

Model 300MB-SD CommCenter Series D1



Installation and Maintenance Manual

Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at www.fedsig.com/SSG-Warranty. A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to info@fedsig.com or call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or implied, contractual or statutory, including, but not limited to the warranty of merchantability, warranty of fitness for a particular purpose and any warranty against failure of its essential purpose.



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Safety Message to Installers of Federal Signal Products

▲ WARNING

People's lives depend on your proper installation and servicing of Federal Signal products. It is important to read and follow all instructions shipped with this product. Listed below are some other important safety instructions and precautions you should follow:

- This device is to be installed by a trained electrician who is thoroughly familiar with the National Electric Code and will follow the NEC guidelines as well as local codes.
- The selection of the mounting location for the device, its controls, and routing of the wiring is to be accomplished under the direction of the Facilities Engineer and the Safety Engineer.
- Read and understand all instructions before installing or operating this equipment.
- Do not connect this unit to the system when power is on.
- Optimum sound distribution will be severely reduced if any objects are in front of the speaker. Ensure that the front of the speaker is clear of any obstructions.
- All effective warning speakers produce loud sounds that may cause, in certain situations, permanent hearing loss. Take appropriate precautions such as wearing hearing protection.
- All effective warning speakers produce loud sounds that may cause, in certain situations, permanent hearing loss. The device should be installed far enough away from potential listeners to limit their exposure while still maintaining its effectiveness. The OSHA Code of Federal Regulations 1910.95 Noise Standard provides guidelines, which may be used regarding permissible noise exposure levels.
- After installation, test the sound system to ensure proper operation.
- Show these instructions to your Safety Engineer and all operating personnel, and then file them in a safe place and refer to them when maintaining and/or reinstalling the unit.
- Establish a procedure to routinely check the sound system for proper activation and operation.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

Unpacking the Product

After unpacking the product, examine it for damage that may have occurred in transit. If the 300MB has been damaged, do not attempt to install or operate it. File a claim immediately with the carrier, stating the extent of the damage. Carefully check all envelopes, shipping labels, and tags before removing or discarding them. If any parts are missing, please call Federal Signal Customer Support at 708-534-4756 or 877-289-3246.

Table 1 Kit contents

Qty.	Description	Part Number
1	Plug, 10-Position	140332-10
1	Plug, 17-Position	140332-17

An Overview of the Model 300MB

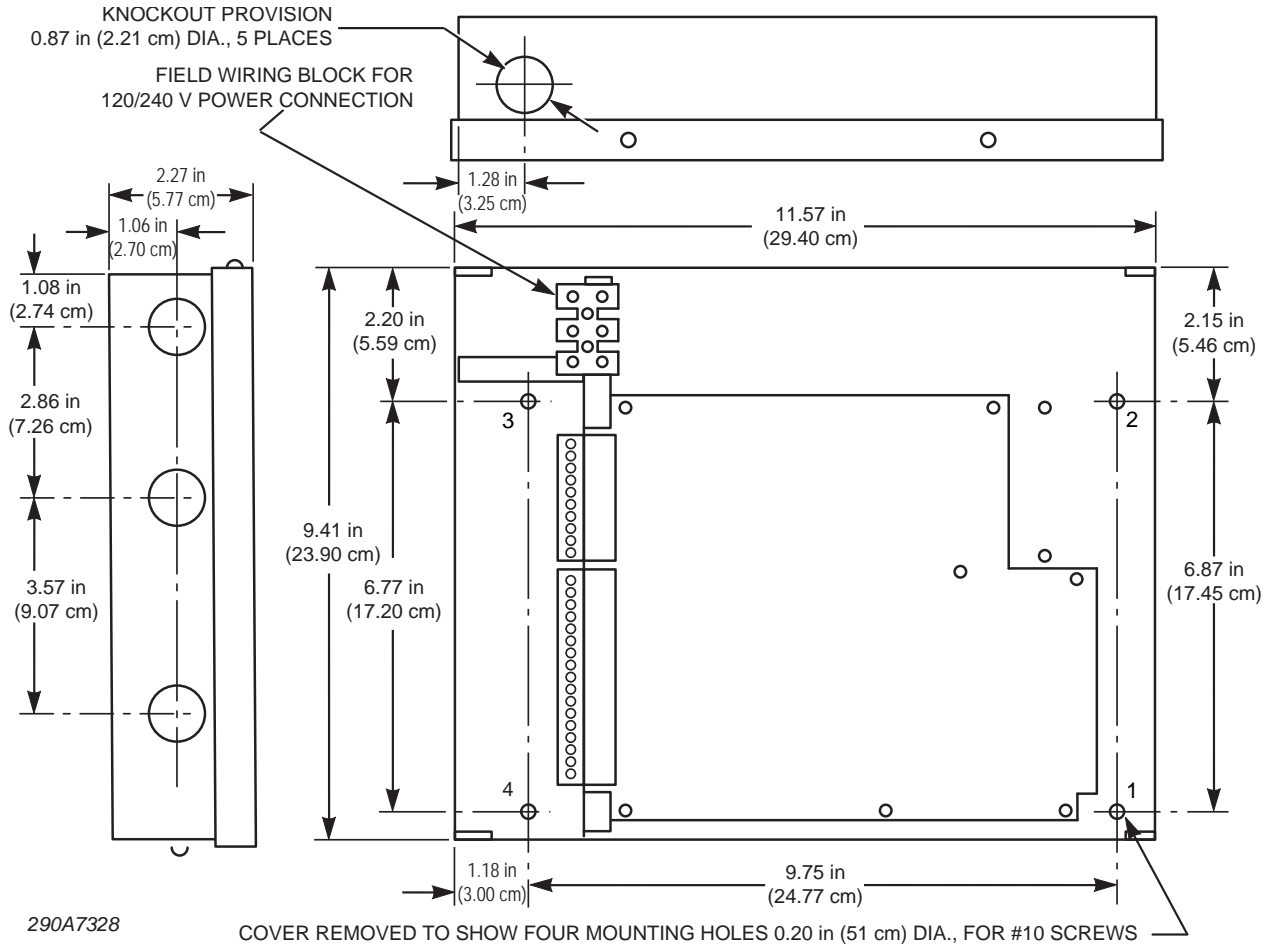
The CommCenter, Model 300MB Series D1 is a digital playback device that is capable of generating up to six different prerecorded voice messages, melodies, tones, and/or signals. This central control device interfaces with any decentralized or centrally amplified system. The CommCenter can control signal lines to Federal Signal SelecTone® Models 300GC, 300GCX, 300X, 302GC, 302GCX, 302X, and 50GC speaker/amplifiers. It can also interface with any SelecTone Control Unit, Models 300VSC or 300SCW-1. It can directly drive speakers designed for 25 V_{RMS} line operation. It can also provide a 1 V_{P-P} audio signal and can be used as a remote audio input for a public address sound system. Using the cascading function, 300MB CommCenters can be linked together to provide a system with the capability of more than six messages.

NOTE: The CommCenter accepts messages stored on ICs and pluggable circuit boards. Both are referred to as message chips in this manual. The messages stored on pluggable circuit boards will operate on all Series B, Series C, and Series D models.

IMPORTANT: The Series D CommCenters use a different storage IC than the Series A, Series B, and Series C. These ICs cannot be interchanged between Series A, Series B, and Series C models. Be sure to verify which series CommCenter you have before ordering any additional messages.

The CommCenter is intended to be installed only in indoor (NEMA 1) or other protected installations. It can be mounted on any horizontal or vertical surface using #10 screws appropriate for the type of mounting surface material and the four mounting holes in the housing. See Figure 1.

Figure 1 Dimensions and mounting holes



The CommCenter can be used for a variety of prioritized signaling purposes, such as indicating the status of a machine or process, background messages, evacuation, alarm, start and dismissal, and other audible notification applications. The system can be automated if external (customer-supplied) devices such as programmable controllers, heat detectors, switches, or program clocks are connected to the remote inputs. This product is not listed for fire use.

A CommCenter plays and amplifies messages through signal lines to the remote SelectTone® devices in the system. To connect the SelectTone speaker/amplifier to the signal line, a Model AM25CK Connector Kit is required in each SelectTone device. Speakers designed for 25-volt operation can connect directly to the 25-volt output.

Each message can be activated by a contact closure or opening at its associated remote control input. The remote control inputs can be configured to work with either latching or momentary contacts.

Each CommCenter can accommodate up to six storage chips, selected from a library of prerecorded voice messages, melodies, tones, and/or signals. There is one message per storage chip. Each chip plugs into a 28-pin IC socket. The six sockets are labeled PRIORITY TONE 1 through PRIORITY TONE 6. See Figure 11 on page 22.

Chassis Description

The CommCenter is assembled in a black, powder-coated, steel, two-piece housing. The cover is attached to the housing with four screws, two along each long edge of the enclosure. The rear of the housing incorporates two field-wiring compartments baffled off from the printed circuit board area. One compartment is for the connection of the Class II power and signal lines, and the other is for the connection of the Class I power lines. These areas are provided with knockouts to allow the external wiring to enter the unit through appropriate installer-supplied bushings.

Input Configuration

The CommCenter can be configured for remote activation in four ways:

- Normally open latching contacts
- Normally open momentary contacts
- Normally closed latching contacts
- Normally closed momentary contacts

The CommCenter is factory-set to be activated by closing a normally open latching contact between the associated input and circuit ground. When activated, the message continues to loop and repeat. It stops as soon as it is deactivated. When configured for momentary activation, the message continues to loop and repeat until the input is deactivated. When the input is deactivated, it plays the entire message before stopping.

Each of the six inputs can be configured individually by moving a two-position jumper on a three-position header. See Table 2 for a list of the priority tones, their associated jumper designations, and their silkscreened label printed circuit board.

Table 2 Model 300MB Series D motherboard

MESSAGE	JUMPER	MARKING	JUMPER	MARKING
PRIORITY TONE 1	J9	NO NC	J12	R M
PRIORITY TONE 2	J10	NO NC	J14	R M
PRIORITY TONE 3	J11	NO NC	J13	R M
PRIORITY TONE 4	J5	NO NC	J8	R M
PRIORITY TONE 5	J4	NO NC	J7	R M
PRIORITY TONE 6	J3	NO NC	J6	R M
NOTES:	NO NC configures an individual channel to interface to normally open (NO) or normally closed (NC) contacts.			
	R M configures an individual channel to interface to a latched contact (R) or a momentary contact (M).			

Control Circuitry

The control circuitry in the CommCenter has a built-in priority level feature. If a message is already sounding when a higher priority message is activated, the higher priority message automatically overrides the lower priority message. When the higher priority message is deactivated, the lower priority message is initiated as long as it is still activated. The messages are prioritized with Priority Tone 1 having the highest priority down to Priority Tone 6. The cascade input has the lowest level of priority.

A message can be activated from the tone activation inputs on TB1. For example, a dry contact, either normally open or normally closed (depending on the configuration) will activate a tone when it is connected between the associated message (TB1-1 through TB1-6) and COM (TB1-7). The configuration of these channels is described in "Input Configuration" on page 8. These inputs are opto-coupled to reduce the possibility of noise on the signal lines falsely activating a message.

There are two sets of contacts that can be used to monitor the status of a CommCenter. When power is applied, a relay with form C contacts is activated. These contacts are connected to TB2 and are labeled Power Monitor Relay. The second set of contacts monitor activation of any of the six messages or a cascaded input. These contacts are labeled Push-to-Talk (PTT) Relay on TB1.

Power Requirements

⚠ WARNING

SHOCK HAZARD: Do not perform any installation or maintenance on this system when power is on. Because the 300MB does not have a power switch, ensure that the power is disconnected before proceeding. Failure to heed this warning may cause serious injury or death.

The Model 300MB can be operated on 120 Vac, 240 Vac, or 24 Vdc input power. To prevent power to the CommCenter from being accidentally turned off, the unit does not have a power switch.

Table 3 Product specifications

Power Input	
Input Voltage	120/240 Vac, 50 Hz to 60 Hz; 24 Vdc
Standby Current	50 mA, 120 Vac 25 mA, 240 Vac
Operating Current	210 mA (max.)
Power Consumption	26 W (max.)
Emergency Power Source Input	
Input Voltage	22 Vdc to 32 Vdc
Standby Current	90 mA
Operating Current	760 mA
Audio/Cascade Input	
Input Impedance	5 k Ω
Input Voltage	1 V _{P-P} (max.)
Audio Outputs	
<i>Output Impedance</i>	
Unbalanced Signal Line	25 Ω (max.)
Unbalanced Signal Line, Standby	120 Ω
Balanced Signal Line	40 Ω (max.)
Low-Level Signal Line	600 Ω
<i>Output Voltage Levels, No Load (< 3% THD)</i>	
Unbalanced Signal Line	9 V _{RMS}
Balanced Signal Line	17 V _{RMS}
Low-Level Signal Line	1 V _{P-P}
<i>Output Voltage Levels, Max. Load (< 3% THD)</i>	
Unbalanced Signal Line	8 V _{RMS} (25 Ω load)
Balanced Signal Line	15 V _{RMS} (40 Ω load)
Low-Level Signal Line	1 V _{P-P} (600 Ω load)
<i>Tone Output Voltage Levels, No Load (sq. wave)</i>	
Unbalanced Signal Line	12 V _{RMS}
Balanced Signal Line	25 V _{RMS}
Low-Level Signal Line	1 V _{P-P}
<i>Tone Output Levels Max. Load (sq. wave)</i>	
Unbalanced Signal Line	12 V _{RMS} (25 Ω load)
Balanced Signal Line	20 V _{RMS} (40 Ω load)
Low-Level Signal Line	0.56 V _{RMS} (600 Ω load)
Signal to Noise Ratio (< 1.5 % THD)	
Chip Input	67 dBA
Relay Outputs	
Contact Rating	2 A at 28 Vdc / 0.5 A at 120 Vac

Table 3 Product specifications (continued)

Audio Frequency Response, Balanced Signal Line	
<i>40 Ω Max. Load, from 250 Hz to 80 kHz</i>	
(Reference 1 kHz)	-3 dB
<i>40 Ω Max. Load, from 450 Hz to 60 kHz</i>	
(Reference 1 kHz)	-1 dB
<i>No Load, from 100 Hz to 90 kHz</i>	
(Reference 1 kHz)	-3 dB
<i>No Load, from 200 Hz to 60 kHz</i>	
(Reference 1 kHz)	-1 dB
Audio Distortion from Cascade Input to Balanced Signal	
Line Output (40 Ω Load)	0.2 %
Fuses	
F1	Type GMC-1, 1 A, 250 V
F2	Type GMC-1/2, 1/2 A, 250 V
Physical Specifications	
Shipping Weight	6.6 lb (3.0 kg)
Net Weight	5.5 lb (2.5 kg)
Dimensions (D,W, H)	2.27 x 9.41 x 11.57 in (57.7 x 239.0 x 293.9 mm)
Operating Temperature	32°F to 120°F (0°C to 49°C)

Recommendation for the Signal Lines

⚠ WARNING

REDUCED SOUND OUTPUT: *If too small a diameter cable is used, unacceptable signal voltage drop in the signal line will cause reduced sound output from the remote signal device. Only use a cable having wire diameter greater than 22 AWG.*

The signal lines transfer tone signals and verbal messages from the CommCenter to the remote SelecTone® devices. To reduce the possibility of cross talk, hum, and static-noise pickup, the signal lines must be twisted-pair, shielded audio cable. In the majority of systems, use AWG 18 twisted-pair audio cables. Federal Signal does not recommend that new or existing telephone lines be used as signal lines in a SelecTone system for the following reasons:

- Interference from other services or systems, or interference from the system to other services
- Cross talk, interference, or hum induced by other telephone lines
- Extended downtime because of the second-party involvement required to service the lines
- The additional cost of installation, interfacing devices, and monthly charges as opposed to a one-time cost of performing the installation

Connecting Signal Lines

⚠ WARNING

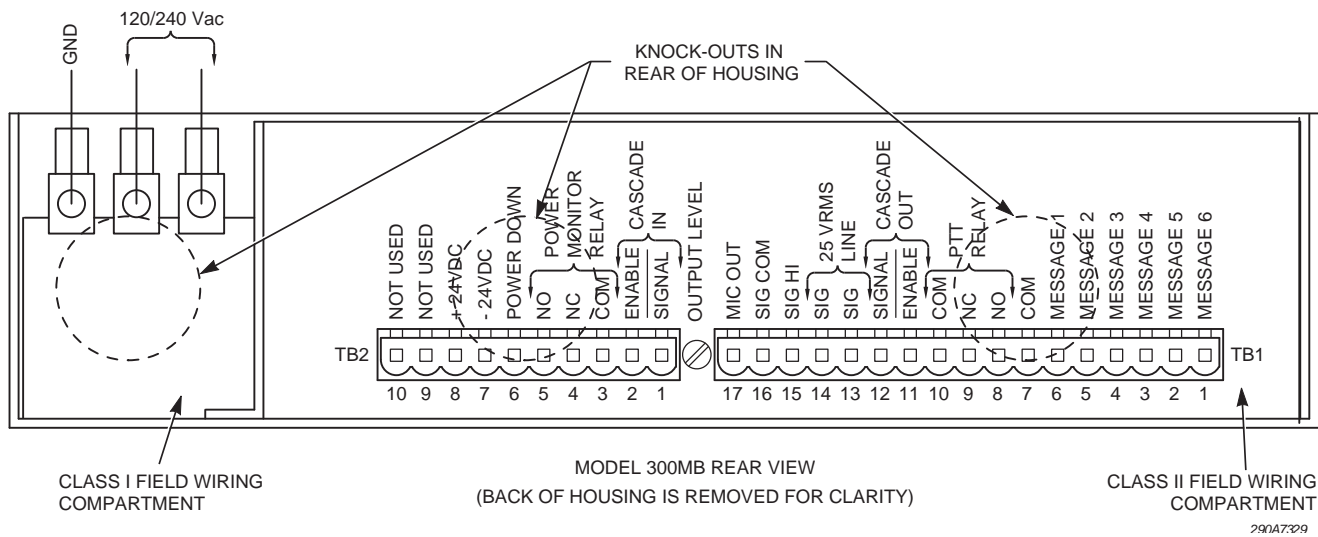
CROSSTALK INTERFERENCE: *Mixing signal lines with power lines could cause electrical interference, which could impede or render the system inoperable.*

⚠ WARNING

SHOCK HAZARD: *Do not install signal lines in the same conduit with power lines. Avoid routing signal lines on cable trays with high voltage power lines.*

To connect the signal lines of the SelecTone system to the 300MB, connect a color-coded, twisted pair of audio cables with conductors no smaller than 18 AWG to the TB1-13 and TB1-14 terminals on TB1. Before using TB1-13 and TB1-14, remove the labeled jumper. Every remote SelecTone signaling device in the system can be connected in parallel or series to these lines. See Figure 2.

Figure 2 Connections on the back of Model 300MB



For non-SelectTone 25 V_{RMS} speakers, such as ceiling speakers, connect the signal lines directly to TB1-13 and TB1-14 of terminal block TB1. Before using TB1-13 and TB1-14, remove the labeled jumper. Signal line losses must be considered when calculating how many speakers can be connected to the 300MB.

Connecting to Remote Devices

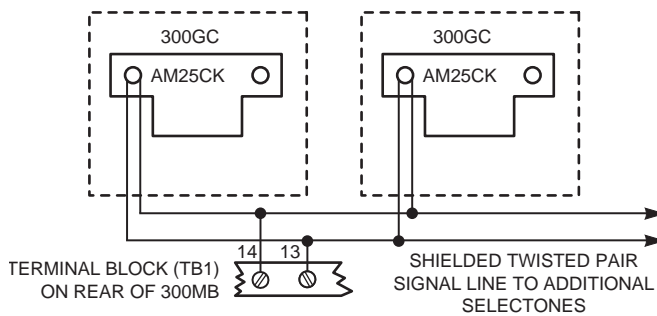
Physically install the remote SelectTone device(s) following the instructions included with the device.

Balanced Line Application

For 300GC, 300GCX, 300X, 302GC, 302GCX, 302X or 50GC speakers, an AM25CK Connector Kit is required for connection to the balanced signal output of the 300MB. The AM25CK properly terminates the balanced signal lines to the amplifier in the 300GC, 300GCX, 300X, 302GC, 302GCX, 302X and 50GC.

Remove the labeled jumper from terminals TB1-13 and TB1-14 of terminal block TB1. Connect the white input wires on the AM25CK to the terminals TB1-13 and TB1-14 of terminal block TB1 on the 300MB as shown in Figure 3. The AM25CK and AM70CK Connector Kits are NOT polarity sensitive, but polarity must be observed when placing speakers in close proximity to each other.

Figure 3 Model AM25CK connections (balanced line)



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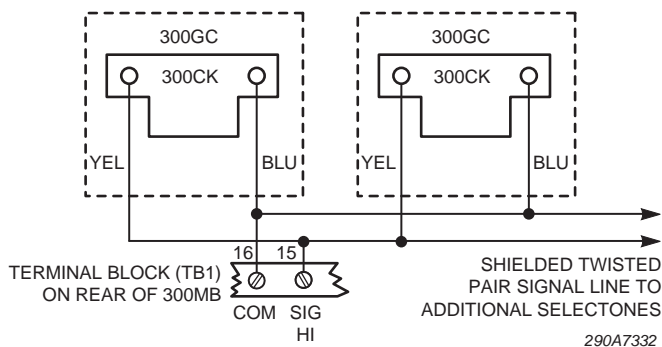
For 25 V_{RMS} line-operated speakers, connect them directly to the balanced signal output of the 300MB. Remove the labeled jumper from terminals TB1-13 and TB1-14 of terminal block TB1. Connect the speakers in parallel to the terminals TB1-13 and TB1-14 of terminal block TB1 on the 300MB. Unlike the unbalanced line output, this output is not switched.

IMPORTANT: This output is to be used only if there are no SelectTone® system devices connected to the unbalanced signal output (across TB1-15 and TB1-16).

Unbalanced Line Application

For existing SelectTone systems using the 300CK Connector Kit, use the unbalanced signal outputs on the 300MB. A 300CK Connect Kit is required to connect a 300GC, 300GCX, 300X, 302GC, 302GCX, 302X or 50GC to the unbalanced signal lines. The 300CK properly terminates the signal lines to the amplifier in the 300GC, 300GCX, 300X, 302GC, 302GCX, 302X and 50GC. Connect the blue wire on the 300CK to the **SIG COM** wire from the 300MB. Connect the yellow wire on the 300CK to the **SIG HI** wire from the 300MB. See Figure 4.

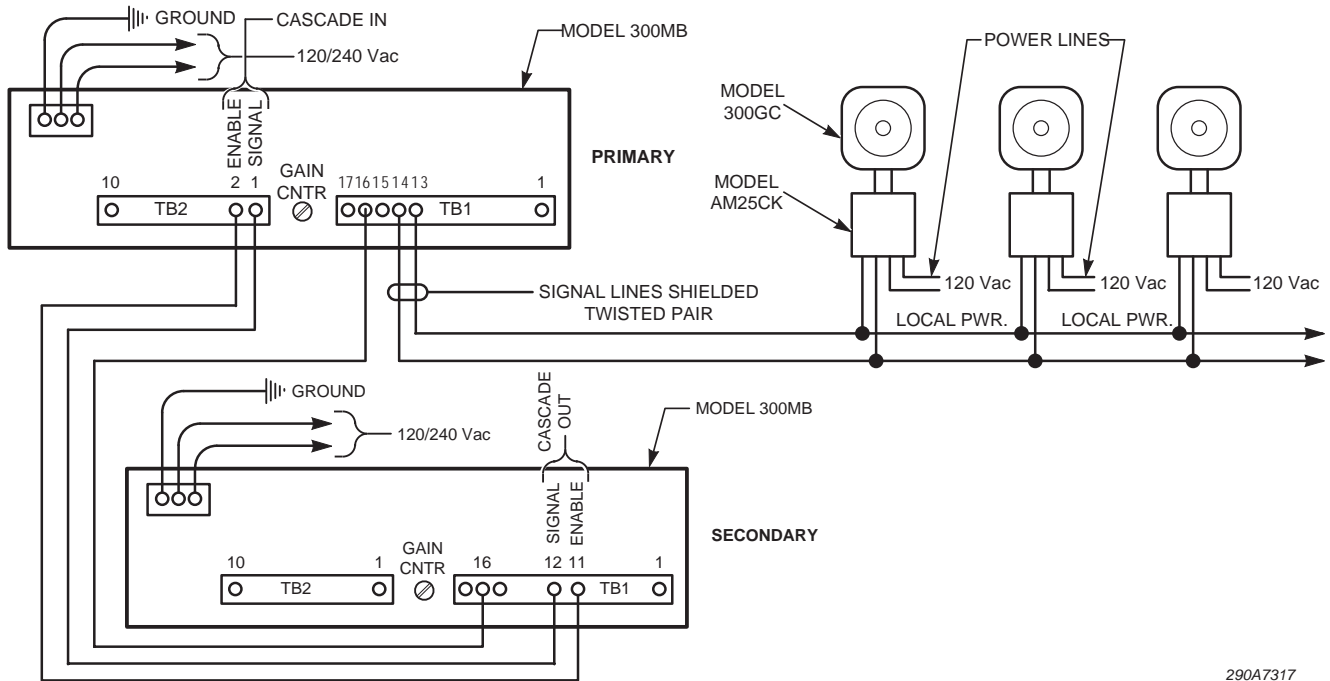
Figure 4 Model 300CK connections (unbalanced line)



Connecting a Low-Level Audio Input

There is a provision for a low-level, low-impedance, audio signal input at the rear of the 300MB. It is designed to accept a cascaded input from a primary CommCenter (TB1-12). But it also accepts audio from a telephone system, radio receiver, CD player, or tape player. When the ENABLE pin (TB2-2) on the cascade input is pulled to circuit ground, audio on the cascade-in signal line is gated through the CommCenter and output on the signal lines. This input is the lowest priority. The audio-level input should be 1 V_{P-P}. When cascading units, connect the cascade-out ENABLE and SIGNAL terminals and the ground of the secondary unit to the cascade-in ENABLE and SIGNAL terminals on the primary unit. The SIG COM terminals (TB1-16) of both units also need to be connected together as shown in Figure 5.

Figure 5 Cascading multiple units



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Connecting a Low-Level Audio Output

The 300MB also has a $1 V_{p,p}$ audio output that is designed to drive the cascaded input of a secondary CommCenter. This low-level output is available across terminals TB1-16 and TB1-17. It can also be connected to an analog fiber optic transmitter so that audio can be transmitted over a fiber-optic link in an electrically noisy environment.

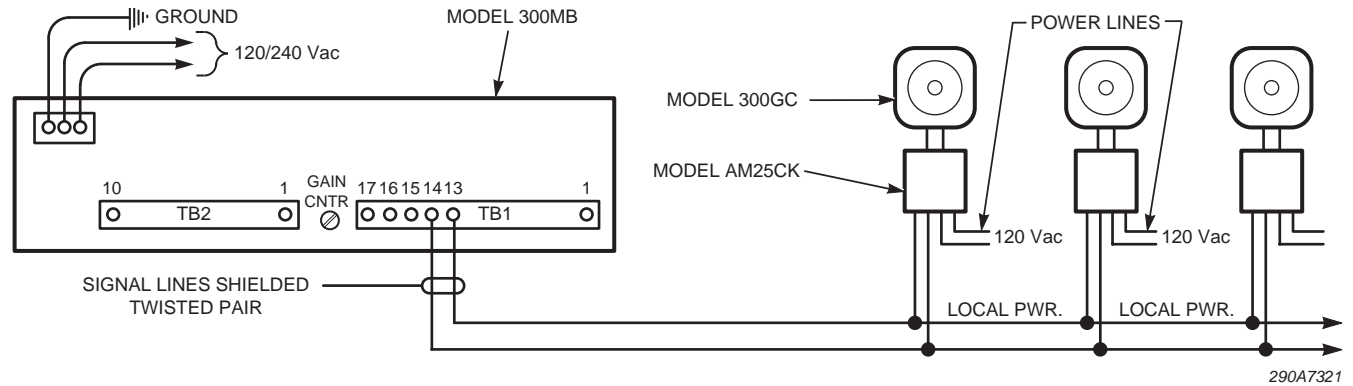
Typical Installations of the 300MB

This section describes four typical installations of the 300MB system.

As a SelecTone Control Center

In this installation, shown in Figure 6, the CommCenter is acting as a SelecTone® control center driving a 25 V_{RMS} signal line. Remote speaker/amplifiers have the signal coupled in through an AM25CK.

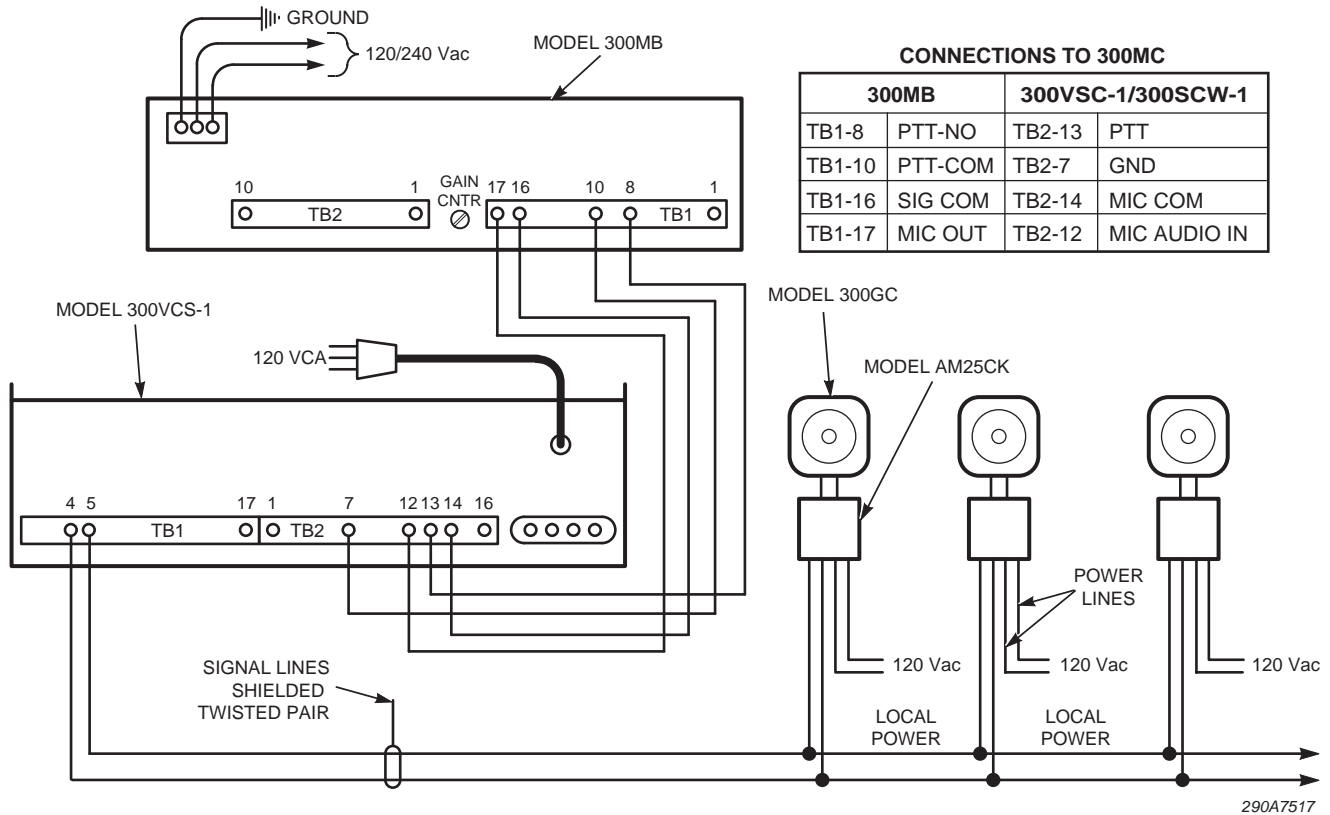
Figure 6 CommCenter as a SelecTone control center



As a Remote Microphone and Message Playback

This installation uses a 300MB interface with a 300VSC-1 or 300SCW-1. The CommCenter acts as a remote microphone audio input and adds message playback capability to a SelecTone system. Adjust the gain on the 300MB so that the audio output is at the required audio input level for the remote microphone input (16 mV_{RMS} max.) on the 300VSC-1 and the 300SCW-1. Failure to adjust the gain causes distortion and clipping in the system. See Figure 7.

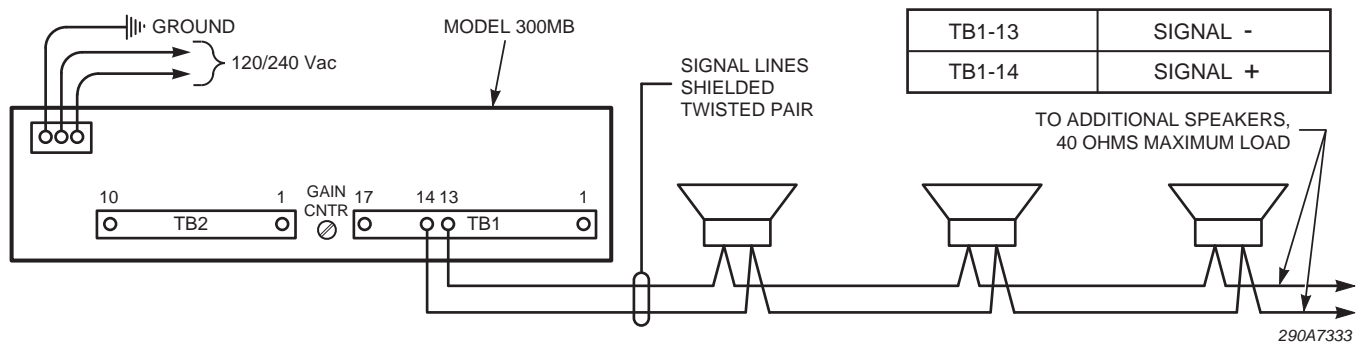
Figure 7 Model 300MB with remote microphone and message playback



Driving a 25 V_{RMS} Speaker Line

In this installation, the CommCenter is directly driving one or more speakers. The total power consumed must not exceed the drive capability of the CommCenter. See Figure 8.

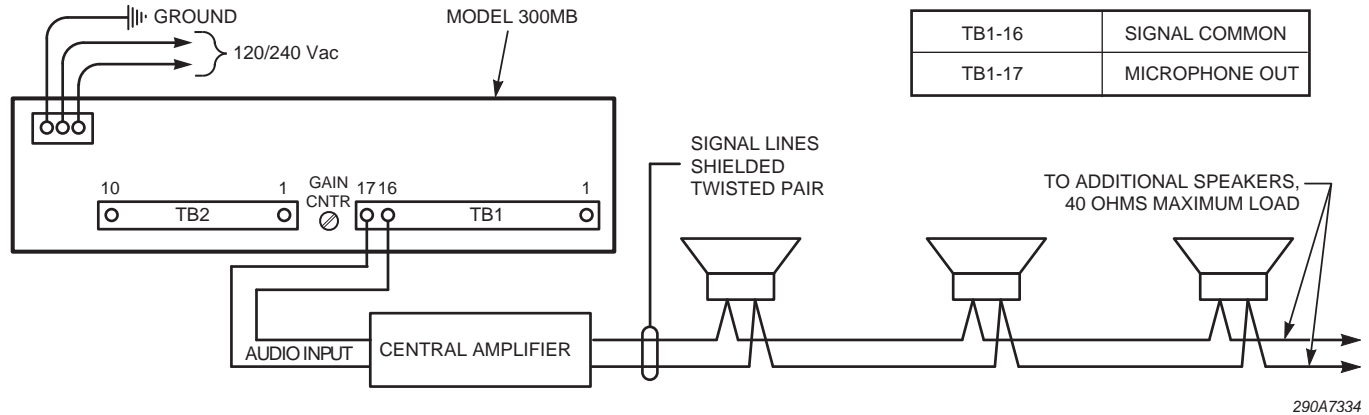
Figure 8 Model 300MB with 25 V_{RMS} connections



Interfacing with a Central Amplified System

In this installation, the CommCenter is acting as an audio input to a central amplifier. Message playback can be added to an existing centrally amplified paging system. See Figure 9.

Figure 9 Model 300MB with central amplifier connections

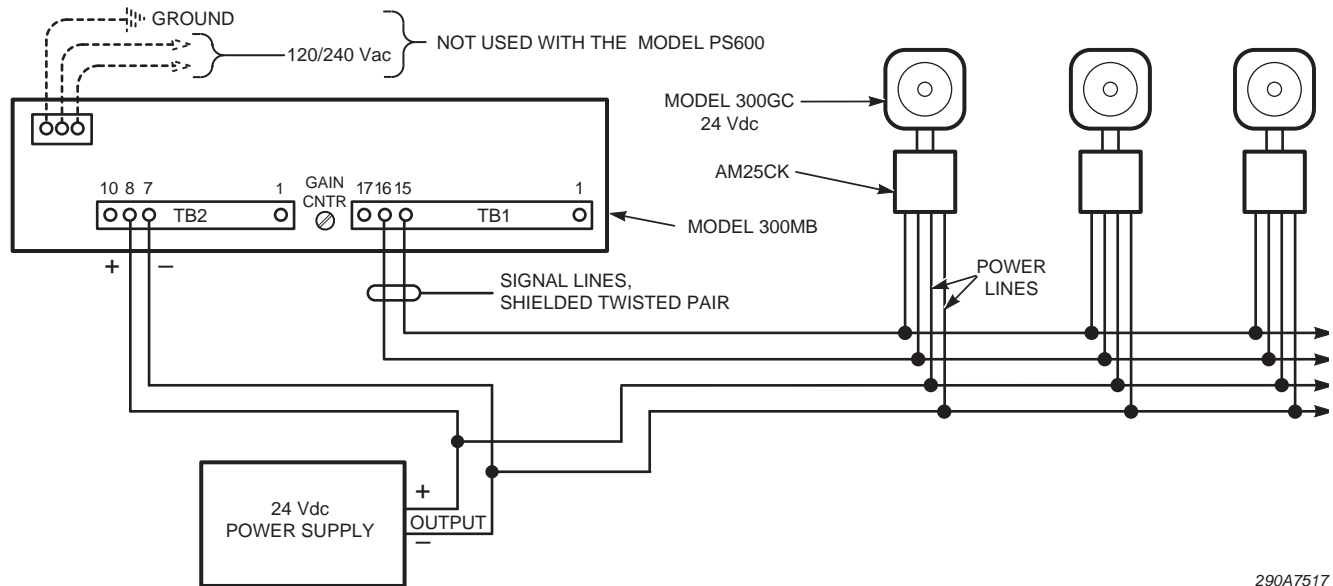


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As a Typical Central Power System

In this installation a 24 Vdc power supply, such as a Model PS600, is driving the CommCenter and one or more speakers. For additional information, including jumper removal, see "For 24 Vdc Operation" on page 19. See Figure 10.

Figure 10 Typical central power system



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Connecting Power to the CommCenter System

⚠ WARNING

QUALIFIED INSTALLERS ONLY: This device is to be installed by a trained electrician who is thoroughly familiar with the National Electric Code and will follow the NEC guidelines as well as local codes.

⚠ WARNING

SHOCK HAZARD: Do not perform any installation or maintenance on this system when power is on. Because the 300MB does not have a power switch, ensure that the power is disconnected before proceeding. Failure to heed this warning may cause serious injury or death.

⚠ WARNING

CROSSTALK/INTERFERENCE HAZARD: Mixing power lines with signal lines can cause cross talk, interference, or hum in the signal lines, which interferes with the emergency warning capability of this equipment. Do not install power lines in the same conduit as signal lines.

Operating power is connected to the 300MB through the three-position, field-wiring terminal block located at the back of the unit. Two knockout openings are provided. One knockout should be removed and provided with a bushing through which the power lines can be routed into the field wiring compartment.

For 120 Vac Operation

The 300MB is factory-set for 120 Vac operation.

For 240 Vac Operation

Set switch SW1 on the motherboard to the 240 V position. See Figure 2 on page 13.

For 24 Vdc Operation

If using 24 Vdc either as a primary or auxiliary source of power, remove the labeled jumper from terminals TB2-7 and TB2-8 of terminal block TB2 before using these positions. Connect the "+" terminal of the 24 Vdc power supply to the terminal TB2-8 (+24 Vdc) and "-" terminal of the 24 Vdc power supply to the terminal TB2-7 (-24 Vdc) of the TB2 terminal block located in the back of the 300MB. Install a Class II power supply, such as a Federal Signal PS600, and its associated wiring. See Figure 10 on page 18.

Safety Messages to Maintenance Personnel

⚠ WARNING

This device is to be serviced by a trained electrician who is thoroughly familiar with the National Electric Code and will follow the NEC guidelines as well as local codes.

This service information is for qualified personnel only. To avoid electric shock, do not perform any servicing other than changing fuses unless qualified to do so. Refer all servicing to qualified service personnel.

Listed below are some important safety instructions and precautions you should follow:

- Read and understand all instructions before operating this system.
- Do not perform any maintenance on this system when power is on. Because the 300MB does not have a power switch, ensure that the power is disconnected before proceeding.
- Read and understand all instructions before operating this system.
- Always ensure that the power to the 300MB is disconnected before removing the metal cover.
- Do not connect this unit to the system when power is on.
- All effective warning speakers produce loud sounds that may cause, in certain situations, permanent hearing loss. Take appropriate precautions such as wearing hearing protection.
- After installation, test the sound system to ensure proper operation.
- Establish a procedure to routinely check the sound system for proper activation and operation.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

Installing Storage Chips

⚠ WARNING

SHOCK HAZARD: Do not perform any installation or maintenance on this system when power is on. Because the 300MB-SD does not have a power switch, ensure that the power is disconnected before proceeding. Failure to heed this warning may cause serious injury or death.

NOTICE

STATIC SENSITIVE DEVICE: The circuitry of the storage chips and of the CommCenter can be destroyed or damaged by static discharge. Observe anti-static procedures when installing or maintaining a CommCenter.

NOTE: Perform the procedures in this section ONLY if you need to change the priority of the storage chips or are adding a different message to the unit 300MB.

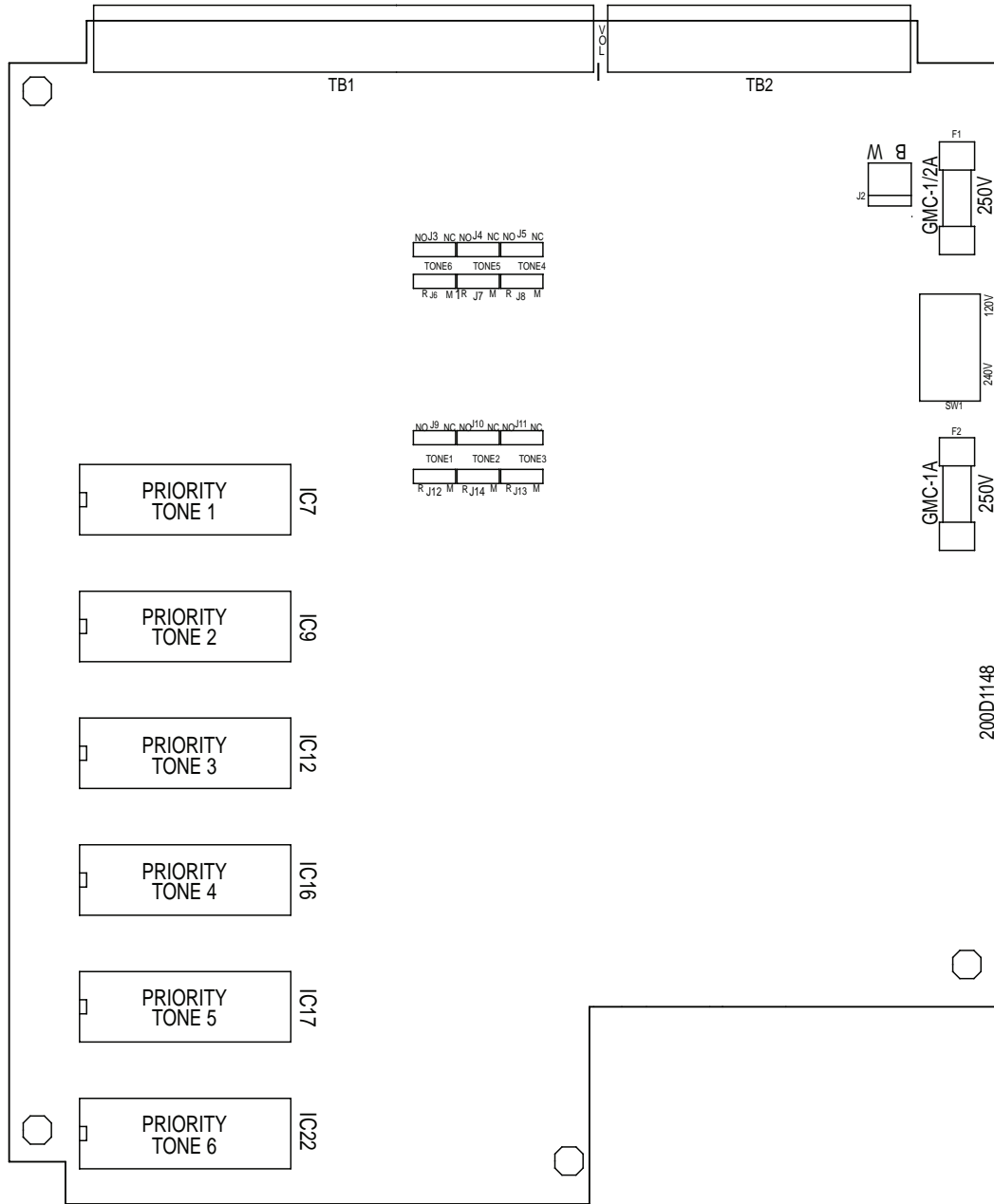
The CommCenter accepts messages stored on ICs and pluggable circuit boards. Both are referred to as message chips in this manual. The messages stored on pluggable circuit boards will operate on all Series B, Series C, and Series D Models. The Series D CommCenters use a different storage IC than the Series A, Series B, and Series C. These ICs cannot be interchanged between Series A, Series B, and Series C models. Be sure to verify which series CommCenter you have before ordering any additional messages.

The 300MB can accommodate up to six storage chips. The CommCenter is be shipped from the factory with the storage chips installed. Each storage chip is marked with the Model Number and other information.

Storage chips should be installed starting at Priority Tone 1 and working downward. If, for example, only four messages are required, have PT1 through PT4 sockets occupied and leave PT5 and PT6 open.

To remove a storage chip, gently pry it out of its socket. To install a storage chip, insert it into the proper socket on the printed circuit board as shown in Figure 11. Ensure that the notch on the edge of the new storage chip is facing in the same direction as the old one, i.e., next to the resistors at the edge of the board, and that all pins are properly inserted in the socket and not bent under.

Figure 11 Model 300MB motherboard



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Getting Replacement Parts

To order replacement parts, call Customer Care. See Getting Service.

Table 4 Replacement parts

Description	Part No
Blank Message Module	RMB9999SD
Pre-Recorded Message Module	RM1SD

Getting Service

If you are experiencing any difficulties, contact Federal Signal Customer Support at 1-800-344-4634 or 1-708-534-4756 or Technical Support at 1-800-755-7621 or 1-708-587-3587 or through e-mail at signalsupport@fedsig.com. For instruction manuals and information on related products, visit <http://www.fedsig.com>.



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