

**SPECIFICATIONS FOR NOISEMASTER®**  
**VEILED VOICE™ SOUND MASKING SYSTEM**

**PART 1.00 GENERAL**

**1.01 GENERAL REQUIREMENTS**

This section details general requirements for plenum sound masking installations with up to 16 speakers per zone.

**1.1 CONTACT**

All work shall conform to contract documents

**1.2 ADDITIONAL WORK**

Additional work required prior to completion of the sound masking system shall be indicated on the drawings for the system but not necessarily limited to the following:

**1.2.1 HANGERS**

Hangers or power driven fasteners will be located on recommended speaker mounting centers in accordance with contract drawings.

**1.2.2 POWER**

Installation of separate 115 volt, 15 ampere circuit (non-switched) at nearest utility panel within 40 feet (12cm) of Master Control Unit location. This circuit supplies the 40 VA transformer which powers each Master Control Unit. The circuit breaker for each sound masking transformer will be clearly marked.

**1.2.3 CABLING**

The installation of cables in a plenum will normally require the use of jacketed 18 Ga. NEC 725b, Class2, Teflon or equivalent cables.

The speakers will use two pin polarized connectors at both of the cable's ends. The power cable will have only one five pin polarized connector for the Master end and bc simply stripped at the transformer end.

**1.2.4 TRANSFORMER INSTALLATION**

Installation of Class 2/40 VA transformer at utility panel/junction box in accordance with 1.2.2 and all applicable codes.

**1.2.5**

Testing of power circuits, hanging the speakers, connecting the speakers and adjusting the system for levels with the environment.

**1.3 SUBMITTAL**

**1.3.1 DRAWINGS**

Drawings submitted to the owner prior to delivery of materials shall consist of complete shop drawings for the following:

- a: Floor circuit
- b: Power transformer and speaker locations
- c: Connector and cable runs

**1.3.2 DATA SHEETS**

Product data for each installed item.

**1.3.3 OPERATION AND MAINTENANCE MANUAL**

An operation and maintenance manual will be provided to the owner after the installation and tuning of the system(s).

## 1.4 QUALITY ASSURANCE

### 1.4.1 ELECTRICAL CONTRACTOR

The electrical contractor shall be licensed to install power panels and circuits for powering transformers to all codes.

### 1.4.2 MASKING SYSTEM INSTALLERS

The masking system installer shall be trained and qualified to install and trouble shoot electrical hook-up and/or acoustical problems with authority to replace any damaged or defective masking system component without additional costs to customer.

### 1.4.3 PROTECTION BY INSTALLERS

All means will be employed to protect the system components from damage and likewise protection will be extended to protect the installed work of other trades.

### 1.4.4 MANUFACTURER

The manufacturer will be regularly engaged in the manufacturing of sound masking systems and will be responsible for manufacturing said product using transformer, wiring and other components in accordance with NEC725, Class 2 codes or their equal. WARRANTY of said system components will be for one year at full material value and then prorated for the next four years at 25% per year.

### 1.4.5 PERFORMANCE

The sound masking system will deliver a uniform sound level of  $\pm$ dB in the areas shown on the floor layout drawings.

**NOTE:** When paging is installed as an option, some reduction in the number of speakers per master may be indicated depending on office layout, ceiling tile, and sound attenuation blanket/banner considerations.

| Octave Band<br>Frequency | Octave Band<br>Sound Pressure Level<br>(dB) | Octave Band<br>Frequency | Octave Band<br>Sound Pressure Level<br>(dB) |
|--------------------------|---|--------------------------|---|
| 200                      | +10 To +14                                  | 1000                     | - 1 To - 0                                  |
| 250                      | + 9 To +12                                  | 1250                     | - 2 To - 1                                  |
| 315                      | + 8 To +10                                  | 1600                     | - 5 To - 3                                  |
| 400                      | + 6 To + 9                                  | 2000                     | - 8 To - 4                                  |
| 500                      | + 4 To + 7                                  | 2500                     | -10 To - 6                                  |
| 630                      | + 3 To + 4                                  | 3150                     | -13 To - 8                                  |
| 800                      | + 1 To + 2                                  | 4000                     | -16 To -10                                  |
|                          |   | 5000                     | -18 To -11                                  |

## PART 2.00 SYSTEM COMPONENTS

System components are supplied by The Proudfoot Company, Inc., are modular in nature.

### 2.1 MASTER SOUND MASKING GENERATOR

The generator will consist of a patented\* circuit including a solid state digital noise source, spectrum shaping filters both fixed and variable, and an amplifier. All connections are via polarized and keyed connectors. \*US Pat. #4,450,321.

#### 2.1.1 GAIN CONTROL

A gain control will allow setting the delivered level up to +88 dBA per speaker for use with mineral or glass fiber acoustic ceilings with an STC 36 rating and still deliver up to 52 dBA in the work space.

#### 2.1.2 TONE CONTROLS

High and low frequency "tone" controls for tailoring the spectrum to the required levels for optimum masking. See curve data for system.

### **2.1.3 PAGING OPTION**

Paging input with 500 nominal input impedance and 2VRMS nominal drive level required, 3VRMS max. Paging input is "flat" from 200 Hz to 6 KHz and does not require special pre-emphasis. A single two wire connection to the Master will drive all the slaved speakers, thus eliminating duplicate wiring between speakers. (See section 1.4.5)

### **2.1.4 DIMENSIONS**

The master size is 3" (7.62) Hx4" (10.16cm) Wx6" (15.24cm)L exclusive of mounting ears, control knobs and connectors, etc. The mounting plate size is 6.5" (16.51) W x 8.75" (22.23cm)L.

## **2.2 SPEAKER UNIT**

### **2.2.1 ACOUSTIC SPECIFICATIONS**

The speaker unit is rated to 3 watts and is designated to deliver up to 88 dB(A) level of sound when measured at four feet axially from the speaker. A **uniform** spectrum of modified pink noise with speaker to speaker variation at less than  $\pm 2$ dB over any \_ octave band will be assured.

For spectrum curves see curve data. The nominal response range is from 200 Hz to 6K Hz.

The system is designed to deliver acceptable (44 to 52 dBA) masking levels at 48" high minimum with speakers on 16' centers maximum. Manufacturer will advise spacing for plenums with heights less than 48".

### **2.2.2 SPEAKER MOUNTING**

The speaker mounting shall be by means of the supplied single S-S jack chain and eye hook. The nominal 3-foot chain will assure uniform dispersion of the sound provided the interior plenum space is 48" high minimum with speakers on 16' centers maximum. Manufacturer will advise spacing for plenums with heights less than 48".

### **2.2.3 SPEAKER CONNECTIONS**

The interconnecting means built into the speaker allows for easy inter-wiring with pre-wired polarized connectors, thus saving time and eliminating wiring errors. These connectors allow either "daisy-chained" or "branched" speaker wiring, to give flexibility in installing wiring.

### **2.2.4 SPEAKER LEVEL CONTROL**

Each speaker has an individual level control, nominally set at 80%. This control is to be normally used for balancing the delivered dB to within  $\pm 1$  dB if nearby air returns or other low or high STC ceiling elements cause elevated or lowered levels. Additionally, special requirements may override the normal speaker placements and this control will again be used.

### **2.2.5 SPEAKER PHYSICAL DIMENSIONS**

The speaker size is 6" (15.24cm) Dia. x 7" (17.78cm) high approx. exclusive of mounting eye blot, control knob, etc.

## **2.3 WIRING**

All wiring shall consist of jacketed 18 Ga Teflon or equivalent "low smoke" producing wire to NEC spec 725b Class 2.

### **2.3.1 SPEAKER WIRING**

The speaker wiring shall have polarized two pin connectors at each end with the nominal length of 20' being standard. Custom length are to be provided as required.

### **2.3.2 TRANSFORMER WIRING**

The transformer wiring shall have polarized five pin connectors at one end and be simply stripped bare for attachment to transformer screw terminals at the end. Nominal lengths from 25' standard to 40' maximum recommended are supplied.

### **2.3.3 PAGING WIRING**

The paging wiring using the optional connector consists of a polarized three pin connector and the same Teflon wire as previously specified. A shielded wire is not needed since the paging voltages are up to 2 or 3 volts RMS typical. Recommended consultation with the factory and understanding the specific application notes will avoid field troubles. The paging wiring path length can be several hundreds of feet long due to voltage and

impedance levels involved.

## **2.4 TRANSFORMER**

### **2.4.1 TRANSFORMER TYPE**

The transformer type supplied will be rated to NEC Class 2 construction for continuous duty to power-limited circuits.

**Note:** Use of any other type transformer will void all warrants and can cause damage to the sound masking system as well as to the property of the owner. UL/CSA Approved.

### **2.4.2 ELECTRICAL RATINGS**

The electrical ratings of the transformer are:

Primary 115V 50/60Hz    Secondary 24V 40VA

### **2.4.3 TRANSFORMER CONNECTIONS**

The primary connections to the transformer will be via the attached 6" wire leads to wire nuts into the previously installed 115V 15 amp circuit on the panel or junction box. The transformer metal case shall be grounded via the ground screw. The secondary connections will be by screw terminals to 18 GA jacketed power cable. See section 2.3.2

## **PART 3.0 EXECUTION**

### **3.1 SURFACE CONDITIONS**

#### **3.1.1 INSPECTION**

- 3.1.1.1 Study building drawings and visit the job site for the purpose of familiarizing with project condition.
- 3.1.1.2 Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- 3.1.1.3 When encountered during the progress of this work, existing active services such as electrical, heating, ventilating, air-conditioning equipment, etc., shall be protected as required and coordinated with the trades for proper execution of the work without disturbing the operation of such services.

#### **3.2.1 PRIMARY POWER SUPPLY**

- 3.2.1.1 Provide power per Section 1.2.2
- 3.2.1.2 The AC circuits will be for the sole use of the masking 40 V A step-down transformer circuits and will be switchable at a circuit breaker panel.

#### **3.2.2 AC STEP-DOWN TRANSFORMERS**

- 3.2.2.1 Provide primary voltage AC 110-120 step-down 40 volt transformers for energizing the master units.
- 3.2.2.2 Hard wire required step-down transformers to input electrical circuit located in electrical closet utility panel.

#### **3.2.3 PLENUM SPEAKERS**

- 3.2.3.1 Plenum speakers shall be located and installed as indicated on the contract drawings and be positioned to avoid interference with mechanical, lighting, or structural features.
- 3.2.3.2 The units shall be suspended from the structure on the supplied light weight chain for clearances as indicated in the enclosed drawings. In certain cases, it will be necessary to locate the units away from obstructions. The relocation should be no more than a three-foot radius from the original location and should be marked on the plans for reference.
- 3.2.3.3 All equipment shall be firmly held in place as field conditions dictate.

#### **3.2.4 WIRING**

- 3.2.4.1 All low-voltage wiring between units shall be Teflon per Section 2.3 or as approved by local code.
- 3.2.4.2 Wiring shall be secured to the eye bolt at the top of the speaker with a wire tie to prevent connector from being pulled free from speaker pin connections if wire is pulled.

3.2.4.3 The wiring from each zone where designated terminating at the electrical closet shall be clearly labeled as to circuit and zone number corresponding to the circuit and zones marked on the location plans.

3.2.4.4 The contractor shall take adequate precautions to prevent electromagnetic and electrostatic interference and hum. Low voltage wiring shall be separate from power wiring.

## **3.2 INSTALLATION**

3.2.1 The contractor must obtain written approval from the architect/owner for any changes or substitutions to this specification.

## **3.3 SYSTEM TESTS**

3.3.1 The contractor shall test each circuit and unit for proper operation.

3.3.2 Upon completion of the entire installation and tests described in this section, the contractor shall notify in writing the architect/owner that the system is operational according to the specification.

3.3.3 The owner's acoustical consultant or factory authorized representative will adjust the system to establish appropriate level characteristics and uniformity within  $\pm 1$  dB, in achieving proper speech privacy and business equipment noise isolation. During documentation any changes or corrections shall be immediately rectified within 7 days by the contractor.