the printing station,
- physical communication connection or timeout while transmitting / receiving.

When the HOST SYSTEM disables the connection the ECR doesn't send any response and continues with the normal operation.

When the HOST SYSTEM need to know when the ECR is ready send a command to simulate the CLEAR key (" KXCL "); if the 1 ' ECR send an " EOT " string then it is in the ON state, otherwise it is in the OFF state or it is not connected.

COMMUNICATION ERRORS

CODE	DESCRIPTION	SOLUTION
E50	Noise on the serial channel	Check the RS - 232 cable and external noise
E51 E53	Parity Errors Framing Errors	Check the serial communication parameters programmed on the Host System

E52	Overrun Errors	Controllare che il programma, prima di trasferire una stringa di dati riceva da ECR la stringa "ÄÏÖ", controllare anche che il Baud Rate sia uguale su P.C. e su ECR
E54	Time - Out (5 seconds)	The ECR is not able to transfer data ; check the serial communication port
E57	Illegal function	Function not allowed in keyboard simulation (i.e.: [SUBTOTAL] key shows the time / date on the display)
E69	Incorrect data	Check the string syntax sent to the ECR

SERIAL CHANNEL PHYSICAL LEVEL

The default internal serial channel parameters are :

BAUD RATE	STOP BIT NO.	PARITY	BIT / CHR
9600	1	NONE	8

No hardware handshake is used an only TX, RX and GND signals are used.
Connection cable example :

HOST SYSTEM 9 PIN		ECR		HOST SYSTEM 25 PIN
3 TX	-->	3 RX	-->	2 TX
2 RX	<--	2 RX	--<	3 RX
5 GND	---	5 GND	---	7 GND

Note : Connect the cable shield on the metallic connectors bodies.

ECR with sequence 793 SUBT		
HOST SYSTEM	Data Dir.	ECR
command string	-->	EOT
command string	<--	authorization string
command string	-->	error string
	<--	EOT
	<--	

When there is no paper the E2 error is sent to the Host System. In this condition the ECR temporarily disables the PC connection until the paper is substitute and the user press the CLEAR key; then the PC will receive a synchronization string (EOT) allowing the next command.

GWBASIC example program

This program shows on the HOST SYSTEM the strings corresponding to the sequences on the ECR in their own syntax :

```
10 OPEN ``COM1: 96, N, 8, 1, CS, DS `` as #1
20 PRINT `` Press on the ECR the sequence `793[SUBTOTAL]
30 LINE INPUT # 1, A$
40 IF LEFT$(A$, 1) = `` Ê `` THEN PRINT A$
50 IF A$= `` KX794ST`` THE END
60 GOTO 30
```

10 Open the serial channel
20 Shows on the HOST SYSTEM the operation on the ECR to start the keyboard simulation.
30 HOST SYSTEM receive the ECR data
40 HOST SYSTEM shows only the K type strings (ECR keyboard)
50 The program terminates if it is requested the end of connection with the ECR sequence: 794 SUBTOTAL

This program simulate a selling session.

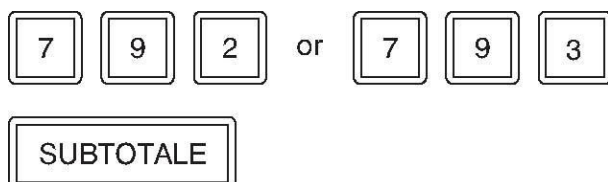
```
10 OPEN `` COM 1: 2400, N, 8, 1, CS, DS `` AS #1
20 PRINT `` Press on the ECR the sequence `793 [ SUBTOTAL ]`
30 GOSUB 100
40 PRINT #1, `` KX00R1COCO COLA ``
50 GOSUB 100
60 PRINT #1, `` KX 1 ``
70 GOSUB 100
80 PRINT #1, `` KX794ST ``
90 END
100 LINE INPUT #1, Á $ `` PRINT Á $ IF A $ <>CHR $ (4) THEN 100
110 RETURN
```

10 Open the serial channel
20 Show on the HOST SYSTEM the operation on the ECR to start the keyboard simulation
30 Executes subroutime at line 100
40 HOST SYSTEM send a sell command of 100 on the Dept. 1 with the `` COCA COLA `` description (It is not valid for the Poland Market)
50 Executes subroutine at line 100
60 HOST SYSTEM send a tender command (CASH) to close the transaction

70 Executes subroutine at line 100
 80 HOST SYSTEM send the command to close the ECR link
 90 The program terminates
 100 In this subroutine the HOST SYSTEM is waiting for the EOT (CHR \$ 4) string
 110 Return from the subroutine description.

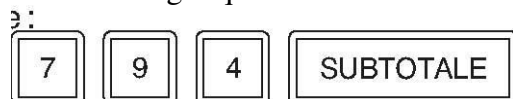
KEYBOARD SIMULATION FUNCTIONALITY

The “ Keyboard Simulation Functionality ” can activate any Cash Register (ECR) function in connection with an HOST SYSTEM through the serial channel. The use of the system (HOST SYSTEM / ECR) requires : 1) Starting the connection with the keyboard sequence :



The ECR keyboard always is active and it is possible to operate at the same time in local or remote mode.

- 2) Selling phase from the HOST SYSTEM that send to the ECR data strings in keyboard simulation.
- 3) Disconnection at the end of the session from the HOST SYSTEM sending a string that simulates the following sequence :



ASCII char codes for GREEK LETTERS

The characters for the Micropos Plus are comply with ASCII except greek letters

Σ = 102
 Γ = 133
 Δ = 134
 Θ = 135
 Λ = 136
 Ξ = 137
 Π = 138
 Φ = 139
 Ψ = 140
 Ω = 141

ΓΙΑ ΠΟΛ/ΣΜΟ «KX2.KENO»
 «KX234*KENO
 «KX100R1”