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**INSTALLATION INSTRUCTIONS  
 3 MESSAGE EXPANDER MODULE (SP4-3MEM)  
 (FOR SP40/2)**

*Use this product according to this instruction manual. Please keep this instruction manual for future reference.*


**MODEL NUMBER:**  
 SP4-3MEM


**GENERAL:**

The 3 Message Expander Module (SP4-3MEM) is designed to be used with Wheelock's SP40/2 SAFEPATH4 panel. The SP4- 3MEM provides a means of expanding the number of digital voice messages by as many as three.

One SP4-3MEM can be connected to the SP40/2 panel. It is connected inside the panel enclosure in the center of the SP40/2 motherboard.

The SP4-3MEM contains its own microprocessor and digital memory chip. It can playback up to three prerecorded digital messages. The digital voice memory chip memory capacity is divided into three 20-second sections. Each section corresponds to one of the corresponding input circuits. If the length of a message exceeds the 20 seconds, it will continue playback into the next section. The next section cannot contain a new message. The exception is the third section, which will stop playback at the end of the 20 seconds. The following table describes the playback feature.

**NOTE:** All **CAUTIONS** and **WARNINGS** are identified by the symbol . All warnings are printed in bold capital letters.

 **WARNING: PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE USING THIS PRODUCT. FAILURE TO COMPLY WITH ANY OF THE FOLLOWING INSTRUCTIONS, CAUTIONS AND WARNINGS COULD RESULT IN IMPROPER APPLICATION, INSTALLATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

*Table 1: Playback Features*

	Message 1	Message 2	Message 3
3 Message Selection	<20 sec	<20 sec	<20 sec
2 Message Selection	>20 sec but <40 sec		<20 sec
2 Message Selection	<20 sec	>20 sec but <40 sec	
1 Message Selection	>40 sec but < 60 sec		

< = symbol for less than  
 > = symbol for greater than

The digital message chip shall be recorded at Wheelock Inc. The SP40/2 does not have the capability to record messages at the panel. When purchased a 3 Message Expander Module custom message chip shall be recorded and installed by the manufacturer. The digital message chip cannot be purchased and installed on site.

The NAC input voltage range for initiating the messages is 8 to 33VDC. The operating voltage on the circuit board is 5VDC. The standby current is 35mA, and the maximum alarm current is 45mA.

The three NAC inputs on the SP4-3MEM provide initiation of the message in the corresponding section on the digital voice message chip. These inputs have a higher priority than the three messages on the SP40/2. The following is a list in the order of priority on the SP40/2 when the SP4-3MEM is used:

1. SP40/2 On board Microphone
2. Remote Microphone (SPRM) (Optional)
3. SP4-3MEM IN-A1
4. SP4-3MEM IN-A2
5. SP4-3MEM IN-A3
6. SP40/2 IN1
7. SP40/2 IN2
8. SP40/2 IN3
9. Night Ringer
10. Telephone Page
11. Background Music

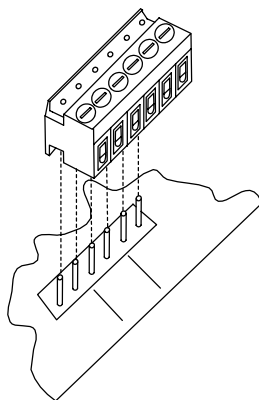
## MATERIALS:

When the SP4-3MEM is received, the following items shall be included:

- One – SP4-3MEM PC board with the message kit already installed.
- Two – Male to male 10 pin interconnectors
- One – Teflon standoff
- One – Screw
- One – Pair of wires to connect the SP4-3MEM to the SP40/2

## WIRING INSTRUCTIONS:

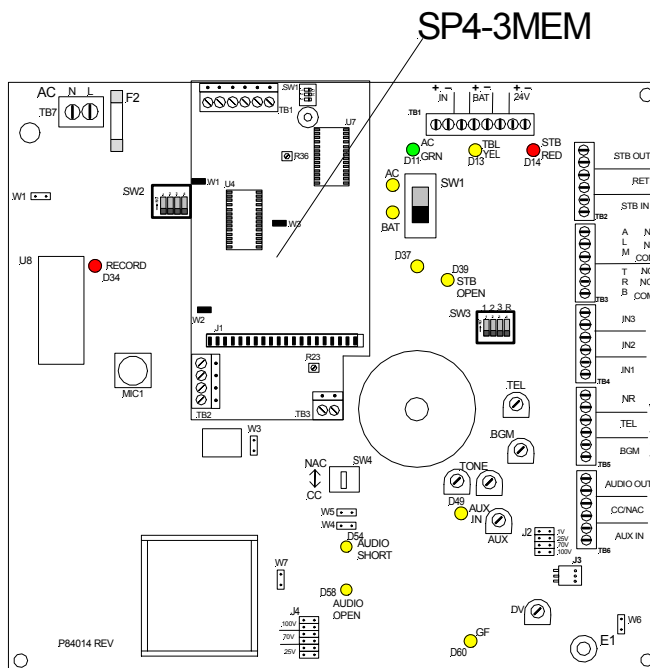
**NOTE:** The terminal blocks (TB1 and TB2) on the SP4-3MEM are removable. To remove a terminal block, pull the block straight up from the circuit board as shown in Figure 1. Attach wires to the desired connections, then plug the terminal block back on the board being careful to match and align the pins.



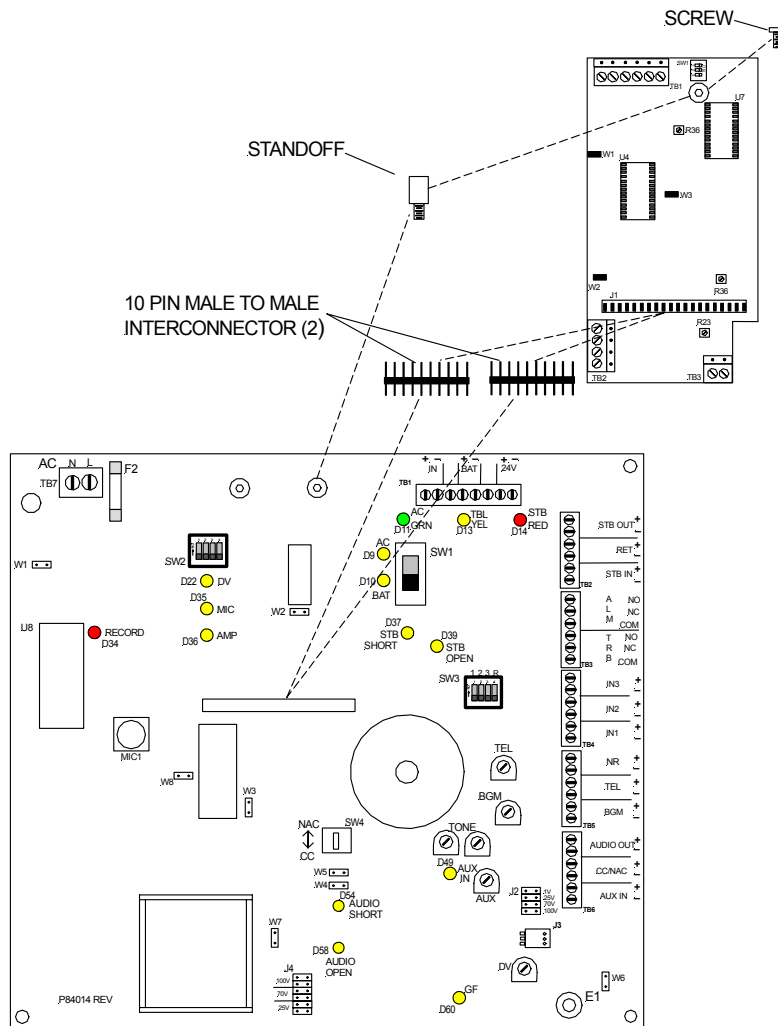
*Figure 1: Removable Terminal Block*

## MOUNTING INSTRUCTIONS:

Figure 2 shows the SP4-3MEM mounted to the SP40/2 motherboard. Figure 3 shows the correct mounting procedure.



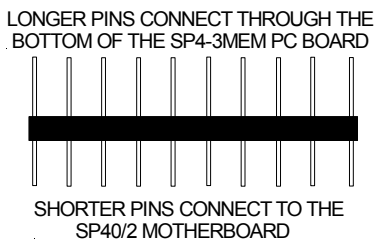
*Figure 2: SP4-3MEM mounted to the SP40/2 motherboard*



**Figure 3:** Shows the correct mounting

1. Remove the mounting screw from the top center of the SP40/2 motherboard. Place screw aside for use in Step 5.
2. Screw the male end of the standoff into the hole from Step 1.

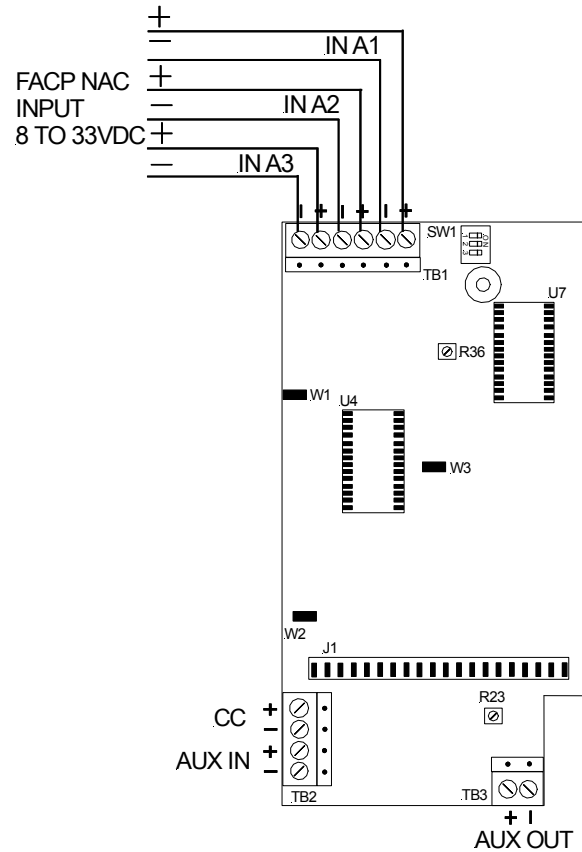
**CAUTION:** The 10 pin male-to-male interconnector pins are two different lengths. Mount the shorter pins into J1 female connector on the motherboard.



**Figure 4:** 10 pin male-to-male interconnector

3. As shown in Figure 4, connect the short pins on the two 10 pin male-to-male interconnectors to the 20 pin female connector J1 on the motherboard.
4. Position the bottom of the SP4-3MEM PC board connector J1 over the two 10 pin interconnectors mounted on the SP40/2 motherboard. When all pins are properly aligned, press firmly on the SP4-MEM3 PC board until the board is properly seated.
5. Using the screw removed in Step 1, secure the SP4-3MEM PC board to the SP40/2 motherboard.

## WIRING INSTRUCTIONS:



*Figure 5: Wiring Connections*

1. Connect NAC (8 to 33VDC) circuits to IN A1, IN A2, and/or IN A3 to play the desired message(s).
2. Connect the AUX OUT on the SP4-3MEM to the AUX IN on the SP40/2 motherboard.

## WIRING INSTRUCTION WHEN USED WITH THE REMOTE MICROPHONE (SPRM)

**NOTE:** When the SP4-3MEM is used, the Remote Microphone (SPRM) shall be connected to the SP4-3MEM PC board and not to the SP40/2 motherboard.

The Remote Microphone (SPRM) shall be connected to the AUX IN and the CC terminals on TB2 on the SP4-3MEM. It shall not be connected to the SP40/2 motherboard.

1. Connect the SPRM 24VDC input to the  $\pm 24V$  terminals on TB1 of the SP40/2.
2. Connect the AUX OUT terminals on TB3 (SP4-3MEM) to the RM AUDIO terminals on the SPRM.
3. Connect the CC terminals on TB3 (SP4-3MEM) to the STATUS (CC) terminals on the SPRM.
4. Switch SW4 (NAC/CC) on the SP40/2 to the CC position.

**NOTE:** The maximum wire length from the SP4-3MEM to the SPRM is 2000 ft.

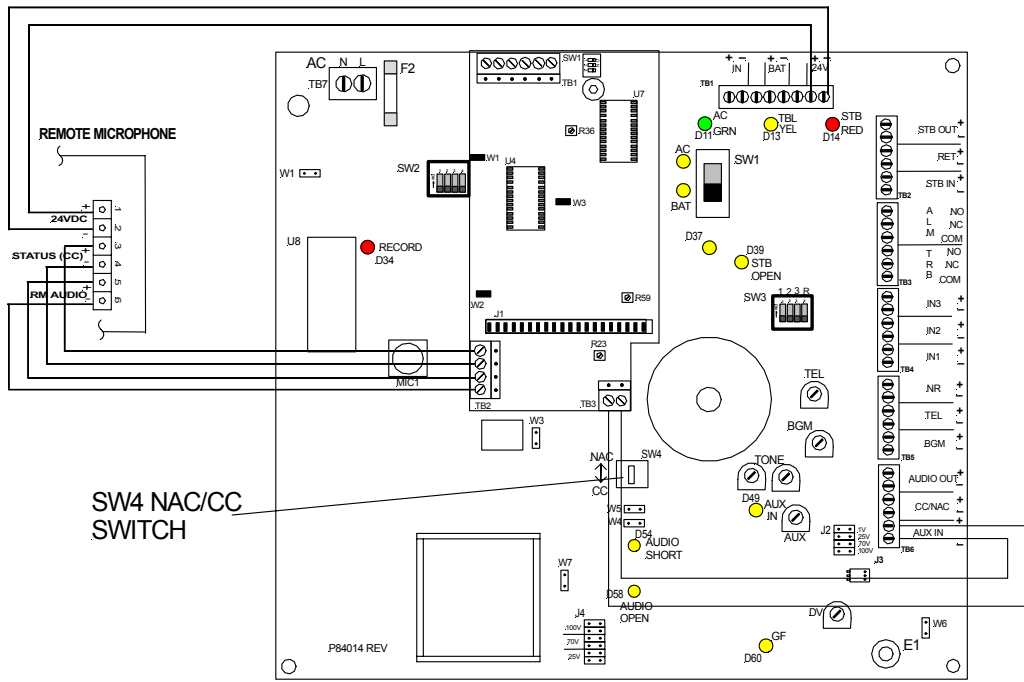


Figure 6: Remote Microphone Connections

**WIRING SPECIFICATIONS:**

Cable Size: NAC inputs accept #12 - #18 American Wire Gauge (AWG).

**OPERATING INSTRUCTIONS:**

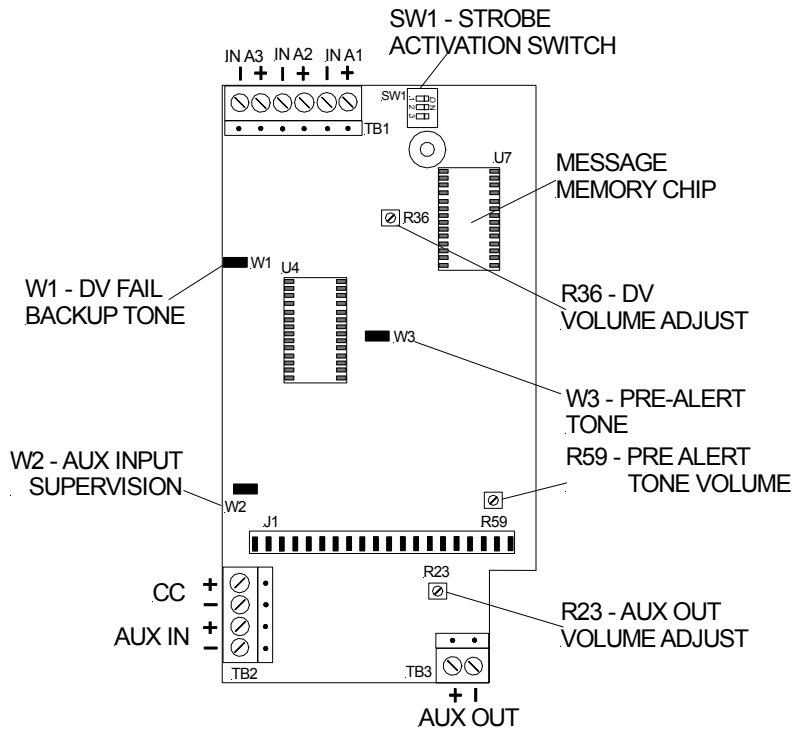


Figure 7: 3MEM Setting

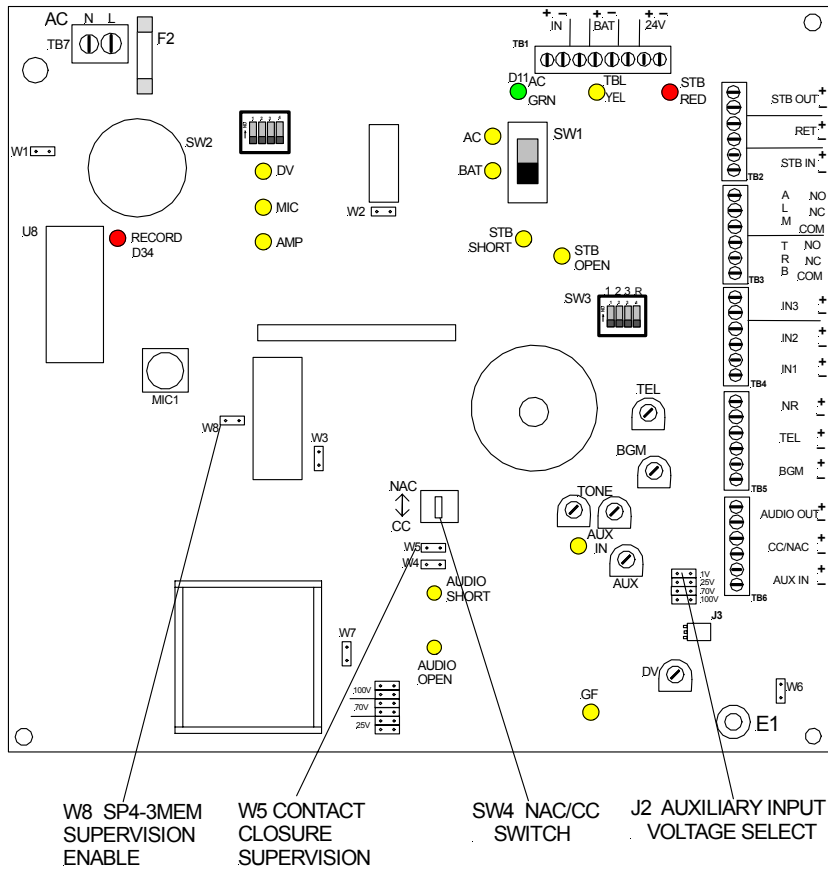
**Table 2: 3MEM Settings**

Name	Function	Description
SW1	Strobe Activation Switch	3-position DIP switch. ON position on any or all positions activates strobe NAC circuit(s) on SP40/2 when corresponding NAC input is selected.
W1	DV Fail Backup Tone	Jumper ON – Code 3 Tone Jumper OFF – Continuous Tone
W2	Aux Input Supervision	Jumper ON – No Remote Microphone (SPRM) installed. Remove jumper when installing SPRM.
W3	Pre-Alert Tone	Jumper ON – Plays DV Fail Backup Tone (two rounds of Code 3 Tone or Continuous) prior to digital voice message from SP4-3MEM.  INA1, 2 = Code 3 INA3 = Continuous
R23	Aux Out Volume Adjust	Adjusts output volume of Remote Microphone (SPRM)
R36	DV Volume Adjust	Adjust digital voice message volume
R59	Tone Volume Adjust	Adjust pre alert tone volume and DV tone backup volume.

1. Select strobe activation using switch SW1 on the SP4-3MEM

**SP40/2**

2. Remove jumper W8 on the SP40/2 motherboard. This enables supervision of the SP4-3MEM. See Figure 8.
3. Set Jumper J2 to “1V”.
4. Set switch SW4 to the “CC” position.
5. Insert jumper W5 to disable supervision of the “CC” input terminals on the SP40/2.

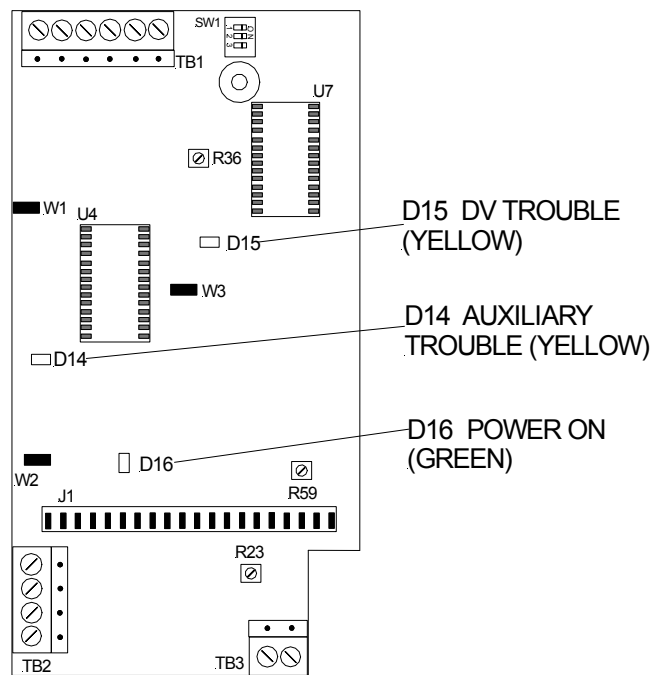


*Figure 8: SP40/2 Setting*

## TROUBLESHOOTING PROCEDURES:

Figure 9 shows the location of the power and trouble LED's on the SP4-3MEM PC board.

1. Insure that the green POWER LED D16 is "ON". If no LED's are lighted, check the SP40/2 to insure it is on. Turn power off prior to checking the 20 pin terminal and insuring all pins are properly seated.
2. Verify wiring is correct.
3. Verify jumpers are correct.
4. If the yellow DV TROUBLE LED is "ON", a Digital Voice Memory Chip (U7) failure is indicated. Also the SP40/2 will indicate a trouble condition.
5. If the yellow AUX TROUBLE LED is "ON", a Remote Microphone (SPRM) trouble has occurred. Also the SP40/2 will indicate a trouble condition. Troubleshoot the SPRM and connecting wiring.
6. A failure of the SP4-3MEM will cause a trouble condition to occur on the SP40/2 turning ON the TROUBLE LED. Turn power off prior to removing the SP4-3MEM and insure the SP40/2 functions correctly. If the SP40/2 operates properly, replace the SP4-3MEM with a new one.



*Figure 9: 3MEM POWER and TROUBLE LEDS*

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