

1171 Notre-Dame W. # 100 Victoriaville, Qc G6P 7L1 Telephone: (819) 751-0095 Fax: (819) 751-1292

# **TCPIP LIBRARY** Version 1.5 E and more

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Use this software with the product : LBC-02/IP SOH (LIB Mode)

Our Internet site: <u>http:// www.symcod.com/</u> To run the library as service use this link: <u>http://www.symcod.com/in\_service/</u>

> Programmer Analyst: Steve Bilodeau Email: <u>sbill@symcod.com</u>

DOWNLOAD OUR SOFTWARE : "EXAMPLE FOR <u>TCPIP</u> (VISUAL BASIC 6)" IT WILL SAVE YOU A LOT OF TIME!



#### DESCRIPTION OF SOFTWARE SCREENS

Description of Main Screen 1.0

- 01. Search and replace tools.
- 02. Each line corresponds to a terminal. If the light preceding the line is green, the terminal is connected. The syntax of the line is interpreted as follows:

Example: 1013,10.1.201.13,1024, =IP CONNECTION OK 02-18-2002 16:40:04

- Terminal number (1013)

Logical number assigned to each terminal. This number is determined by the user when it is added (*Command* #03) or will be attributed automatically if the library is in AUTO IP mode (*Option* #18)

- Terminal IP address (10.1.201.13) IP number assigned to the terminal. Make sure your computer is in the same address range as your terminals. To assign the IP address to each terminal, use the BOARD CONFIG software.

Ethernet Port (1024)

This value must always be equal to 1024. Symcod LBC-02 V3 IP terminals only work on this port.

Terminal state (=IP CONNECTION OK 02-18-2002 16:40:04)

Terminal state with the date and time the state was checked.

03. Use this button to add a terminal to the library.

SCIECII. ADD A NEW TERMINAL				
🎸 ADD A NEW TERMINAL				×
TERMINAL NUMBER (0001 - 1000):	000	1		
IP ADDRESS:	10.1	.200.23		•
PORT NUMBER:	1024	1		
STATUS				
		<u>C</u> ANCEL	ADD	

Screen: ADD A NEW TERMINAL

To add a new terminal to the library

You simply fill in the following two fields, and press the ADD button.

- Terminal Number (0001 – 9999)

Choose a logical number for this terminal between 0001 and 9999.

IP Address

Enter the desired terminal IP address in this field.

04. Macros commands tools.

05. Use this button to modify the terminal configuration.

Screen: EDIT A TERMINAL \*Port number is always 1024

💰 EDIT A TERMINAL		×
TERMINAL NUMBER (0001 - 1000):	0001	
IP ADDRESS:	10.1.200.23	•
PORT NUMBER:	1024	
<u>S</u> TATUS		
	<u>C</u> ANCEL	SAVE

Change the desired fields and press SAVE when finished.

- 06. Use this button to remove the selected terminal (*field #09*) from the library.
- 07. Press this button to go to the terminal listed in the space to the right. This space contains the **terminal number** or **the end of the address** *IP* (*Example: 1013 or .201.13*).
- 08. Use this button to save the library configuration.
- 09.
- 10. This zone displays important error messages and other information during communication.
- 11. For test purposes, use this button to send a question to the terminal selected in *field* #23.
- 12. For test purposes, check this option to receive an answer for each piece of data sent by the terminals.
- 13. For test purposes, causes all terminals on the network to emit a sound.
- 14. Request all terminals to simulate a transaction, which will generate one packet per terminal, every 5 seconds.
- 15. Check this option to put the library into "pause" mode. While this option is checked, no more packets are received from terminals. Very useful to add, change or remove terminals.
- 16. You must check this option to use the BOARDCONFIG software at the same time as the library.

17.

- 18. Check this option for the library to generate the terminal number based on the IP address. The active terminals on the Ethernet network will be automatically added by this option. So if you press on CLEAR ALL IP #19, all terminals will be displayed in the list #02.
- 19. In AUTO IP mode, click this button to delete all terminals from the list #02. The active terminals on the network will be automatically listed again in a few seconds.

20. In AUTO IP mode, the terminal numbers are assigned based on their IP address: Example #1: 999.999.999 xxx

If you select the three last digits of the address 10.1.201.13, its terminal number will be 13.

Explanation:

- First, the library converts the IP address 10.1.201.13 to 010.001.201.013
- Then, the library removes the periods; which gives: 010001201013
- Finally, the library takes the selected numbers (*settings* #20) and uses this value as terminal number (terminal = 13).
- 21. For test purposes, check this option to simulate a packet each time a terminal establishes a connection with the library.
- 22. For test purposes, click this button to blink the light of the terminal selected in *field* #23. Check the box to cause continual blinking.
- 23. Enter the number of the terminal to be tested here. Enter \* for all terminals.
- 24. For test purposes, initializes the time and date for all terminals.
- 25. Same as *field #23*.
- 26. Check this box to configure the desired link to communicate with the library. See description of Communication Screen.
- 27. In this field, you have the number of packets (transactions) from the terminal selected in *field #09*. If this number is not equal to zero, the library contains packets not processed by your software.
- 28. In this field, you have the commands intended for the terminal selected in *field #09*. If there are commands that are not moving, there is probably a problem with the terminal.
- 29. Reserved for use by Symcod.
- 30. Command currently being executed.
- 31. Number of commands waiting to be sent to the terminal.
- 32. Check this option to have the library log the telecommunication history (commands and packets) in the file SYM\_DD-MM-YY.LOG (*For example : SYM\_19-02-02.LOG*).
- 33. Last packet received by the library from terminals.
- 34. Click this button to cause each terminal to display its IP configuration (MAC ADR & IP ADR).
- 35. Click this button to configure ringing of bell(s). Each terminal has four TTL outputs that can control bells or any other peripheral. See description of BELL CONTROL screen.
- 36. Click this button to perform a RESET of the terminal selected in *field #25*.
- 37. List of packets received by the terminal (field #09) and not processed by your software.
- 38. Tick off this space to see the last hundred communication errors that have happened (ATTENTION: "CONNECT" <u>are not</u> errors)
- 39. Tick off this space to see the list of terminals sorted out by **NO DE TERMINAL** or by **IP ADDRESS**.
- 40. Tick off this space for the library to save the history of the communication delays in the file DELAYS\_DD-MM-YYYY.LOG (Example DELAYS\_19-02-2002.LOG).



# Screen: BELL CONTROL

- 01. To reconfigure the bell rings, check this option.
- 02. Use this scroll bar to choose the desired day.
- 03. Each line of the list corresponds to a ring. Field #03 shows the time the bell will ring for the day selected by *scrollbar* #02. Enter the time in 24 hour format with no separator.
- 04. Value not used. Reserved for use by Symcod.
- 05. Terminal number of the bell to be rung.
- 06. Output (1 to 4) connected to bell to be rung (each terminal has four TTL OUTPUTS)
- 07. Length of the ring in seconds.
- 08. Click this button to save the configuration.
- 09. Click this button to add a ring.
- 10. Click this button to delete the selected ring.
- 11. Displays the day being edited. To change the day, use scroll bar #02.
- 12. To change or add a ring, enter the desired value in this field. (See description #03).
- 13. Time of the next ring to go off.
- 14. To change or add a ring, enter the information in the fields. (*See description #05 to 07*).
- 15. Terminal no., Bell no., Duration in sec. of the next ring to occur.
- 16. Click this button to hide the window.
- 17. Click this button to copy the configuration of the day selected with *scroll bar #02* to all other days.

To communicate with our library, you have to use the FILE LINK, easier to integrate and very fast.

\*The DDE link is not available any more.



#### SCREEN DESCRIPTION: FILE COMMUNICATION

- 01. Click this button to save the configuration of the FILE link.
- 02. If checked, the file exists. You have only to verify the existence of the .OK file; if it exists, process it, and then delete it.
- 03. If checked, the file exists. You have only to verify the existence of the .OK file; if it exists, process it, and then delete it.
- 04. If checked, the file exists. You just write the commands to be sent in the .TMP file and rename it to .OK, and SYMCOD will process it.
- 05. Chose the directory name which will be used for file exchanges in this field.

### FILES COMMUNICATION

Communication through file links is very simple. A file can contain several packets and/or commands. The commands and packets in a file are separated by ENTER characters (ASCII 13 + ASCII 10). If you want to send an ENTER within one of the following commands: Command %187%, %186% or %199% replace CHR(13)+CHR(10) by the following character string: [CR]

<b>FILE LINK</b>
FILE_PAQ.OK
FILE_COM.OK
FILE_MSG.OK

### ON THE CLIENT SIDE RECEIVE PACKET(S)

At intervals of one thousandths of a second, you must check if the file FILE\_PAQ.OK exist. If this file exist, you must open it, read its contents (the packets) and delete it.

\* If an error occur during the opening of the file, leave the procedure and close the file.

\* Each line is a packet.

\* The FILE\_PAQ.OK may contain several packets.

\* The procedure is the same for FILE\_MSG.

### ON THE CLIENT SIDE SEND A COMMAND(S)

Open the file FILE\_COM.TMP in APPEND mode, add the commands to the files. \* If an error occur during the opening of the file, leave the procedure and close the file.

Create a timer at intervals of one thousandths of a second that will check:

- If FILE\_COM.TMP exist and FILE\_COM.OK is not there.

- If this condition is TRUE then RENAME FILE\_COM.TMP to FILE\_COM.OK

\* If an error occur during the RENAME of the file, leave the procedure.

\* Each line contain a command.

\* The FILE\_COM can contain several commands.

### DESCRIPTION OF THE SYNTAX TO SEND COMMANDS Send commands through FILE\_COM

Terminal number \* = all terminals

### EXAMPLES OF COMMANDS (Example: Visual Basic)

'SEND A BEEP TO TERMINAL 1 ''0001,%7%''

'DISPLAY A CHARACTER STRING ''0001,%199%40LAST TIME('' & Time\$ & '')%7%%179%''

'RECORD QUESTION NO. 01 ON ALL TERMINALS ''\*,%187%01%12%YOUR NO: ^|||||%187%01,01,01,01,01,01,01

'ALL TERMINALS DISPLAY QUESTION NO 1
''\*,%200%01''

For the complete list, see section: **LIST OF COMMANDS** 

### LIST OF COMMANDS (LIBRARY)

Send commands through FILE\_COM

### MINIMIZE THE LIBRARY WINDOW

To minimize the window:

### MAXIMIZE THE WINDOW

To maximize the library window:

### HIDE THE LIBRARY WINDOW

To hide the windows (invisible mode): "<"

### SHOW WINDOW

To see the library window (visible mode):

### **REQUEST TERMINALS STATUS**

To receive terminal's status:

The terminal's status is return by **FILE\_MSG.OK**: Section : <u>MESSAGE RECEPTION</u> / <u>Description of message 06, terminal's status</u>

### RENAME TERMINAL NUMBER

"R" + X + "," + Y + CHR(3)

X= Old terminal number Y= New terminal number

### LIST OF COMMANDS (TERMINALS)

Send commands through FILE\_COM

Displaying a message %186%
 Syntax %186%CHARACTER STRING

Example: %186%%12%NAME : ^||||| CODE : ~~~~

This message is displayed on the screen together with the <u>input fields</u> (semi-interactive mode).

• Light LED %179%

Syntax: %179%

Lights LED for about 1 second.

 MESSAGE POSITION %200% Syntax: %200%{MESSAGE #}

> Repositions the terminal to a new message number. Example message # 3: %200%03

• Emit sound: %7%

Syntax: %7%

Emits a sound for about 1 second.

 Display a character string %199% Syntax: %199%{POSITION} {CHARACTER STRING} Example :%199%40Hi Paul

> \*The character string is displayed on the screen without changing the current message. \* Line 1 POSITION 00 to 39 \* Line 2 POSITION 40 to 79

To be used with commands %199%, %187% and %186%		
٠	Номе %198%	
	Places the cursor at the beginning of the	
screen		
•	CLS %12% Erases screen.	
•	[CR] To make a line feed send [CR]	

• Recording messages 1 to 25 %187%

#### Syntax:

%187% "MESSAGE NUMBER" "CHARACTER STRING" %187% "KEY M1 go to"	1 character 2 characters, 01 to 25 x characters 1 character 2 characters
, "KEY M2 go to " " "	2 characters
, "KEY M3 go to " " "	2 characters
, "KEY M4 go to " " "	2 characters
, "KEY M5 go to " " "	2 characters
, "ESC KEY go to "	2 characters
"ENTER KEY go to "	2 characters

#### Example:

%187%01%12%NAME:^///// CODE:~~~~%187%87,12,01,01,01,01,01

### See: Input fields

The values contained in the keys M1 to M5, ESC and ENTER are used to go to another message number (from 01 to 25). Example, if M2 contains 12, when the user presses the M1 key of the LBC-02, it will automatically go to message #12. If the message number requested is greater than 25, the terminal will return a packet with the corresponding ASCII character. Example: if M1 = 87, the LBC-02 will return a packet containing "W".

### Example using command %187%

Recording messages 1 and 2



In Visual Basic, the source code will be: 'RECORD QUESTION NO. 01 ON ALL TERMINALS "\*,% 187%01% 12% Employee No.: ^|||||||||||[CR]Overtime% 187%02,01,01,01,01,01,01,01" 'RECORD QUESTION NO. 02 ON ALL TERMINALS "\*,% 187%02% 12% Overtime: ~~~ hour(s)[CR]ESC = CANCEL% 187%02,02,02,02,02,01,01" 'ALL TERMINALS DISPLAY QUESTION NO 1 "\*,% 200%01"

#### TTL OUTPUTS (see CABLING)

- Output signal 1-> ON xx SECONDS %220% xx = + - 1 second Syntax: %220%xx
- Output signal 2-> ON xx SECONDS %221% xx = + - 1 second Syntax: [DD]xx
- Output signal 3-> ON xx SECONDS %222% xx = + - 1 second Syntax: %222%xx
- Output signal 4-> ON xx SECONDS %223% xx = + - 1 second Syntax: %223%xx
- OUTPUT SIGNAL 1-> ON %193% Syntax: %193% Sets logical output 1 to logical level 1.
- OUTPUT SIGNAL 1-> OFF %196% Syntax: %196% Sets logical output 1 to logical level 0.
- OUTPUT SIGNAL 2-> ON %192%
   Syntax: %192%
   Sets logical output 2 to logical level 1.
- OUTPUT SIGNAL 2-> OFF %195% Syntax: %195% Sets logical output 2 to logical level 0.
- OUTPUT SIGNAL 3-> ON %226% Syntax: %226% Sets logical output 3 to logical level 1.
- OUTPUT SIGNAL 3-> OFF %227% Syntax: %227% Sets logical output 3 to logical level 0.
- OUTPUT SIGNAL 4-> ON %228% Syntax: %228% Sets logical output 4 to logical level 1.
- OUTPUT SIGNAL 4-> OFF %229%
   Syntax: %229%
   Sets logical output 4 to logical level 0.

# INPUT FIELDS: USED WITH THE COMMANDS: %187% AND %186%

Each message recorded by the terminal can contain input fields. The cursor will go to the first field on the screen and wait until the user enters a response. As soon as all input fields are filled in, the response is transmitted. There are several types of input fields. For example, to create a numeric field, you incorporate the ASCII character "~" [7E] in the message character string. The number of characters in the string determines the length of the field. More than one kind of input field can be specified in the character string.



ALPHABETIC FIELD:

This field can only contain letters.

# NUMERIC FIELD:

This field can only contain numbers.

## ALPHANUMERIC FIELD:

This field can contain numbers or letters.

# BAR CODE SYMBOL:

This symbol is placed at the beginning of a field and can be followed by a prevalidation. For example, the bar code symbol followed by the characters 72 and the symbols ##### specifies that the bar code must start with the numbers 72 to be valid. Several combinations are possible: for example, bar code symbol followed by ##\_\_\_#\_\_\_# (two numeric characters followed by two alphanumeric characters, followed by one numeric character, followed by two alphanumeric characters and one numeric character.)

# TIME AND DATE SYMBOL:

These codes cause the time and/or date to be displayed on the screen.

# **IDENTIFICATION SYMBOL:**

This code displays the terminal identification on the screen.

## BAR CODE SYMBOL ONLY

This field can contain numbers or letters which can not be entered by the keyboard, but only by a bar code reader.

# LIST OF FIELD CHARACTERS AND SYMBOLS:

TYPE	CHARACTER	HEXADECIMAL	LCD DISPLAY
LETTER	``	60	_
NUMERIC	~	7E	#
ALPHANUMERIC		7C	_
BARCODE AND	٨	5E	SMALL TRIANGLE
KEYBOARD			Example: No: ^
BARCODE ONLY	@	40	BARCODE DRAWING
TIME	{	7B	TIME
DATE	}	7D	DATE
IDENTIFICATION	[	5B	IDENTIFICATION
PASSWORD	1	5D	PADLOCK

\* IN A "PASSWORD" FIELD, THE BACKSPACE IS DISABLED

### PACKET RECEPTION

You will receive packets through FILE\_PAQ.OK

To receive packets:

If the library contains packets, you will receive: "9999,"+CHR (2) + PACKET + CHR (3)

terminal #

### DESCRIPTION OF PACKET RESPONSE

When the terminal returns a number it read, it returns the character string in the following order:

{STX}	1 character, start of packet [2]
{PACKET NUMBER}	1 character, [30] to [3F] (Reserved for use by Symcod)
{ORIGIN}	1 character M, - or * (- = Barcode and * = Keyboard)
{DATE}	6 characters, example: "123095"
{TIME}	6 characters, example: "102208"
{CMP IDENTIFICATION}	2 characters (Reserved for use by Symcod)
{SCREEN NUMBER}	2 characters, example: "01"
{,FIELD 1, FIELD 2, FIELD 3,}	Example: ",5943,1233,12,"
{CRC}	2 characters (Reserved for use by Symcod)
{ETX}	1 character, end of packet [3]

# KEYS M1 to M5, ESC and ENTER

If one of the keys M1 to M5 is pressed and it contains a value greater than 25, only FIELD1 will be returned; it will contain the ASCII character corresponding to Mx. {ORIGIN} Contains "M" for Message response.

{ORIGIN} will contain - (ASCII 45d) if the data is entered via the BARCODE reader and \* (ASCII 42d) if it comes from the keyboard.

### **MESSAGE RECEPTION**

You will receive messages through FILE\_MSG.OK

Description of message 01, established connection with a terminal: "9999,01-CONNECT" + CHR(3)

terminal #

Description of message 02, closed connection with a terminal: "9999,02-CLOSE" + CHR(3)

terminal #

Description of message 03, communication error with a terminal: "9999,03-ERR[999]: Error description" + CHR(3)

terminal #

# of error message

Receiving a 03 message means communication with the terminal is cut off. When communication is reestablished, a 01 message will be sent to you.

Description of message 05, command to a invalid terminal number: "9999, 05-NOT\_FOUND"+ CHR(3)

terminal #

Description of message 06, terminal's status: "0000, 06-9999=9,9999=9,9999=9, ..." + CHR(3)

You can ignore the terminal number in this message; it will always be 0000 9999 = Terminal number

9 = Terminal status (0=No communication, 1=Communication establish)

Description of message 07, rename terminal number: "0000,07-RENAME,9999,9999,99-MESSAGE" + CHR(3)

You can ignore the terminal number in this message; it will always be 0000

9999 = Old number 9999 = New number 99-MESSAGE = 01-OK the number is rename 02-9999 EXIST The new number exist 03-9999 NOT EXIST The old number, not exist

### **CABLING**



#### Light pen port, DB9 Male "WAND"

- 1 Bar code input #2 (Wand Emulation) \*available on LBC V4 only
- 2 Bar code input #1 (Wand Emulation by default or RS-232 on demand)
- 4 Output power (+5 VDC)
- 5 Common (Ground)
- 9 Output power (+5 VDC)
- 7 Common (Ground)

#### DB9 Female "IN/OUT"

- 1 TTL 1 output (0 ou 5 VDC 20 mA)
- 2 TTL 2 output (0 ou 5 VDC 20 mA)
- 3 TTL 3 output (0 ou 5 VDC 20 mA)
- 4 TTL 4 output (0 ou 5 VDC 20 mA)
- 5 Common (Ground)
- 6 Common (Ground)
- 7 External Buzzer (0 or 12 VDC 50 mA)
- 8 TTL #1 input (0 to 5 VDC)
- 9 TTL #2 input (0 to 5 VDC)

#### POWER

8 to 18 VCD 650 mA maximum Center positive



The LBC-02/IP communicate through an Ethernet 10 BASET network (figure 8). The connector is a standard type RJ-45 connector. The connector as 2 LED's, the green one showing the active link with the network and the yellow one that shows the activity. The LBC-02/IP can be powered by an individual power supply, a single or 16 ports DC-Injector (use only SYMCOD DC-Injector). As all the standard 10BaseT Ethernet devices, it uses a UTP CAT5 cable. A maximum length of 300 feet (91.44 meters) is allowed between the HUB or the SWITCH and LBC-02/IP. For more information on cabling issue, please download «Ethernet wiring and recommendations TCPIP» available free of charge on our website at WWW.SYMCOD.COM.

### Your cards must respect the following example:

#### READING ZONE OF LB-02 YOUR BARCODE MUST FILL THE RED AREA



### SYMBOL DEFINITIONS

	ASCII format (000 to 255)	
[]	Hexadecimal format (00 to FF)	
()	Decimal format	
{STX}	[02] (2)	
{ETX}	[03] (3)	
{H1}{H2}{M1}{M2}{(S1}{S2}	[30] to [39] = ASCII	
{CHARACTER STRING}	Character of the ASCII table	
	example: ABC = [41][42][43]	
{CODE}	[00] to [64]	
{TIME}	Example 10:23:12 -> [31][30][32][33][31][32]	