

OPERATOR'S MANUAL  
MODEL AP70  
PC-ALARM PANEL

Micro Seven, Inc.

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## SECTION 1

### INTRODUCTION

Micro Seven Model AP70, PC-Alarm Panel or Alarm-Panel Simulator, transmits Contact-ID, Pulse 4X2 and SIA-FORMAT alarm messages to alarm receivers by starting commands sent at RS232C interface in PC. PC sends ASCII alarm message for Contact-ID and Pulse 4X2 or Hexadecimal messages to AP70. PC also sends telephone number to AP70. After AP70 dials a telephone number for a receiver, the receiver answers the call and transmits the handshake tones. Depending on which protocol mode that is selected, AP70 transmits one of three protocol messages to alarm receiver. AP70 sends status messages back to PC. If the alarm reporting is not successful, AP70 transmits a different status message to PC. Transmission of alarm messages is repeated for three times if AP70 does not receive positive acknowledge tone. The sequence, which involves re-dialing of telephone number, may be repeated for three times. AP70 contains audio monitor internally to hear dialing process, handshake signals, alarm signal transmission, and acknowledge tone/kiss-off tone. AC/DC adapter for 117VAC and interfacing cable between PC and AP20 is provided. International AC/DC power adapter is available as an option. Alarm receiver with FXS and FXO ports, model LS15E+TRIPLE, with all three protocols, Contact-ID, SIA-Format, and Pulse 4X2, is available for your alarm receiver/simulator. AP70 also runs auto-dial sequence for standard 52 line, which dials telephone numbers and transmits multiple alarm messages for each of three different alarm protocols for each telephone number. The PC software is required to start auto dialer, and it continues auto dialer operation without PC.

## SECTION2

### SPECIFICATIONS

**Telephone number entry:** D<telephone number-maximum fifteen digits><CR>  
for example D5035551212<CR> for dialing 5035551212. Note <CR> is a carriage return. It is stored in EEROM (non-volatile memory) in AP20.

**Alarm message entry for Contact-ID or Pulse 4X2:**

S( in maximum 15 ASCII characters for Contact-ID or 6 ASCII characters for Pulse 4X2 or any length of characters for SIA-FORMAT)<CR> for Contact-ID or Pulse 4X2

Note: AP70 prepares checksum at the end of string for Contact-ID and SIA-FORMAT.

**Alarm message entry for SIA-FORMAT:**

Because alarm message for SIA-FORMAT may contain binary data, alarm message may be difficult to be entered into AP70. Instead of entering alarm messages using the “S” character in the beginning of character string, memory write command for storing memory address 0D0H or 0xD0 may be used. The memory address is 0D0h, 0D1H, 0D2H, 0D3H, 0D4H----- . The end of message is indicated by 0FFH. In this method, check-sum byte needs to be entered.

For example, sending an address block data of 06 23 30 30 30 31 31 31 31 DA FF requires the following:

KD006KD123KD230KD330KD430KD531KD631KD731.

Note: The column parity byte is automatically prepared and attached at the end of message by AP70.

Another new entry format is available to enter hexadecimal notation with ‘S’ header as follows:

S(hexadecimal two character ASCII) (hexadecimal two character ASCII)-----.

For example, sending an address block data of 46 23 30 30 30 31 31 31 31 requires the following:

S0623303030313131<CR>

Note: The column-parity byte is automatically prepared and attached at the end of message by AP70.

**Protocol selection:**

W7F00 for selecting Contact-ID, W7F01 for selecting SIA-FORMAT, or W7F02 for selecting Pulse 4X2.

**DTMF dialing signal power:** 0 dBm total for two frequency components, 100 ms on, 100ms off

**Pulse dialing:** Break period: 60 ms, make period: 40 ms, inter-digit wait time: 1 sec

**Alarm message signal power:** -12 dBm (factory default), 0 dBm with Control Register bit 7 on

**Alarm message DTMF tone timing:** burst ON time: 50 ms (factory default), burst OFF time: 50 ms (factory default), programmable by DTMF register

**SIA-FORMAT baud rate of FSK signal:** 110 or 300 selectable by bit 1 of AB register

**Handshake tone and kiss-off tone signal detection:** -26dBm minimum (factory default), -38dBm with x4 gain by Control Register bit 6 off

**Front panel controls:**

Power switch

Power-On Indicator: green LED display

**Rear panel controls:**

DC power input, DC12V, 800 ma

RS232C interface connector, 9-pin D-sub, female

RJ11 connector

**Audio monitor:** monitoring receiving signal (handshake tone and kiss-off tone) and transmitted signal (dialing signal and alarm message), 0.1 watts maximum with internal speaker

**RS232C interface:** 9600 baud nominal (may be changed to 1200 baud by control register 2), no parity, and 8-bit character

There are no RS232C data communication handshakes available for AP70 and PC. The hardware and software handshakes involving with CTS, RTS, XON, and XOFF are not required for AP70 because AP70 does not require any delay between character inputs and AP70 transmits few characters for messages normally. However, if the AP70 Control Register bit 5 is cleared to enable nonvolatile memory operation for storing telephone numbers and alarm messages, minimum 10 ms delay is required between characters inputs for telephone number and alarm message entry.

**Start alarm reporting: G**

Start alarm reporting process by dialing the telephone number, receive handshake tones, transmit alarm messages, receive kiss-off tones and hang up the line if AP70 Control Register is programmed.

A carriage return is not needed.

**Continuous message transmission mode without turning off telephone relay:**

Instead of transmitting single message, multiple messages are transmitted by sending "WACB2".

**Single message transmission mode:**

WACB0

**Hang-up command or Abort command: A**

Turn off off-hook relay in AP70 or abort alarm reporting process. A carriage return is not needed.

**Repeat alarm message command: B**

It transmits alarm message when AP70 is off-hook condition. A carriage return is not needed.

**Reading telephone-number command: T**

AP70 transmits programmed telephone numbers to PC. A carriage return is not needed.

**Reading alarm-message command: U**

AP70 transmits programmed alarm message in sixteen digit-long including check sum to PC. A carriage return is not needed.

## Status messages from AP70 to PC

MESSAGE SUCCESS

MESSAGE FAILED or CALL FAILED

**Telephone interface:** use of mechanical relay, optical-coupler, and telephone coupling transformer to obtain high voltage isolation and high on-hook impedance

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

### **AP70 REGISTERS: Caution: We recommend factory default values for all AP70 registers.**

AP70 registers are written by a command format of "M m1 m2 n1 n2" for EEROM/data memory operation or "W m1 m2 n1 n2" for data memory operations. EEROM/data memory operation saves copy of data memory in EEROM for restoring data memory contents on power-up. The "m1 m2" is address, and "n1 n2" is the data. There is a character "C" is returned to PC after each EEROM operation. The "W m1 m2 n1 n2" operation writes new value in data memory only and not in EEROM. The content of EEROM is not changed.

### **1. DTMF Register**

DTMF Register operation writes new value of on/off timing of DTMF generation of alarm messages.

Each increment is 10 ms, and the factory default condition is 5 for 50ms on and off timing. Ademco specification limits 50ms minimum and 60 ms maximum. The command format is:

MA5 n1 n2 for EEROM/data memory operation

Or

WA5 n1 n2 for data memory operation.

Where n1 and n2 forms increment of 10 ms. For example, MA506 or WA506 selects 60 ms on/off times.

The content of DTMF Register may be done by "RA5", and AP70 outputs "06".

### **2. Tone Detect register**

Tone Detect register contains threshold value for detecting handshake and kiss-off tones for poor line conditions or for long-distance telephone calls.

The threshold value for long-distance telephone line condition when Control Register bit 6 is off is programmable by the following command:

**MA7 n1 n2** for EEROM/data memory operation, and **WA7 n1 n2** for data memory operation, and when smaller hexadecimal value provides lower threshold value and higher sensitivity. The factory default value is 20 hexadecimal value. The content of Tone Detect register may be read by RA7.

### **3. Control Register**

It is written by the following command:

**MAC n1 n2**, where n1 n2 form one byte in hexadecimal notation or **WAC n1 n2**.

Note: "MACB0" programs the factory default conditions.

Status of the control register is performed by entering "RAC", and AP70 generates "B0".

**Bit 7:** "1" selects higher signal power output (0 dBm) for alarm message, and "0" selects lower signal power output (-12 dBm). The factory default is "1".

**Bit 6:** "1" disables input signal amplification (x4) for detecting weak handshake and kiss-off tones, and "0" enables input signal amplification. The factory default is "0".

**Bit 5:** "1" disables storing telephone number in non-volatile memory for telephone number input command, and "0" is for storing telephone number in non-volatile memory. The factory default is "1".

**Bit 4:** AP70 does not detect busy tone and it requires to be "1".

**Bit 3:** "1" selects rotary-pulse dialing, and "0" selects DTMF dialing of telephone numbers. The factory default is "0" for DTMF dialing.

**Bit 2:** "1" disables re-dialing of telephone numbers when "MESSAGE FAILED" is generated. "0" enables re-dialing of telephone number for maximum times. The factory default is "0" for re-dialing telephone numbers when "MESSAGE FAILED" is displayed.

**Bit 1:** "1" keeps telephone line off-hook after successful delivery of alarm messages. "0" enables hanging up the line after successful of alarm messages. The factory default is "0" for hanging up the line.

**Bit 0:** "1" disables re-dialing telephone numbers when message "CALL FAILED" is displayed. "0" enables re-dialing telephone numbers. The factory default is "0" for re-dialing telephone numbers.

#### 4. Redial Register

The number of times that AP70 repeats dialing when there is a "CALL FAILED" or "DIALED # BUSY" message is output to PC is written by the following command:

MA3 n1 n2, where n1 n2 form one byte in hexadecimal notation or WAC n1 n2. The factory default is three times.

#### 5. Message Length Register

The alarm message length for AP70 is normally sixteen digits as defined in SIA DC-05-1999.09, Ademco Contact ID Protocol for Alarm System Communications, but it may be changed for fewer length by the following command:

MF0 n1 n2

For example, "MF010" programs the factory-default condition. The command "MF00F" programs fifteen-digit alarm message.

The Message Length Register is in EEROM.

#### 6. AP70 control register 2 (address location AE, Factory default condition is obtained by MAE05.)

Bit 0 of AP70 control register 2 enables CTS handshake between AP70 and PC. In null condition, CTS is asserted to allow PC to transmit characters. During alarm message

transmission, CTS is de-asserted to stop transmission of characters to AP70. As soon as transmission of alarm message is completed or aborted because of error conditions, CTS is asserted. The factory default condition is CTS-enabled.

Bit 1 of AP70 control register 2 selects baud-rate. When it is cleared, 9600 baud is selected. When it is set, 1200 baud is selected. Factory default is cleared.

**Caution: changing this bit affects baud-rate.**

Bit 2 of AP70 control register 2 enables clearing CTS signal when "MESSAGE SUCCESS" or telephone line is disconnected or AP70 goes on-hook. When the bit 2 is off, CTS signal is cleared when the telephone line is disconnected or AP70 goes on-hook. Factory default is set.

## 7. AB Register

It is written by the following command:

**MAB n1 n2**, where n1 n2 form one byte in hexadecimal notation for writing in EEROM or WAB n1 n2 for writing data memory.

Note: "MAB00" programs the factory default conditions.

Status of the AB register is read by entering "RAB", and AP70 may generate "00".

**Bit 7:** "1" disables audio monitor.

**Bit 6:** The following debug messages are generated after start alarm message command G:

1. p (protocol) m(alarm message) <CR>

The following debug messages are generated after start alarm message command G:

d(telephone number) p (protocol) m(alarm message) <CR>

Example of the Debug message:

After programming telephone number of 18005551212 and contact-ID message of 123418313112345, the following debug message is generated by microAP1:

d18005551212 p00 m123418313112345<CR>

2. When the Control Register bit 1 is set for not hanging up telephone line after the first message is successfully transmitted and next consecutive alarm message is transmitted, The following debug messages are generated after repeat alarm message command, B:  
p (protocol) m(alarm message) <CR>

Example: after programming consecutive message of 234518313112345, the following debug message is generated by microAP1:

p00 m234518313112345<CR>

**Bit 5:** the following status messages are generated at RS232 interface when this bit is set:

S00<CR>: telephone relay is on

S01<CR>: begin to dial

S02<CR>: contact-ID handshake signal is detected

S03<CR>: SIA format handshake signal is detected  
S04<CR>: 4+2 handshake signal is detected  
S05<CR>: transmission of Contact-ID message  
S06<CR>: Sequential synch signal transmission  
S07<CR>: SIA-FORMAT message transmission  
S08<CR>: Pulse 4+2 message transmission  
S0A<CR>: hang up telephone line

**Bit 4:** SIA-FORMAT transmitter continue spacing as a test circuit, must be 0 for normal operation

**Bit 3:** SIA-FORMAT transmitter continue marking as a test circuit, must be 0 for normal operation

**Bit 2:** "1" for SIA-FORMAT FSK baud rate for 110, "0" for 300.

**Bit 1:** continue generating speed synch signal in SIA-FORMAT, must be 0 for normal operation

**Bit 0:** run auto dialer. It is cleared on power-up.

## 8. Speed synch signal register A8

MA8(n1)(n2) for writing EEROM, and each count results 33ms, and the factory default value is 9 and 300ms.

Speed synch signal register determines the speed synch signal period in SIA-FORMAT mode. .  
AP70 control register 2 (address location AE, Factory default condition is obtained by MAE05.)



## SECTION3

### OPERATION

#### 3.1 First-time operation

Connect AC adapter to an appropriate AC power source, and connect power plug to AP70. Push power switch on AP70 front panel. You will see green power indicator turned on. Connect RS232C interface cable between PC and AP70. Connect telephone cord to RJ11 connector on rear-panel of AP70, and connect the other end to an inside line of PBX. In your PC, go to Hyper-terminal with communication set in 9600 baud. Local echoing of input character may be desirable to view key board entries.

#### 3.2 Programming telephone number

If a telephone number for dialing alarm receiver is 9-503-555-1212, input the following:  
D9,5035551212<CR>

Note: "CR" is a return or carriage return on PC-key board. And a comma, ",", provides 2.5 second delay that may be necessary to reach outside line in PBX equipment after dialing "9".

To verify the above telephone number entry, enter the following:

T

Then AP70 outputs 9,5035551212.

You will also see the front-panel LED, "DATACOMM" is turned on momentarily when each character is output to AP70. Telephone numbers are stored in EEROM (non-volatile memory) and data memory when Control Register bit 5 is off as a factory default condition.

When Control Register bit 5 is on, programmed telephone numbers and alarm messages are stored only in data memory and not in EEROM. And verification of telephone numbers is done by the same command "T".

Note: During power-on initialization of AP70, data in EEROM is brought to data memory.

#### 3.3 Programming alarm message for Contact-ID

Select alarm message mode for Contact-ID by the following command:

W7F00

If an alarm message is sixteen digit-long, 123418113101015 and a checksum, input the following:

S123418113101015<CR>

Note: "CR" is a return or carriage return on PC-key board. Do not enter a checksum. AP70 prepares check sum by itself.

To verify alarm message entry, input the following:

U

Then AP70 outputs 1234181131010158. Note: 8 at the end is a check sum that AP70 has produced.

If sixteen character alarm command is entered, i.e., S1234181131010158<CR>, AP70 prepares a wrong checksum for an alarm message. Generating wrong checksum may be useful in testing AP70 for repeating generation of alarm message for four times.

Alarm messages are stored in EEROM (non-volatile memory) and data memory when Control Register bit 5 is off as a factory default condition.

When Control Register bit 5 is on, telephone numbers and alarm messages are stored only in data memory and not in EEROM. And verification of alarm message is done by the same command "U".

Note: During power-on initialization of AP70, data in EEROM is brought to data memory.

### **3.4 Start alarm message transmission**

To start sending alarm message, input the following:

G

You will hear a relay is turned on, front-panel LED is turned on, and dialing telephone numbers in DTMF tones. If the dialed number is alarm receiver, handshake tones with 1400 Hz and 2300 Hz is heard. Then AP70 transmits alarm message very quickly. After AP70 completes transmission of alarm message, the alarm receiver transmits kiss-off tone (1400Hz) for short period. After the end of kiss-off tone, AP70 hangs up the line. The front-panel LED is turned off.

The following message is output to PC:  
MESSAGE SUCCESS

### **3.5 Testing no loop current, no dial tone, or dialing wrong number for an alarm receiver**

When there is no loop current, no dial tone received or dialing wrong number, the following message is output:

CALL FAILED

When re-dialing is enabled with Control Register bit 2 off, AP70 tries three times as a factory-default condition.

### **3.6 Poor telephone line or long-distance telephone calls**

Under poor telephone line or long-distance calls, the following sequence may be necessary:

#### **3.6.1 Adjustment of DTMF signal power for alarm messages**

Signal power of alarm message is increased from normal -12 dBm to 0 dBm when the Control Register bit 7 is on. The factory default condition is -12 dBm for signal power with the Control Register bit 7 off.

#### **3.6.2 Sensitivity adjustment for detecting handshake and kiss-off tone**

When handshake and kiss-off tones are difficult for AP70 to recognize because of poor telephone line condition or long-distance call, tone input is amplified by four times when the Control Register bit 6 is off.

When the Control Register bit 6 is off, tone detection threshold value is determined by value in Tone Detect Register. The factory default of the Tone Detect register is hexadecimal 20. Smaller value makes detection much sensitive.

### 3.7 Multiple alarm message transmission

When several types alarm messages need to be transmitted without hanging up the line, set bit 1 on of the Control Register. After successful delivery of alarm message, it remains off-hook without hanging up the line. Also setting bit 5 of Control Register prevents alarm message stored into EEROM area, then input the following new alarm message:

S123418313101015<CR>

Type the following command to deliver the above message:

B

When the alarm message delivery is successful, "MESSAGE SUCCESS" is output from AP70 to PC.

To hang up the call, input the following:

A

### 3.8 testing MESSAGE FAILED operation

An alarm message with incorrect checksum is prepared by entering extra character as follows:

S1234183131310158<CR>

G

AP70 dials a telephone number stored in AP70, and sends the above alarm message. But an alarm receiver does not generate kiss-off tone because the alarm message contains an incorrect checksum. AP70 sends four times because it does not receive kiss-off tones. The AP70 sends the following:

MESSAGE FAILED

AP70 hangs up the call, and re-dials the telephone number four times, but AP70 will not receive kiss-off tone because the alarm message contains an incorrect checksum. AP70 sends "MESSAGE FAILED" messages three times.

When the Control register bit 2 is on, AP70 does not redial the telephone number. AP70 sends "MESSAGE FAILED" message once.

### 3.9 testing SIA alarm receiver with sending wrong parity or no 9<sup>th</sup> bit parity

When CIDFLG register with address of 73hex is written as the following bit pattern, AP70 generates alarm messages in wrong syntax.

Bit 3: alarm messages with wrong column parity

By outputting W7308, AP70 generates alarm message with wrong column parity.

Bit 2: alarm messages with no 9<sup>th</sup> bit parity

By outputting W7304, AP70 generates alarm messages withouts 9<sup>th</sup> bit parity.

## SECTION 4

### AP70DEMO1.EXE SOFTWARE

The screenshot of AP70DEMO1.EXE is shown below. In this screenshot, the protocol is set for Contact-ID. The status and debug messages are enabled.

#### 4.1 Enable audio

“Enable audio” indicates current state of audio amplifier/speaker which sounds detected dial-tone, ring-back tone, dialing telephone numbers, handshake signals, alarm signals and kiss-off tones.

#### 4.2 Enable status message

#### 4.3 Enable debug message

#### 4.4 Load factory default

“Load factory default” button loads the factory default parameters into AP70.

#### 4.5 RS232 communication port setting

Enter communication port number into the edit window if it is known. Otherwise click “auto detect commport” button. The detected commport number will be displayed in both “message received” edit window and commport edit window.

#### 4.6 Protocol selection

Select one among Contact-ID, SIA-FORMAT and Pulse 4X2 modes. When the mode is changed, this software must be exited and reentered.

#### 4.7 Operation of AP70DEMO1

##### 4.7.1 Single message delivery mode

- (a) Enter dialing telephone number in the “telephone number” edit window.
- (b) Enable audio if audio is not enabled.
- (c) Select one of protocol among Contact-ID, SIA-FORMAT and Pulse 4X2 modes.
- (d) Click “go(transmit message) after update file operation above”. AP70 will dial the telephone number after going off-hook and detecting dial tone. Dial tone and dialing of the telephone number is heard through speaker inside AP70.
- (e) Handshake signal is heard, and message is transmitted by the selected protocol.
- (f) Kiss-off tone is heard if the message is received correctly. “MESSAGE SUCCESS” is displayed in the “message received” edit window. Otherwise, “call failed” or “message failed” is displayed.
- (g) AP70 goes on-hook of telephone line.

##### 4.7.2 Multiple message delivery mode

- (a) AP70DEMO1 software can transmit eight messages continuously in single telephone call. Enter several alarm messages in ten edit windows on the right hand side. Leave blank if there is no more alarm messages to be transmitted.
- (b) Click “go for multiple alarm messages by alarm message files-----“
- (d) Handshake signal is heard, and message is transmitted by the selected protocol. Kiss-off tone is heard if the message is received correctly. “MESSAGE SUCCESS” or “CALL FAILED” is displayed in the “message received” edit window.
- (c) “transmitting alarm message” window shows current message transmission.
- (d) The transmission of alarm messages continues with next alarm message. Each time “MESSAGE SUCCESS” or ‘CALL FAILED” is displayed in the “message received” edit window.

##### 4.7.3 Repeat dial-up operations of transmitting multiple alarm messages

## 4.7.4 Screenshot of Pulse 4+2 mode is shown below.

The screenshot displays the AP70DEMO1 v2 software interface. The main window has a light blue header with the title 'AP70DEMO1 v2'. The interface is divided into several sections:

- Transmitting Alarm Message Section:** Includes a text box for 'transmitting alarm message' containing '799930' and a text box for 'telephone number' containing '18005551212'. Below these are two buttons: 'go (transmit message) after update file operation above.' and 'abort (on-hook, hang-up)'. A larger text box below these buttons contains instructions: 'go for multiple alarm messages by alammessages files. It requires the above updating file operation before starting. Click the above abort at the end.'
- Protocol Section:** A group box containing three radio button options:
  - ☐ Contact-ID mode, do not enter checksum.
  - ☐ SIA-FORMAT mode, enter hexadecimal numbers-do not enter checksum
  - ☒ Pulse 4X2 mode-transmit first six characters of the alarm message
- Alarm Message Section:** A vertical list of text boxes for entering alarm messages. The first five contain '123401', '123440', '123450', '123463', and '445579'. The sixth contains '456742'. The seventh contains '799930'. The eighth contains '123418'. To the right of these boxes, the text 'alarm message' is visible.
- Terminal Mode and Disable AP70 Operation Section:** A group box containing a radio button labeled 'ENABLE' and a text box labeled 'bdata'.
- Comport Section:** Includes a text box for 'comport' containing 'COM4:' and a button labeled 'auto detect comport'.
- Message Format Conversion Section:** A group box containing a radio button labeled 'hexadecimal'.
- Buttons:** A 'load factory default' button is located at the bottom right of the Protocol section.

On the far right edge of the screenshot, there is a vertical list of text: 'mes', 'co', 'd1', 'SC', 'SC', 'SC', 'MI', 'p2', 'SC', 'MI', 'p2', 'SC', 'MI', 'p2', 'SC', 'MI', 'p2', 'SC', 'MI'.

Screen shot of SIA-FORMAT for using AP70demo1 software is shown above. Please note that the message is entered as hexadecimal. Here in the above example, the message of "442333323334" is an address block message indicating account number "3234". The first byte "44" indicates that four bytes long address requesting acknowledgement signal (kiss-off signal) from a receiver. Entering column parity is not required because AP70 prepares it before transmission of entire message to a receiver.

The screenshot displays the AP70DEMO1 v2 software interface. The title bar reads "AP70DEMO1 v2". The interface is divided into several sections:

- transmitting alarm message:** A text box containing "424E5250".
- telephone number:** A text box containing "2".
- Buttons:** "go (transmit message) after update file operation above." and "abort (on-hook, hang-up)".
- Instructions:** A box stating: "go for multiple alarm messages by alammessages files. It requires the above updating file operation before starting. Click the above abort at the end."
- Protocol Section:**
  - ☐ Contact-ID mode, do not enter checksum.
  - ☒ SIA-FORMAT mode, enter hexadecimal numbers-do not enter checksum.
  - ☐ Pulse 4X2 mode-transmit first six characters of the alarm message.
- alarm message:** A vertical stack of text boxes. The first contains "442335333637", the second contains "424E5250", and the others are empty.
- enable status message:** ☒
- enable debug message:** ☒
- enable audio:** ☒
- ☐ SIA-FORMAT 110 BAUD
- load factory default:** A button.
- TERMINAL MODE AND DISABLE AP70 OPERATION:**
  - ☐ ENABLE
  - bdata:** A text box.
- commpport:** A text box containing "COM4:" and an "auto detect commpport" button.
- message format conversion:** A section with a "hexadecimal" label and an empty text box.

#### 4.8 KB ENTRY

Transmitting ASCII data at RS232 interface is available by moving cursor to the edit area "kbdata". Any received data at RS232 interface is shown in the "message received" window.



## SECTION 5

### Autodialer software, ap70autodialer52line.exe and optional ap70 autodialer104line.com

The screenshot of the autodialer software, ap70autodialer52line.exe, is shown below. This dialer software starts, stops or monitors dialer operation and displays any messages in the edit window on its upper right part of the screen. Once started, it stores test results in history file "al" in the same directory as this dialer software resides. Please note that AP70 can run dialer operation without presence of PC, but it requires to be started or stopped. The ap70autodialer104line.exe expands to 104 lines. Once the auto-dialer is started, it continues to run without PC involvement. When the PC is connected during the auto-dialer operation, history file 'al' inside the same directory as the software is created. Separate hardware history file in AP70 is also created.

This software writes protocol mode, telephone number and alarm messages (single or multiple) into AP70. The programmed data may be stored in a disk file, or new program data may be loaded by another disk file into the screen and AP70.

Automatic dialer function programming for AP70 104 lines

start/restart dialer

STOP DIALER

reset line number to 0

write programming data to AP70

read programmed data from AP70. Auto-dialer must be disabled, and there is no dialing/message transmission.

RS232 port COM4

hex message

ascii message

convert from ascii to hex

convert from hex to ascii

maximum line number/4 1

program

mode telephone number alarm message

0 12

1 13

2 14

3 15

4 16

5 17

6 18

7 19

8 20

9 21

10 22

11 23

RS232 monitor and create history file

Enable audio

Enable debug message

Enable status message

communication established

CAUTION: this software support

The current programmed data including protocols, telephone number and alarm messages may be read by clicking "read programmed data from AP70" button. The following screen will be displayed.

Automatic dialer function programming for AP70 104 lines

start/restart dialer  
☒ STOP DIALER  
 reset line number to 0  
 write programming data to AP70  
 read programmed data from AP70. Auto-dialer must be disabled, and there is no dialing/message transmission.  
 RS232 port COM4:  
 hex message  
 ascii message  
 convert from ascii to hex  
 convert from hex to ascii  
 maximum line number/4 1  
 program

Enter 15 digit Contact-ID, 6 digit Pulse 4X2, or variable-length-hexadecimal SIA-FORMAT messages in separated with space in maximum 47 positions. Enter 15 digit maximum telephone number.  
 mode=0 for Contact-ID, 1 for SIA-FORMAT 300, 2 for pulse 4+2, or =5 for SIA-FORMAT 110 BAUD

☒ RS232 monitor and create history file  
☒ Enable audio  
☐ Enable debug message  
☐ Enable status message

Reading of mode, tel number and alarm message

| mode | telephone number | alarm message                     |
|------|------------------|-----------------------------------|
| 0    | 1                | 18005551210 0623303031313131 444E |
| 1    | 5                | 18005551212 0623303031313131 444E |
| 2    | 0                | 18005551213 123418111023451 23451 |
| 3    | 2                | 18005551214 123418                |
| 4    |                  | 18005551215 123418111023455       |
| 5    |                  | 18005551216 123418111023456       |
| 6    | 0                | 18005551217 123418111023457       |
| 7    | 0                | 18005551241 123418111023473       |
| 8    | 0                | 18005551230 123418111023474       |
| 9    | 0                | 18005551231 123418111023475       |
| 10   | 0                | 18005551232 123418111023476       |
| 11   | 0                | 18005551233 123418111023477       |
| 12   | 0                | 18005551234 123418111023478       |
| 13   | 0                | 18005551235 112341811102347       |
| 14   | 0                | 18005551236 123418111023480       |
| 15   | 0                | 18005551237 123418111023473       |
| 16   | 0                | 18005551238 123418111023473       |
| 17   | 0                | 18005551239 123418111023473       |
| 18   | 0                | 18005551241 123418111023473       |
| 19   | 0                | 18005551242 123418111023473       |
| 20   | 0                | 18005551243 123418111023473       |
| 21   | 0                | 18005551244 123418111023473       |
| 22   | 0                | 18005551245 123418111023473       |
| 23   | 0                | 18005551246 123418111023473       |

### 5.1 End of line delay in seconds

Enter a number of seconds in the edit window for keeping delay for starting a new sequence after the end of line. When "100" is entered, a new test sequence does not start before one hundred second lapses.

### 5.2 maximum line number/4

Enter maximum line number divided by four in the edit window. If 1 is entered, test is repeated among 0, 1, 2, and 3.  
 If "2" is entered, test is repeated among 0, 1, 2, 3, 4, 5, 6, and 7.

### 5.3 Enable audio

"Enable audio" indicates current state of audio amplifier/speaker which sounds detected dial-tone, ring-back tone, dialing telephone numbers, handshake signals, alarm signals and kiss-off tones.

### 5.4 RS232 communication port setting

Enter communication port number into the edit window if it is known. Otherwise click "auto detect commport" button. The detected commport number will be displayed in both "message received" edit window and commport edit window.

### 5.5 Message format conversion

Note: Alarm messages using AP70DEMO1.EXE need to be entered as ASCII. Because some parts of SIA-FORMAT messages are binary numbers. Message format conversion converts

hexadecimal messages for SIA-FORMAT mode into ASCII type messages for building alarm messages for SIA-FORMAT mode.

Enter alarm message in hexadecimal notation for SIA-FORMAT. Click the “hex to ascii conversion” button once. The converted ASCII message will be shown in the edit window of “ascii message”. Then move the converted messages into alarm message windows on the right hand side.

#### 5.6 “Write programming data to AP70”

After entered data of mode, telephone number and alarm message in the screen, clicking “Write programming data to AP70” writes data to AP70.

#### 5.7 “read programmed data from AP70”

Clicking this button, reads programmed data from AP70. The auto-dialer must be disabled .

#### 5.8 START (enable dialer) or STOP (disable dialer)

When enabled, AP70 continues dialing and alarm-message deliveries. Note that recycling power of AP70 also stops auto dialer operation.

#### 5.9 “Send email or IP message upon failed line (optional feature)”

Optional feature of sending email or IP messages when failed line reports are received from AP70 is available.

#### 6.0 alarm message protocol mode entry

Enter “0” for Contact-ID mode, “1” for SIA-FORMAT mode in 300 baud, “2” for Pulse 4X2 or “5” for SIA-FORMAT mode in 110 baud. Leave blank or enter “9” for skipping a line.

#### 6.1 telephone number entry

Maximum 14 digit-long telephone number may be entered.

#### 6.2 alarm message entry

Maximum 47digit-long alarm messages may be entered without check-sum. Multiple messages are entered with space character between messages. For SIA-FORMAT mode, enter hexadecimal noted data, which is separated by space character.

#### 6.3 load data

Screen data may be loaded after entering disk file name and clicking “load” button.

#### 6.4 save data

Screen data may be saved as a disk file after entering disk file name and clicking “save” button.

#### 6.5 RS232 monitor and create history file

When enabled, received messages are displayed in the edit window below, and history file in disk file “al” is created as follows:

```

Sun Dec 07 06:10:23 2014
L000P1#18005551210 M0623303031313131 MESSAGE SUCCESS

M444E51413030 MESSAGE SUCCESS
M424C3930 MESSAGE SUCCESS
Sun Dec 07 06:10:42 2014
L001P2#18005551212 M123442 MESSAGE SUCCESS
M236789 MESSAGE SUCCESS
Sun Dec 07 06:11:23 2014
L002P0#18005551213 M123418111023451 MESSAGE SUCCESS
M234518113012345 MESSAGE SUCCESS
M999118337098765 MESSAGE SUCCESS
Sun Dec 07 06:11:56 2014
L003P
L004P
L005P
L006P0#18005551217 M123418111023457 MESSAGE SUCCESS
Sun Dec 07 06:12:20 2014
L007P0#18005551241 M123418111023473 MESSAGE SUCCESS
L000P1#18005551210 M0623303031313131 MESSAGE SUCCESS
M444E51413030 MESSAGE SUCCESS
M424C3930 MESSAGE SUCCESS

```

The “al” file shows date and time, line number, P with protocol mode for 0 for Contact-ID, 1 for SIA-FORMAT, or 2 for Pulse 4X2, # with dialed telephone number, M with alarm message, and result message (MESSAGE SUCCESS or CALL FAILED).

6.6 Enable Debug Message and Enable Status Message may be included in the display window.

6.7 If the button, “ Load PC history file “al” into the edit window” is pushed, the content of the file “al” is displayed in the edit window as shown below:



Automatic dialer function programming for AP70 104 lines

start/restart dialer  
☒ STOP DIALER  
 reset line number to 0  
 write programming data to AP70  
 read programmed data from AP70. Auto-dialer must be disabled, and there is no dialing/message transmission.  
 RS232 port COM4:  
 hex message  
 ascii message  
 convert from ascii to hex  
 convert from hex to ascii  
 maximum line number/4 1  
 program program program

Enter 15 digit Contact-ID, 6 digit Pulse 4X2, or variable-length-hexadecimal SIA-FORMAT messages in separated with space in maximum 47 positions. Enter 15 digit maximum telephone number.  
 mode=0 for Contact-ID, 1 for SIA-FORMAT 300, 2 for pulse 4+2, or =5 for SIA-FORMAT 110 BAUD

| mode | telephone number | alarm message                     |
|------|------------------|-----------------------------------|
| 0    | 1                | 18005551210 0623303031313131 444E |
| 1    | 5                | 18005551212 0623303031313131 444E |
| 2    | 0                | 18005551213 123418111023451 23451 |
| 3    | 2                | 18005551214 123418                |
| 4    |                  | 18005551215 123418111023455       |
| 5    |                  | 18005551216 123418111023456       |
| 6    | 0                | 18005551217 123418111023457       |
| 7    | 0                | 18005551241 123418111023473       |
| 8    | 0                | 18005551230 123418111023474       |
| 9    | 0                | 18005551231 123418111023475       |
| 10   | 0                | 18005551232 123418111023476       |
| 11   | 0                | 18005551233 123418111023477       |

RS232 monitor and create history file  
☒ Enable audio  
☐ Enable debug message  
☐ Enable status message

Thu Mar 02 10:20:31 2017  
 T000077  
 L002 P0 #091 M123418111023  
 M234518113012345 MESSAGE  
 M999118337098765MESSAGE  
 1  
 Thu Mar 02 10:27:03 2017  
 T000018  
 L000 P1 #001 M062330303131  
 M444E51413030 MESSAGE S  
 M424C3930MESSAGE SUCCE  
 Thu Mar 02 10:27:22 2017  
 T00002E  
 L001 P5 #1234567890 M06233  
 M444E51413030 MESSAGE S  
 M424C3930MESSAGE SUCCE  
 11  
 Thu Mar 02 10:39:06 2017  
 T0002F3  
 L002 P0 #091 M123418111023  
 M234518113012345 MESSAGE  
 M999118337098765MESSAGE  
 Thu Mar 02 10:39:40 2017  
 T00031B  
 L003 P2 #1234567890 M12341  
 Thu Mar 02 10:40:08 2017

6.8 When the “History file inside AP70 is pushed, the following typical screen is displayed:

Automatic dialer function programming for AP70 104 lines

start/restart dialer  
☒ STOP DIALER  
 reset line number to 0  
 write programming data to AP70  
 read programmed data from AP70. Auto-dialer must be disabled, and there is no dialing/message transmission.  
 RS232 port COM4:  
 hex message  
 ascii message  
 convert from ascii to hex  
 convert from hex to ascii  
 maximum line number/4 1  
 program program program

Enter 15 digit Contact-ID, 6 digit Pulse 4X2, or variable-length-hexadecimal SIA-FORMAT messages in separated with space in maximum 47 positions. Enter 15 digit maximum telephone number.  
 mode=0 for Contact-ID, 1 for SIA-FORMAT 300, 2 for pulse 4+2, or =5 for SIA-FORMAT 110 BAUD

| mode | telephone number | alarm message                     |
|------|------------------|-----------------------------------|
| 0    | 1                | 18005551210 0623303031313131 444E |
| 1    | 5                | 18005551212 0623303031313131 444E |
| 2    | 0                | 18005551213 123418111023451 23451 |
| 3    | 2                | 18005551214 123418                |
| 4    |                  | 18005551215 123418111023455       |
| 5    |                  | 18005551216 123418111023456       |
| 6    | 0                | 18005551217 123418111023457       |
| 7    | 0                | 18005551241 123418111023473       |
| 8    | 0                | 18005551230 123418111023474       |
| 9    | 0                | 18005551231 123418111023475       |
| 10   | 0                | 18005551232 123418111023476       |
| 11   | 0                | 18005551233 123418111023477       |

RS232 monitor and create history file  
☒ Enable audio  
☐ Enable debug message  
☐ Enable status message

T000018  
 L000 P1 #001 M062330303131  
 M444E51413030 MESSAGE SI  
 M424C3930MESSAGE SUCCE  
 T00002E  
 L001 P5 #1234567890 M06233  
 M444E51413030 MESSAGE SI  
 M424C3930MESSAGE SUCCE  
 T0002F3  
 L002 P0 #091 M123418111023  
 M234518113012345 MESSAGE  
 M999118337098765MESSAGE  
 T00031B  
 L003 P2 #1234567890 M12341  
 T000144  
 L000 P1 #001 M062330303131  
 M444E51413030 MESSAGE SI  
 M424C3930MESSAGE SUCCE  
 T00015A  
 L001 P0 #1234567890 M12341  
 T000179  
 L002 P5 #091 M062330303131  
 M444E51413030 MESSAGE SI  
 M424C3930MESSAGE SUCCE  
 T00018F  
 L003 P2 #1234567890 M12341  
 T00018C  
 L000 P1 #001 M062330303131  
 M444E51413030 MESSAGE SI  
 M424C3930MESSAGE SUCCE  
 T0001D2  
 L001 P0 #1234567890 M12341  
 T0001F0  
 L002 P5 #091 M062330303131  
 M444E51413030 MESSAGE SI  
 M424C3930MESSAGE SUCCE  
 T000240

T000018

The time stamp, which is cleared on powering up of AP70, is shown as 3byte hexadecimal numbers.

L(line number in 3-digit decimal number), P(protocol), and #(alarm messages) are included.

## 6.9 The104 line software

For setting up your email parameters, run “centralprogram.exe”.

The screenshot of the centralprogram.exe is shown below:

The screenshot shows the 'centralprogram' window with the following sections:

- EMAIL PARAMETERS:**
  - SMTP SERVER: [Empty text box]
  - TO ADDRESS: [enter your email address here]
  - USER NAME: [Empty text box]
  - SUBJECT: [receiving email server does not reject it]
  - PASSWORD: [Empty text box]
  - WAVEFILE: [Empty text box]
  - SENDER: [Empty text box]
  - WAVEFILE PLAYING LENGTH IN SECOND: [Empty text box]
  - FROM ADDRESS: [enter your email address here]
  - ☐ ENABLE EMAIL
- MAIN COMMPORT:**
  - [Empty text box]
  - AUTO COMMPORT DETECTION
- PRINTER RS232 PORT:**
  - [Empty text box]

Leave edit-windows of SMTP server, User name, password, and sender blank as shown in order to use Micro Seven's SMTP server unless otherwise, enter your own server name and others.

Enter your email address in “From address”. Enter a destination email address in “To address”.

Enter your own subject field so that a receiving email server will not reject emails. Good example is like “I love you Mom, from your son John” or “I love you Mom”.

The screenshot of AP70-104line software is shown below. Enter a good opening message so that your receiving email server does not reject any emails.

After each email is sent, future emails are disabled unless clicking “Email Enabled” button.

The 104-line software contains email transmission feature when there is “call failed”. However, the automatic dialer in AP70 will keep dialing numbers and transmitting alarm messages. The email feature is disabled when the software is closed.

After the fail email is sent, email transmission is disabled to prevent multiple email transmission. Click “Email Enabled” button on lower left corner to enable email transmission again.

Automatic dialer function programming for AP70/AP80 104 lines. It continuously runs without this software except email feature.

start/restart dialer  
STOP DIALER

reset line number to 0

write programming data to AP70

read programmed data from AP70. Auto-dialer must be disabled, and there is no dialing/message transmission. It takes sixty seconds.

RS232 port COM5

hex message

ascii message

convert from ascii to hex

convert from hex to ascii

maximum line number/4 1

program lines 24-51

program lines 52-79

program lines 80-103

initial time delay in sec 0

load data filename test22

save data filename test22

Test Email

LOAD PC HISTORY FILE(al) INTO THE WINDOW

BACK TO THE NORMAL DISPLAY

Email Enabled, It requires to be reset after email is sent after failure.

Opening statement in an email Hi I am John Merry Christmas Mom!

Enter 15 digit Contact-ID, 6 digit Pulse 4x2, or variable-length-hexadecimal SIA-FORMAT messages in separated with space in maximum 47 positions. Enter 15 digit maximum telephone number.

mode=0 for Contact-ID, 1 for SIA-FORMAT 300, 2 for pulse 4+2, or =5 for SIA-FORMAT 110 BAUD

mode telephone number alarm message

|    |   |             |                       |
|----|---|-------------|-----------------------|
| 0  | 1 | 18005551210 | 0623303031313131 444E |
| 1  | 5 | 18005551212 | 0623303031313131 444E |
| 2  | 0 | 18005551213 | 123418111023451 23451 |
| 3  | 2 | 18005551214 | 123418                |
| 4  |   | 18005551215 | 123418111023455       |
| 5  |   | 18005551216 | 123418111023456       |
| 6  | 0 | 18005551217 | 123418111023457       |
| 7  | 0 | 18005551241 | 123418111023473       |
| 8  | 0 | 18005551230 | 123418111023474       |
| 9  | 0 | 18005551231 | 123418111023475       |
| 10 | 0 | 18005551232 | 123418111023476       |
| 11 | 0 | 18005551233 | 123418111023477       |
| 12 | 0 | 18005551234 | 123418111023478       |
| 13 | 0 | 18005551235 | 112341811102347       |
| 14 | 0 | 18005551236 | 123418111023480       |
| 15 | 0 | 18005551237 | 123418111023473       |
| 16 | 0 | 18005551238 | 123418111023473       |
| 17 | 0 | 18005551239 | 123418111023473       |
| 18 | 0 | 18005551241 | 123418111023473       |
| 19 | 0 | 18005551242 | 123418111023473       |
| 20 | 0 | 18005551243 | 123418111023473       |
| 21 | 0 | 18005551244 | 123418111023473       |
| 22 | 0 | 18005551245 | 123418111023473       |
| 23 | 0 | 18005551246 | 123418111023473       |

RS232 monitor and create history file

Enable audio

Enable debug message

Enable status message

Reading of mode, tel number and alarm messages is complete.  
T000118  
L000 P1 #18005551210 M0623303031313131 CALL FAILED  
220 ESMTP Mon, 20 Dec 2021 14:44:49 -0500: UCE strictly prohibited  
Email sent to the primary email address. email address empty in customer's file  
CALL FAILED

A typical email that was sent from AP70 104-line software is shown on the next page.

The telephone number is shown in a blue colored section. The “P1” indicates SIA-FORMAT message followed by hexadecimal notation of the message because SIA-FORMAT employs binary data transmission. The “T000118” is a time stamp data. The “I love you Mom” is a message that was programmed using centralprogram.exe. The opening message of “Hi I am John Merry Christmas, Mom” is the opening message that was programmed.

11:47

[< Inbox](#)



sales@microseveninc.com

## I love you Mom

Hi I am John Merry Christmas Mom!

T000118

L000 P1 #[18005551210](#) M06233030313

Mon Dec 20 11 44 44 2021

CALL FAILED

Mon Dec 20 11 44 48 2021