OPERATOR'S MANUAL
MODEL LS100-2E

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All requests for repairs should be directed to the factory .

This instrument is warranted against defective workmanship and materials for a period of six months. There will be no warranty when the instrument is misused, or when the factory seal on the instrument is broken.

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Specification and price change privileges are reserved.

SECTION 1

INTRODUCTION

Micro Seven, Inc. model LS100-2E contains both dtmf-Alarm-Receiver Simulator and PBX simulator/telephone-line simulator functions. The Alarm-Receiver Simulator function provides simulated telephone-line and alarm receiver for bench-testing alarm panels for dtmf-based protocol including the Ademco® (registered trade mark by ADEMCO Group, a division of Pittway) Contact ID Protocol. The simulated telephone-line functions include generation of dual-frequency-type dial and ring-back tones, detection of DTMF and rotary-pulse dialing pulses, and battery-feed function. The LS100-2E provide functions of generation of handshake tones and kiss-off tones, receiving alarm messages, check-sum calculation, and transmitting alarm messages in ASCII format at RS232C interface to a PC. Selections of handshake tones, kiss-off tones, alarm message length, enabling/disabling checksum, kiss-off tone hold, enabling 2-way audio by listen-in command, handshake tone length are provided with Windows-based control software. LS100-2E provides testing of alarm panels for many types of dtmf-based alarm message formats including popular Ademco Contact-ID.

Telephone-line simulator function simulates two dial-up telephone lines for testing and demonstrating telecommunication equipment. When a correct telephone number is dialed at line 2, ring signal is produced at line 1. When the call is answered at other line, bi-directional signal paths are established between two lines. The telephone-line simulator features are very similar to ones in LS100-2A. Many features include 30HZ square-wave ring signal, dual frequency and single frequency call progress tones, switching extra 20 dB signal attenuation on/off, primary and secondary telephone numbers, stutter dial tone, PBX mode, hot-line mode, distinctive ring, network delay, and disconnect signal.

SECTION 2

SPECIFICATIONS

<u>**Specifications for alarm receiver function:**</u>

Dialing into alarm receiver: It accepts any numbers of any DTMF digit, but the maximum pause time between digits should be less than one seconds. The maximum dialing digit is sixteen. Dialed numbers are shown in the LCD display.

Alarm message detection signal power:
-13 dBm to +5 dBm per a frequency with maximum 4 dB different between frequencies at the RJ11-C connector

Alarm message DTMF signal on time (Burst ON time): 50 ms minimum
Alarm message DTMF signal off time (Burst OFF time): 50 ms minimum 400 ms maximum
Note: Contact ID protocol requires Burst ON and OFF times to be 50 ms minimum and 60 ms maximum.

Handshake tones:
1400: 1400+/- 1Hz, -20 dBm nominal power, -30 dBm power in the line impairment mode, duration of 100 ms +/- 1.5 ms, -14 dBm maximum
2300Hz: 2300+/-2 Hz, -20 dBm nominal power, -30 dBm power in the line impairment mode, duration of 100 ms +/- 1.5 ms, -14 dBm maximum

Kiss-off tones:
1400 +/- 1 Hz –20 dBm nominal power, -30 dBm power in the line impairment mode with duration of 750 ms, -14 dBm maximum

Alarm receiver software: Window-based software is provided with LS100-2E for further decoding alarm messages with date/time information. Also, all received alarm messages are stored in a disk file as continuous file. The software may be able to transmit emails into Internet when alarm messages are received at PC. All communications via PC are done at RS232 interface.

2-way audio and listen-in command: If the listen-in command with alarm event code of 606 is received by LS100-2E, no subsequent alarm messages are received. Ring signal is generated at other line in LS100-2E. Ring-back tone is generated at the alarm panel. When the call is answered at the line, voice paths are established between the other line and alarm panel in 2-way audio path. The hang-up timer is disabled.

Reference: Digital Communication Standard-SIA DC-05-1999.09, Ademco Contact ID Protocol for Alarm System Communications

Limitation of decoded information for each event: The maximum sixteen characters for each event code is displayed on the LCD display in LS100-2E, i.e. "101 Personal EM" or "102 Fail-to-report" is only displayed on the LCD display because of limited display area. Consult Micro Seven for programming your own display. Decoded messages for the Contact-ID alarm code may be edited by using Notepad editor, and they may be downloaded to LS100-2E for your own custom display.

Alarm message storage in EEROM in LS100-2E: Hundred received alarm messages and real-clock data are stored in EEROM in LS100-2E for later uploading to PC.

Real-time clock: date and time data is stored in a history file with received alarm messages.

Alarm control register 1 with EEROM address AE: input command "MAE00" for factory default and setting for Contact-ID
 bit 7: internal usage
 bit 6: single frequency 2300Hz handshake tone
 bit 5: generation of kiss-off without checking checksum
 bit 4: single frequency 1400Hz handshake tone
 bit 3: kiss-off tone hold until PC response
 bit 2: 1:kiss-off tone with 2300Hz, 0: kiss-off tone with 1400Hz
 bit 1: internal usage

Alarm message length register with EEROM address FD: hexadecimal 10 for Contact-ID for decimal 16, input command "MFD10" at RS232 interface using Hyper-terminal.

Alarm control register 2 with EEROM address FA: bit 0: 1:alarm receiver for line 1, 0: telephone line simulator for line 1, bit 1: 1: alarm receiver for line 2, 0: telephone line simulator for line 2. Input command "MFA00" for setting line 1 and line 2 for 2-line telephone line simulator, input command "MFA01" for setting line 1 for alarm receiver and line 2 for telephone line simulator for 2-way audio and the listen-in command.

PBX mode is not available for alarm receiver mode.

RS232 interface, 1200 baud, eight bit data, no parity, and one stop bit format for outputting received alarm messages in real time and uploading received alarm history file to PC.

RS232C Interface:
Speed: 1200 baud, with one stop bit, no parity bit
The interface signals: Receive Data, Transmit Data, Data Set Ready, Clear-to-send, and ground. The Data Terminal Ready signal is forced high at LS15-E meaning that a PC is always ready to receive data from LS15-E.
Connector: special modular connector on LS15-E the rear panel
Special cable and special connector-9-pin (F)-D-sub at a PC
Received alarm messages are computed for the checksum, and they are transmitted to PC for each character. PC transmitted back hex D (carriage return) to LS15E to signal reception of data. Alarm history file may be uploaded to PC under software "2ER.EXE".

Specifications as telephone line simulators:

The selection between PBX simulator/telephone-line simulator and alarm receiver may be made by using the control software that is provided. The PBX simulator/telephone-line simulator function is for testing and demonstrating of telecommunication equipment in engineering, manufacturing, and fields. It contains dual frequency call progress tones, 30Hz square wave ring signal, short or programmable telephone number, stutter dial tone, and distinctive ring signals. It also contains a pseudo line-impairment mode with 20 dB insertion losses and random noise. The LS100-2E is also equipped with a forced-disconnect feature where disconnect signals are sent to calling and called lines. Programmable network response delay simulates time delay after completion of dialing. Simulated PBX mode returns dial tone after dialing 9. The

secondary call progress tone generates a single-frequency tone instead of dual-frequency call progress tone. The programmable disconnect signal changes duration of the disconnect-signal.

LCD display of 2-line of sixteen characters:
Display on-hook, off-hook status, dialing indicator, dialed telephone number, call-progress tone indication (dial-tone, ring-back tone, and busy tone)
Note: Wrong telephone numbers that are dialed are not displayed.

Loop start and dialing as telephone line simulator:
1. Primary telephone number method: 1 for line 1 and 2 for line 2, when the primary telephone number method is selected, the secondary telephone number method is disabled.
2. Secondary telephone number method, independent number for line 1 and 2 and also primary telephone method is enabled.
Dialing signal power: -13dBm to +5dBm per a frequency with maximum 4dB difference between frequencies.
DTMF dialing detection time: 45 ms
Pulse dialing: Break period: 45 to 75 ms (60 ms nominal), make period: 30 to 60 ms (40 ms nominal)

Warning: pulse dialing in the secondary telephone number method may not function in telephone line simulator mode.

Note: selection between primary and secondary telephone number is done by dialing process or using by control software.

20 dB signal insertion loss:
When a number of 00 and line-number is dialed, signal insertion losses between lines is 20dB.

Ideal line condition mode:

When a number of 09 and a line number are dialed, the insertion loss between lines becomes only 1 dB. This is the factory default condition

Ring signal: 30Hz-square Wave, 100V RMS

Distinctive ring signal features:
The following distinctive ringing pattern is enabled instead of standard 2 sec on/ 4 sec off ringing pattern:
(a). Dialing 0 * 1 + (line number): 2 sec on/ 4 sec off   (default condition)
(b). Dialing 0 * 2 + (line number): 0.8 sec on, 0.4 sec off, 0.8 sec on, 4 sec off
(c). Dialing 0 * 3 + (line number): 0.4 sec on, 0.2 sec off, 0.4 sec on, 0.2 sec off, 0.8 sec on, 4 sec off
(d). Dialing 0 * 4 + (line number): 0.3 sec on, 0.2 sec off, 1 sec on, 0.2 sec off, 0.3 sec on, 4 sec off

Hot line mode, which may be entered by dialing 06. Turn off the power to exit the hot line mode.

Common specifications for telephone line simulators and alarm receivers:

LCD display of 2-line of sixteen characters:
display on-hook, off-hook status, dialing indicator, dialed telephone number, call-progress tone indication (dial-tone, ring-back tone, and busy tone)
Note: all dialed telephone numbers that are dialed are displayed.

Transmit Power Adjustment: A potentiometer for each line, accessible through a rear panel, provides a control range of 0 to -40 dB(maximum at full clockwise).
Battery-feed voltage (loop voltage) and loop current: -20 volts and 25 mA

Off-hook impedance requirement: 400 ohms maximum DC, 600 ohms nominal AC
(same as the telephone line simulator function)

Call Progress Tones: (same as the telephone line simulator function)
Dual-frequency call progress tones, nominal -16 dBm.
Dial Tone: 350 Hz + 440 Hz, continuous unless programmed for stutter dial tone
Ring-back Tone: 440 Hz + 480 Hz, 2 sec ON/4 sec OFF.
Busy Tone: 480 Hz + 620 Hz, 0.5 sec ON/0.5 sec OFF.

Single frequency Call Progress Tones: 480 Hz
The selection between dual frequency call frequency and single frequency type is done by control software.

Stutter dial tone: The stutter dial tone with three of 0.1 seconds on/off period following with continuous dial tone.

The factory default conditions are as follows:
 -alarm receiver at line 1 and telephone line simulator at line 2
 -primary (short) dialing method (single digit).
 -Ideal line condition mode.
 -Continuous dial tone, not stutter dial tone.
 -Secondary telephone number is set for1234567890 for line 1 and 2345678901 for line 2
 -No network response delay
 -Disconnect signal of 320 ms
 -Secondary call progress tone instead of dual frequency call progress tones

Simulated PBX Mode:
The simulated PBX mode where dial tone returns after dialing 9:
Line characteristics: (same as the telephone line simulator function)
Input impedance at 1 k Hz: 600 ohms +/- 5%
Accuracy in frequency component: +/- 1%.

Line Input Jacks: USOC-RJ11-C, standard modular phone jack (same as the telephone line simulator function) located on rear panel

Programmable disconnect-signal, network response delay:
The programmable disconnect signal is interruption of loop current at the end of call when one line hangs up. The network response delay is inserted between completion of dialing and ring signal.

Power Switch: on rear panel

Calibration: not required because digitally synthesized tones

Transmit Power Adjustment: A potentiometer for each line, accessible through a rear panel provides a control range of 0 to -40 dB(maximum at full clockwise).

Power Requirements:
100-130 VAC, 50/60 Hz, 18 watts maximum

Fuse: fuse holder is located at rear panel: 0.15A, 3AG, SLO-BLO for 117VAC, 0.1A, 3AG, SLO-BLO for 230VAC

Dimensions:
8.35 in (21.2 cm) Wide x 2.5 in (6.35 cm) High x 7.25 in (18.4 cm) Long.

Line Status Display: red LED for each line to indicate off-hook status (continuous on) or ringing status (blinking) on rear panel

Power On Indicator: green LED display on front panel.

Weight: 3.5 lbs. (1.6 kg.)

Environmental: Operating temperature: 0 to 35 degree C, Humidity: 85% RH at 35 degree C

Warranty/Service: 6 months limited warranty. No warranty if any factory seal is broken. Service is performed at the factory, usually within 5 working days.

Options: 1. 230V power

Accessories: 9pin/25pin RS232 cable and CD disk for manual and software

SECTION 3

OPERATION

Warning: To preclude the possibility of electrical shock, do not remove the instrument cover.

3.1 Operating Voltage

This instrument will operate only from a 100-130 volt, 50/60 Hz AC source unless 230V power option is equipped. Refer to the Specification for additional details regarding power.

3.2 Safety Information

This instrument operates from a single-phase power source with one of the current-carrying conductors (the neutral conductor) at ground (earth) potential. Operation from power sources where both current-carrying conductors are live with respect to ground (such as phase-to-phase on a 3-wire system) is not recommended, since only the line conductor has over-current (fuse) protection within the instrument.

These instruments use a 3-wire cord with a 3-terminal polarized plug for connection to the power source and safety earth; the LS100 power cord is fixed to the instrument, while the LS200 power cord is detachable. In either case, the ground terminal is directly connected to the metal parts of the instrument. For electrical shock protection, insert this plug only into a mating outlet with a safety earth contact.

3.3 Controls, Indicators, and Connectors

The user should become familiar with all controls, indicators, and connectors before turning the instrument power on. The LS100 front panel contains only the POWER ON indicator, which should light when the instrument is connected to the proper power source and the rear panel POWER switch is in the ON position.

LS100 rear panel contains the following:

1. POWER ON/OFF: Rocker switch turns instrument power on or off
2. Power Input Cord: AC power is supplied through this cord.
3. Fuse: Use correct fuse as specified. Warning: for continued fire protection, replace fuse only with same type and rating.
4. LINE 1 TRANS ADJ: Screwdriver adjustment to lower transmit power output from LINE 1.
5. LINE 1 OH/BUSY Indicator: LED to indicate "Off Hook" status, blinking for ringing
6. J1 (TO DAA): Line 1 input jack for connection to modems/Data Access Arangements
7. LINE 2 TRANS ADJ: Same as 4 except for Line 2
8. LINE 2 OH/BUSY Indicator: Same as 5 except for Line 2
9. J2 (TO DAA): Line 2 input jack for connection to modems/DAAs
A. LINE3 TRANS ADJ: Same as 4 except for Line 3
B. Line 3 OH/BUSY Indicator: Same as 5 except for Line 3
C. J3 (TO DAA): Line 3 input jack for connection to modems/DAAs

D. LINE 4 TRANS ADJ: Same 4 except for Line 4

E. Line 4 OH/BUSY Indicator: Same as 5 except for Line 4

F. J4 (TO DAA): Line 4 input jack for connection to modems/DAAs.

3.4 First-Time set up (initialization) and software description

Copy all files in the provided CD into a newly created file directory in your PC, "LS1002E".

Go to "Control Panel", and "Device Manager" and "Ports" to find out what is setting of your RS232 communication port. It is usually "COM1:", or any number between 1 and 9. Make a note as "MyCommport".

From the Windows, go to the created directory "LS1002E", and double-cliick "2et".

The numerical number in the "RS232 COMMPORT NUMBER" in your PC display differs from "MyCommport", enter your "MyCommport" in the edit window provided.

The "DISPLAY AREA" is for displaying transmit data output including received alarm messages, status word from LS100-2E operations, and terminal data output from memory read command from LS100-2E. The "mini-terminal" mode is available by moving cursor to the smaller window in the 'DISPLAY AREA" for typing keyboard strokes. If you points the cursor in the smaller window and type "QFF", you would receive two ASCII characters in hexadecimal notation for the content of EEROM addressed "FF".

The "LINE IMPAIRMENT CONDITIONS" is for selecting signal insertion losses between line1 and line2. The factory default condition is the "Ideal line condition". "20 dB signal insertion loss" mode is to attenuate signals.

The "TELEPHONE NUMBER IN TELEPHONE LINE SIMULATOR MODE" is for telephone line simulator mode. When secondary telephone number method is selected, the shown telephone number and primary telephone number are accepted in telephone line simulator mode. Enter "E" after newly entered secondary telephone number to end telephone number entry.

The "PROGRAMMED DATA" section is to upload (saving) or download (loading) programmed conditions and parameters set in a disk file that you specify in the edit window for each loading and saving. Saving and loading operation takes about 60 seconds. The factory default file "DEF2E" is provided to load the factory default condition.

The "MISC TEL FUNCTIONS" contains programming of basic telephone functions including "PBX MODE", "STUTTER TONES", "SINGLE FREQUENCY CALL PROGRESS TONES" , "DISCONNECT SIGNAL", and "NETWORK DELAY". Enter a new number among 0 and 255 in the edit window provided for value changes for , "DISCONNECT SIGNAL", and "NETWORK DELAY".

Exit "2ET.EXE., and reenter it again.

If the comport setting of the previous "2ET.EXE" initialization is correct, you should not see "?" in the "DISPLAY" area. Otherwise, make sure that it is the same as "MyCommport".

Then double-click "2ER".
Then you should see a different screen display, which is also shown in the next page.

The section "TELEPHONE LINE SIMULATOR OR ALARM RECEIVER" for line1 and line2 shows the current setting. The factory default condition is alarm receiver for line 1 and telephone line simulator for line 2.

"SEND ALARM CODE TO LS100-2E" is to download a file called "alarmcode.txt", which is used for decoding Contact-ID alarm messages. The file defines description for each alarm code. A new file of your own may be created to display descriptions of alarm code, and it may be able to replace the factory alarm code to display new descriptions of alarm codes.

"CHECK DOWNLOADED ALARM CODE" compares previously downloaded "alarmcode.txt" in EEROM in LS100-2E against the file "alarmcode.txt" in your PC directory. The status message is displayed in the "STATUS DISPLAY AREA".

Each alarm message and real-time data are stored in flash memory in LS100-2E for later PC upload. "CLEAR ALARM MESSAGES" clears saved alarm messages in flash memory in LS100-2E.

"TRANSFER FLASH MEMORY TO PC FILE" uploads saved alarm messages in LS100-2E to a file "alarmhistory.txt" in PC.

"REAL-TIME CLOCK PROGRAMMING" shows the current date and time information when the software "2ER.EXE" is entered. Date and time may be updated by entering new value.

The "INITIALIZE" is to initialize the real-time clock chip in LS100-2E.

"MESSAGE DECODED MODE IN LS1002E DISPLAY" decodes received alarm messages.

"ALARM MESSAGE LENGTH" should show "16", which is for Ademco Contact-ID format. Different alarm message length may be entered. Because of internal data memory limitation, the maximum alarm message length is 24.

The standard handshake tone for Ademco Contact-ID is 1400Hz on for 100ms, silence for 100 ms, and 2300Hz on for 100 ms. Each 100 ms timing may be changed by entering a new value (new value +1) in the edit window provided. The factory default shows 11, which produces 100 ms. A single tone handshake tone for either 1400 Hz or 2300 Hz may be produced instead of 1400Hz+2300Hz handshake tone.

The "CHECKSUM" section of the screen selects "NORMAL CHECKSUM" or "NO CHECKSUM TESTING". "NORMAL CHECKSUM" mode conducts checksum testing for each received alarm message, and it generates or does not generate depending on the test result. "NO CHECKSUM TESTING" mode does not conduct checksum testing for each received alarm message.

"KISSOFF TONE" section selects the "STANDARD 1400 Hz" or "2300Hz" tone for kiss-off tone.

"KISSOFF HOLD" enables or disables the kiss-off tone hold operation, which does not generate kiss-off tone until LS100-2E receives ASCII "a" from PC within 1.25 seconds.

"HANDSHAKE TONE AMPLITUDE" selects handshake signal in different audio power.
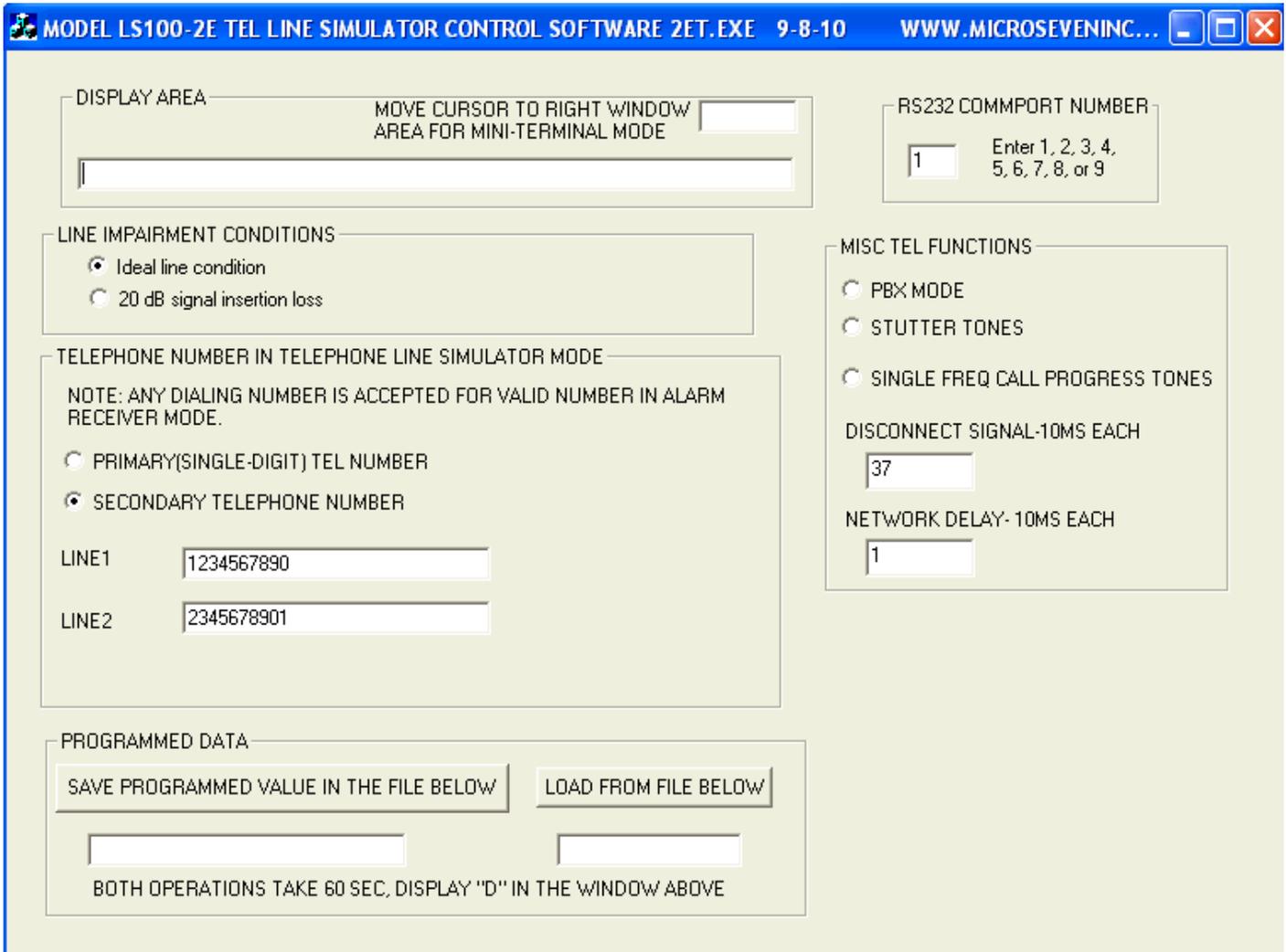
Exit the software "2ER.EXE".

Figure 1. Screen display of 2ET.EXE

LS100-2E ALARM RECEIVER PROGRAMMING SOFTWARE 2ER.EXE 9-8-10   WWW.MICROSEVENINC.COM

CAUTION: LS100-2E NORMAL OPERATION IS DISABLED
WHEN THIS PROGRAM IS BEING EXECUTED.

SEND ALARM CODE TO LS100-2E-TAKES 10 SEC

CHECK DOWNLOADED ALARM CODE-TAKES 60 SEC

CLEAR ALARM FLASH MEMORY IN LS100-2E

TRANSFER FROM FLASH MEMORY TO PC FILE

REAL-TIME CLOCK PROGRAMMING

MONTH   DAY   24HOUR   MINUTE   SECOND

09   04   08   29   30

INITIALIZE CHIP

STATUS DISPLAY AREA

◉ MESSAGE DECODING MODE FOR LS100-2E DISPLAY

ALARM MESSAGE LENGTH
<=24 IN DECIMAL NUMBER

16

HANDSHAKE TONE
LENGTH-0-99, 10M
EACH, DEFAULT 1'

11

HANDSHAKE SIGNAL
◉ STANDARD 1400HZ + 2300HZ
○ 2300HZ   ○ 1400HZ

CHECKSUM
◉ NORMAL CHECKSUM
○ NO CHECKSUM TESTING

KISS-OFF TONE
◉ 1400HZ STANDARD
○ 2300HZ

KISS-OFF HOLD
◉ NORMAL KISSOFF GENERATION
○ KISS-OFF TONE HOLD

TELEPHONE LINE SIMULATOR OR ALARM RECEIVER
◉ LINE1 AS ALARM RECEIVER
○ LINE2 AS ALARM RECEIVER

HANDSHAKE TONE AMPLITUDE
○ -6DB   ○ 0 dB   ◉ +6DB

Figure 2: Screen display of 2ER.EXE

3.5 Operation of alarm-receivers

Traditionally, when alarm panels are tested in the manufacturing, an alarm receiver with telephone lines is required. The Micro Seven model LS100-2E provides both simulated telephone lines and alarm receiver in a box so that your alarm panels are connected directly to LS100-2E. The line 1 and 2 of LS100-2E are designated as an alarm receiver and telephone line simulator respectively.

Connect your alarm panel to the RJ11 connector at line 1 of LS100-2E with a regular telephone cable. The connection of serial interface cable between LS100-2E and PC is optional. If it is connected and the software is executed, further decoded alarm messages are displayed on PC screen. Even emails may be generated automatically.

Create an event at your alarm panel to report alarm condition. When your alarm panel goes off-hook, "OFF-HOOK SIGNAL" and "DIAL-TONE ON" are displayed on LCD displayed on LS100-2E.

Note: actual display area is 1"(2.5cm)x2.75"(7 cm).

OFF-HOOK SIGNAL
DIAL-TONE ON

When the alarm panel is dialing a telephone number such as a toll-free 1800-555-1212 for your alarm panel, "DIALING" and "18005551212" is shown on the LCD display. LS100-2E accepts any telephone number for alarm receiver function unlike correct telephone numbers are required to be dialed at a line when the line is programmed as a telephone line simulator not as an alarm receiver. Since the alarm receiver is internal, there is no ring signal generated.

DIALING
18005551212

LS100-2E waits one second at the end of dialing process. Then it generates ring-back tone at the line displaying "RING-BACK TONE" on the LCD display. There are two ring-back tone periods.

RING-BACK TONE

Then LS100-2E generates the handshake tones with 1400 and 2300 Hz displaying "HANDSHAKE TONES" on the LCD display.

RING-BACK TONE
HANDSHAKE TONES

Then your alarm panel transmits sixteen-digit digital alarm message to LS100-2E.

There are two displaying modes. One mode displays raw sixteen-digit alarm messages on the LCD display. The other mode displays decoded alarm messages including alarm code, description of alarm code, account number, new/restaural/status, zone, and partition number.

The raw message mode displays "KISS OFF/MESS.RECV" and "567818111012223" on LCD display. If it is the decode message mode, the display is "110 Fire Alarm" and "A:5678 New/Open". Where 5678 is account number and the "New/Open" is the type of message. The display may also be either "Rest/Clos" for 3=New Restore or Closing/or " or Status Rp" for 6=previously-reported condition still present (Status report).

KISS OFF/MESS.RECV
5678181110122223

or

110 Fire Alarm
A:5678 New/Open

The bottom portion of the display is then changed to : "P:12 ZON/USR:222" which indicates the partition=12 and the zone=222. The bottom portion of the display changes for every second between the account number with type of message and partition with zone numbers. The decoded messages of event codes that are stored in EEPROM inside LS100-2E may be edit by any text editor, and the changes may be downloaded to LS100-2E by special software. Twelve maximum characters for each event code is displayed at 16x2 LCD module.

110 Fire Alarm
P:12 ZON/USR:222

Maximum twelve characters are only displayed on the above LCD display for a decoded event code.

If there was no alarm message received and LS100-2E goes on hook, it display "ON-HOOK" shown as below.

If the checksum in the alarm message is wrong, the "BAD MESSAGE" is shown as below with the received message.

SECTION4

SPECIAL FEATURES

4.1 Listen-in mode

This mode requires line 1 as an alarm receiver and line 2 as a telephone line simulator. When LS100-2E receives an alarm message with alarm code "606-listen-in feature" at line 1, the hang-up timer is disabled to keep telephone line open, and ring signal is produced at line 2. When the call at line 2 is answered, voice path is established between line1 and line 2. When both lines hang up the call, the hang-up timer is restored. And line 1 and line 2 are returned to their on-hook conditions.

SECTION5

Alarm Receiver Software

The alarm receiver software, LS15ES0.EXE, is Windows-type. The software "2ET.ESE" needs to be installed with your RS232 port set up. Using a text editor to change communication port number in a file "commport" if it is different.
Execute LS15ES0.EXE. The screen displays liability question, and enter 'y' if you agree with it. Exit the program and reenter the program. If everything is set up correctly, screen should say 'ready'. A text file, "al" is created by the alarm receiver software

Example of PC display and data stored in a file, "al".
Alarm message number: 12354
Fri Mar 23 10:47:10 2007
Alarm message: 1234181131010158
Acount number: 1234
Event qualifier: New Event
Event code: 131 Perimeter-Burglar Alarm
User/Zone Number: Zone 015
Partition number: 01

Date and time and consecutive alarm message number, and stores decoded messages are stored in a text file.

Note that the file "commport" contains communication port number as "COM1". If you have not installed the software "2ER.EXE" or if your RS232 port is different from the content of "comport" file, use your text editor to change the content. The default "comport" file contains "COM1:".

The file "al" contains all decoded messages. When an alarm message is received, the software opens the file "al" and stores the message and closes the file.

SECTION6

"CENTRAL" SOFTWARE

The software "central.exe" is provided at no charge.

6.1 Communication port selection

The provided software on the disk assumes that your serial communication port is set as communication port 1. If it is different, please use a text editor such as Notepad to change the default "COM1:" to "COMx:" that is contained in a file "commport".

6.2 software description

"central.exe" displays subscriber's profile information and email transmission features. It also includes display scrolling and it displays typical subscriber's profile information, which is stored in a disk file under each 4-digit account number, that may be consisted of subscriber's street address, phone number, fax number, name, and other pertinent information.

The typical PC display is as shown below:

Caution: actual email message that is delivered s different from PC display.

Alarm message number: 12345
Mon Apr 27 11:16:02 2009
Alarm message: 1234181131010158
Acount number: 1234
  Abc corporation 1234 NE Broadway
  Anycity, Anystate
  Zip code
  Phone number 555-555-5555
  Fax: 555-555-5555
  Email address:
  Name John Smith
Event qualifier: New Event
Event code: 131 Perimeter-Burglar Alarm
User/Zone Number: Zone 015
Partition number: 01

When PC receives digital alarm messages, consecutive alarm message number, date/time, alarm message, account number with subscriber information, event qualifier, decoded event code, zone and partition number are displayed on screen. All displayed information is stored in a text file "al" in disk. Then displayed data is emailed to the primary email address and subscriber's email address automatically assuming that Internet is connected to the PC.

6.3 Building files for customer profile information and email addresses

1. In "**program**" directory, edit **servername.txt** by using Notepad editor or other text editor to enter your local SMTP server, i.e. smtp.microseveninc.com. Do not enter carriage

return at the end. If you don't have a local SMTP server or SMTP email account, we can provide you your own email account with low email volume for small monthly fee.

2. In "**program**" directory, edit **username.txt** by using Notepad editor or other text editor to enter your username to your local SMTP server, i.e. alarmtesting1@microseveninc.com Do not enter carriage return at the end.

3. In "**program**" directory, edit **password.txt** by using Notepad editor or other text editor to enter your password to your local SMTP server. Do not enter carriage return at the end.

4. In "**program**" directory, edit **subject.txt** by using Notepad editor or other text editor to enter subject field in your email, i.e. "CT10-Reporting alarm condition". Do not enter carriage return at the end.

5. In "**program**" directory, edit **sender.txt** by using Notepad editor or other text editor to enter name of sender and email address in your email, Do not enter carriage return at the end. i.e. "John Kicker< sales@microseveninc.com>"

6. In "**program**" directory, edit **fromaddress.txt** by using Notepad editor or other text editor to enter name of your email address, i.e. " sales@microseveninc.com". Do not enter carriage return at the end.

7. In "**program**" directory, edit **toaddress.txt** by using Notepad editor or other text editor to enter the primary email address which is the first email address that an alarm message is sent to. Leave it blank if there is no primary email address. Do not enter carriage return at the end.

8. Each subscriber's email address is contained under each account number in "**custemail**" directory. For example, file "1234" contains an email address of the subscriber's account. Leave it blank if you do not want to send alarm messages to subscriber's email address. Leave it blank if there is no primary email address. Do not enter carriage return at the end.

9. Each subscriber's profile information that may include name, address, and phone number may be included under each account number in "**custemer**" directory. For example, file "1234" may contain name, address and phone number of account holder 1234. The example of profile information is as follows:
Abc corporation
1234 NE Broadway
Anycity, Anystate
Zip code
Phone number555-555-5555
Fax 555-555-5555
Email address
Name John Smith

EMERGENCY CONDITIONS REPORTING

```
┌──────────────┐                    ┌──────────────┐     ┌──────────────┐
│ 2ND REMOTE   │      EMAIL         │ ALARM CENTRAL│RS232│ MICRO SEVEN  │
│ ALARM CENTRAL│                    │ STATION      │     │ ALARM RECEIVER│
│ STATION      │                    │ PC           │     │              │
└──────────────┘     INTERNET       └──────────────┘     └──────────────┘
                                                                 ▲
┌──────────────┐                                                 │  PBX
│ SMART        │                                                 │  OR
│ CELL-PHONE   │     TEXT MESSAGE                                 │  TELEPHONE LINE
│ OR           │     OR                                          │
│ PC           │     EMAIL                            ┌──────────────┐
└──────────────┘                                      │              │
                                                      │ ALARM PANEL  │
                                                      │              │
                                                      └──────────────┘
```