



USECON - the configuration utility for the USE145 encoders

USECON (USE145 CONfiguration software) is a program for setting or changing any of the USE145 parameters, such as interface type, Baud rate, keypad pinout, etc. It also allows users to save or recall all parameters to or from a disk file. Before running this program the USE145 should be connected to a serial port, COM1 or COM2, and powered up.

NOTE. USECON is a DOS program, it cannot run in WIN95 DOS window; you need either DOS or WIN95 command mode. To get to Win95 command prompt mode select Start|Shutdown, in the shutdown dialogue select "Restart the computer in MS-DOS mode".

COMMAND LINE PARAMETERS

Usage: USECON [options]

Options:

- c1 : use COM1 port only, do not attempt to communicate through COM2; default is to check COM1 and if unsuccessful, try COM2
- c2 : use COM2 port only, do not attempt to communicate through COM1; default is to check COM1 and if unsuccessful, try COM2
- f<file> : read parameters from the <file>, program it into encoder and then exit. If the file is not in the current directory, its name should include the path.

If no parameters are given the USECON will first try to establish communication with the USE145 by trying different Baud rates for port COM1 and then COM2. Once communication is established, the program will read all configuration parameters from the USE145 into computer

memory. If it is unable to communicate, it will display the message "Encoder is not responding, default parameters are used". If this is the case, please make sure that the USE145 is properly connected and its power supply is "ON"; then try to run the program again. It is possible to run USECON without the USE145 to create or modify files of configuration parameters for later use. In this case, USECON will issue the message "communication error" or "encoder is not responding" every time the program tries to read from or write to the encoder.

If communication parameter (-c1 or -c2) are given the USECON will try to communicate only with specified serial port

If file parameter (-f) is given the USECON will search for file named "File.prm ", program it into encoder and exit. If the file was not found or encoder did not respond the USECON will exit anyway.

Examples:.

USECON -c2 -fFile1.prm

will search for encoder on COM2: then try to download File1.prm and then terminate and exit to DOS, whether downloading was successful or not.

USECON -fFile1.prm

will check COM1: for encoder, then if unsuccessful will check COM2:, then download the File1.prm and terminate whether downloaded successfully or not.

USECON -c2

will search for encoder in COM2:, upload the configuration from the encoder and whether successful or not will show the Main Men

MAIN MENU.

MAIN MENU	
1.	Interface Type Selection
2.	Configure Input Lines
3.	Define Shift Keys
4.	Change Key Codes Interactively
5.	Recall file into memory
6.	Save memory to file
7.	Recall encoder program into memory
8.	Program the encoder from memory
9.	Check Encoder Communication
Press ESC to exit	
Please enter command (1..9)	

After communication is established between the USE145 and the computer, the user is presented with a Main Menu of nine options. Normally you program the USE145 by selecting options 1 through 4 in order. After the encoder has been programmed and its operation verified, the configuration parameters can be saved in a disk file for future use (option 6). If you need to program more USE145s for the same application, these configuration parameters can be recalled (option 5), and the required number of the encoders can be programmed (option 8). Option 7 allows you to recall configuration parameters from the USE145 into computer memory for modification and/or storage on disk. It is normally executed automatically when the program starts. Option 9 allows you to quickly check communication between the computer and the USE145, and to verify the USE145 parameters, such as operation mode, key codes, etc.

To return to the Main Menu from any option, press “Esc”. When the program returns to the Main Menu it automatically updates the encoder and the parameters stored in computer memory. The following is a brief description of each menu option.

1. INTERFACE TYPE SELECTION.

INTERFACE SELECTION MENU	
Communication port is	COM2:
Baud rate is	9600
Interface type is	PC AT
Typematic delay is (nsec)	250
Typematic period is (nsec)	250
Rollover disabled	No
Beep During Typematic	Yes
Use LEFT/RIGHT arrows to select com port	
use UP/DOWN arrows to select action	
to return to the MAIN MENU, press ESC key	

This option provides for the selection of encoder interface type (RS232, IBM PC/XT or IBM PC/AT), Baud rate for the RS232 interface, and “typematic” parameters – the initial delay before sending repeating codes, and the frequency of these codes. Use “Up” and “Down” arrows to select a parameter, and “Left” and “Right” arrows to change the value of a parameter. Press “Esc” to return to the Main Menu.

If you wish to disable typematic action, select typematic period “infint” (infinity).

If you wish to enable/disable rollover move cursor to “ROLLOVER” position and choose “No/Yes”.

To enable/disable buzzer beeping during typematic action move the cursor to “Beep During Typematic” position and choose “Yes/No”.

This screen also contains an option to change the serial communication port, COM1 or COM2. Be aware, however, that when the program returns to the Main Menu, it will check communication with the USE145. If the encoder is still connected to the same communication port, USECON will reset itself to that port, regardless of the changes made on-screen. The communication port is shown here mainly for reference purposes.

2. CONFIGURE INPUT LINES.

INPUT CONFIGURATION MENU		
pin # 1 Vertical	pin # 9 Horizont	pin # 17 Not used
pin # 2 Vertical	pin # 10 Horizont	pin # 18 Not used
pin # 3 Vertical	pin # 11 Horizont	pin # 19 Not used
pin # 4 Vertical	pin # 12 Horizont	pin # 20 Not used
pin # 5 Vertical	pin # 13 Horizont	pin # 21 Not used
pin # 6 Vertical	pin # 14 Horizont	pin # 22 Not used
pin # 7 Vertical	pin # 15 Horizont	pin # 23 Not used
pin # 8 Vertical	pin # 16 Horizont	pin # 24 Not used

use UP/DOWN arrows to select pin, LEFT/RIGHT arrows to change pin status to return to the MAIN MENU, press ESC key

This option allows us to describe the connection diagram of the keypad. The user is presented with a screen showing 24 input lines for the USE145. Each line (with the exception of lines 1 through 4) can be programmed as “horizontal” trace, “vertical” trace or “not used” (not connected). Lines 1 through 4 must be programmed as either “vertical” or “not used”. It is important to specify unused lines as “not used”. Otherwise noise may be picked up and interpreted as a key closure.

Please note that the terms “vertical” and “horizontal” are purely conditional and have no physical meaning, we can rows and columns instead.

Use the Up/Down arrow keys to move between lines and the Left/Right arrow keys to change the line programming. Press “Esc” to return to the Main Menu.

3. DEFINE SHIFT KEY.

SHIFT KEY SELECTION
Scan Code for Shift Key 1 is 178
Scan Code for Shift Key 2 is 195
Clear Shift Keys
Press shift1 key on keypad
use UP/DOWN arrows to select action to return to the MAIN MENU, press ESC key

This option is supported only for the RS232 interface, if it is selected for the IBM PC/XT or PC/AT interface the message “This option is not

supported for this interface” is displayed, and the program returns to the Main Menu.

PC/AT or XT keyboard do not have “shift” keys (see our application note **AN1 IBM AT and XT Keyboards Operation**), however, we offer encoders USE150 and USE104 which provide “TrueShift” capability and other enhancements over standard AT/XT keyboard

It is possible to designate up to two keys as “Shift” keys for the RS232 interface. When either of these “Shift” keys is pressed, no codes are sent out. Instead, the USE145 switches into “Shift” mode. If any other key is pressed while the shift key is held down, the USE145 transmits the second (or “shifted”) code for that key. The “shifted” code for any key can be programmed independently of its normal code (see “Changing Key Codes Interactively” below).

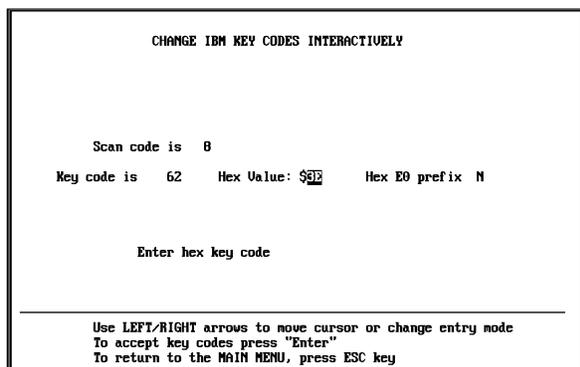
Here we have three options: select Shift1 key; select Shift2 key; or clear both shift keys. To define the Shift1 key, move the cursor to the top line using the Up/Down arrow keys, and then press the key on a keypad. The highlighted line will show the “Scan Code” for that key (an internal parameter of the USE145). If you wish to allocate “Shift1” to a different key, just press that key and a new code will appear on the screen. The “Shift2” key can be defined in the same way. When you finish defining the shift keys, press “Esc” to return to the Main Menu.

4. CHANGE KEY CODES INTERACTIVELY.

CHANGE KEY CODES INTERACTIVELY
Press a key on the keypad
Use LEFT/RIGHT arrows to move cursor or change entry mode To accept key codes press "Enter" To return to the MAIN MENU, press ESC key

The first screen for this option is shown above. The way this option works depends upon the type of interface you have selected.

In RS232 mode when a key other than the "Shift1" or "Shift2" keys is pressed, the screen displays the current state of the Shift keys ("Shift is On/Off"), the scan code for the key which has been pressed, the decimal and hexadecimal values of its key code, and the ASCII character corresponding to the key code. Use the Left/Right arrow keys to move the cursor within a field or between fields. We can enter the key code into any of these fields. Decimal values should be less than 256. A hexadecimal value will have two hexadecimal digits. Or to enter a character value just press the required key on the computer keyboard. If you need to enter the small decimal number for the existing key code, use leading zeros. To accept a key code press "Enter" on the computer keyboard. The program will update the value in computer memory and on the encoder. Now the program is ready to repeat this procedure for another key on the keypad. The program remembers how you entered the last key code - as a decimal, hexadecimal or character value - and positions the cursor in the same field for the next key. To enter "shifted" key codes, first press and hold one of the "Shift" keys, then press the key which code you want to enter.

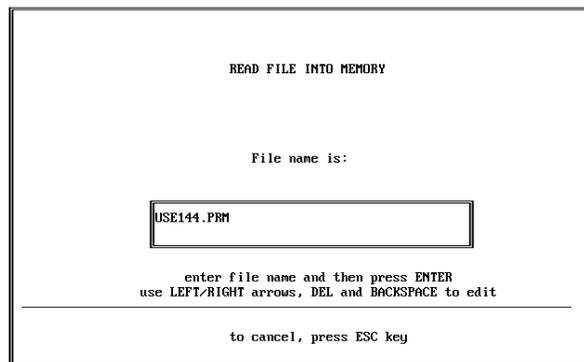


The screen for IBM PC/XT and PC/AT modes is shown above. Key code selection is similar to that of RS232 mode, but we do not allow "shifted" codes, and we can use only decimal or hexadecimal values for the key codes. The codes which we enter are "make"-codes. The USE145 forms the "break"-codes according to the respective interface requirements. In PC/XT mode the code should be less than 128 decimal (80 hexadecimal).

If you want the key to have an "extended code" move the cursor to the position marked "Hex E0 prefix" and type Y. The prefix "Hex E0" will be automatically send prior to the key-code you programmed upon pressing such key on the keypad. To remove the prefix, move the cursor into "Hex E0 prefix" field and type N.

Press "Esc" on the computer keyboard to return to the Main Menu.

5. READ FILE INTO MEMORY.



This option allows us to recall configuration parameters from a disk file into computer memory. When prompted for the file name you should enter the full file name, including the path (if applicable), and the extension. Use the Left/Right arrow keys, "Del", and "Backspace" to correct errors. Press "Enter" to accept the file name. If USECON cannot find the file, it will display the message "Cannot find a file" and will show the file name again.

If you wish to cancel this option and return to the Main Menu, press "Esc".

After reading parameters from a file, USECON returns to the Main Menu.

6. SAVE MEMORY TO FILE.

This option allows you to save configuration parameters to a hard drive or floppy disk for future use. The screen is almost identical to the one for "Recall File into Memory" (above). If a file with the name you selected already exists, the program displays a warning: "File exists. Overwrite (Y/N)?". If you wish to overwrite the existing file, press "Y", otherwise press "N". If you press

“N”, the program will allow you to select another file name.

If you wish to cancel this option and return to the Main Menu, press “Esc” .

After saving parameters to a file, the program returns to the Main Menu.

7. RECALL ENCODER INTO MEMORY.

This option will read all configuration parameters from the encoder into computer memory. If the program cannot communicate with the encoder it will display a message, “Encoder is not responding, press any key to continue”, and then it will return to the Main Menu.

After reading parameters from the encoder, the program returns to the Main Menu.

8. PROG. ENCODER FROM MEMORY.

This option will program the encoder using configuration parameters presently stored in computer memory. After writing these values to the encoder, USECON will read the parameters back for verification. If the values cannot be verified, an error message appears on the screen. If no message appears, verification is complete.

After programming and verifying parameters, the program returns to the Main Menu.

9. COMMUNICATION CHECK.

Communication Test



to return to the MAIN MENU, press ESC key

This option allows you to check communication between the computer and the encoder. It also allows you to verify the encoder programming, such as key codes, typematic parameters, etc. The encoder echoes back all characters it receives from the computer.

If we type something on the computer keyboard and these characters appear on the screen, it means that the encoder received them and sent them back to the computer. If we press a key on a keypad connected to the encoder, it will send a key code to the computer. This key code will be displayed differently depending upon the interface type. In RS232 mode the code itself will be typed. In IBM PC/XT or PC/AT modes the code will be shown in its hexadecimal form preceded by a dollar sign. For example, the key code “43” (decimal) will be displayed as \$2B. The sample screen above shows the encoder programmed for an IBM PC/AT interface. First we typed some characters on the computer keyboard, then we pressed and released the key programmed as “Enter” on the encoder’s keypad. The “make”-code for that key, according to the “IBM PC/AT Technical Reference”, is Hex 5A. On the screen we have “make”-code (\$5A) and then “break”-code for that key: a two code sequence (\$F0 and \$5A). See the application note **AN1 IBM keyboard operation** for details on Make/Brake codes.

Addendum USECON for USE145 v1.1

The USE145 v1.1 allows to program 2-character combinations Alt+Key, Shift+Key and Ctrl+Key into one key. We offer encoders USE150 and USE104 providing complete macros capability along with other extensions.

The USECON for USE145 ver 1.1 differs from standard version in the menu option 4 (Program key-codes interactively). Here it adds additional key modifier which can be A, C, S or N for Alt, Control, Shift or None, respectively

To program USE145 v1.1 choose the key-modifier for every key. Don't forget to put in "N" if you don't need any modifier.

EXAMPLES:

1. Let us say you need some letters on your keypad to be capitals without pressing CapsLock. In AT/XT keyboard there is no separate codes for capitals, so you have to send "shift" prior to any key. By having programmed the keys with a "Shift" modifier you will send a "Shift code" to computer any time you press these keys and computer will recognize them as Capital.

2. Another useful combination could be "Ctrl-C". This way you can interrupt your application program by one key stroke instead of two.