

## **MASTERFORMAT™ 2004 EDITION SECTIONS**

27 51 19 – SOUND MASKING SYSTEMS

27 51 13 – PAGING SYSTEMS

## **PREVIOUS MASTERFORMAT™ SECTION**

16820 – SOUND REINFORCEMENT / SOUND MASKING SYSTEMS

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### NOTE TO SPECIFIER

AccuMask™ Sound Masking System – Decentralized sound masking, paging and music system.

This section is based on the products manufactured by K.R. Moeller Associates Ltd., located at:

3-1050 Pachino Court  
Burlington, Ontario  
L7L 6B9  
Canada

Toll Free           1-866-564-4766  
Tel                 (905) 332-1730  
Fax                (905) 332-8480  
Email             [info@accumask.com](mailto:info@accumask.com)  
Web                [www.accumask.com](http://www.accumask.com)

K.R. Moeller Associates Ltd. also manufactures the LogiSon® Acoustic Network and the Scamp® Sound Masking System. The AccuMask System is entirely compatible with existing Scamp installations.

(Spec Version 1.0)

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## **1. PART ONE – GENERAL**

### **1.1. SECTION INCLUDES**

- A. Sound masking systems
- B. Paging systems

### **1.2. RELATED SECTIONS**

- A. 27 51 19 – Sound Masking Systems
- B. 27 51 13 – Paging Systems

### **1.3. REFERENCES**

- A. UL6500 – Standard for Audio/Video and Musical Instrument Apparatus for Household, Commercial and Similar General Use
- B. UL 2043 – Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces; 1996
- C. ASTM E 1374-02 – Standard Guide for Open Office Acoustics and Applicable ASTM Standards
- D. ASTM E 1573-02 – Standard Test Method for Evaluating Masking Sound in Open Office Using A-Weighted and One-Third Octave Band Sound Pressure Levels
- E. ASTM E 1130-02e1 – Standard Test Method for Objective Measurement of Speech Privacy in Open Offices Using Articulation Index
- F. FCC – EN 55103-1&2 – Audio, Video and Entertainment Lighting Control

### **1.4. PERFORMANCE REQUIREMENTS**

- A. General Performance

1. The sound masking and paging system shall be digitally adjustable by remote control at each distributed master unit.
  2. Output settings shall be saved in non-volatile memory in each master unit.
- B. Sound Masking Performance
1. The masking sound shall be random and provide no noticeable repetitive pattern.
  2. The masking sound shall be provided by independent generators included in each master unit (feeding zones of 1 to no more than 3 speakers).
  3. The master units shall provide fine digital masking spectrum adjustment with 100 or more preset curves, capable of adjusting zones of 1 to no more than 3 speakers.
  4. The masking volume shall be digitally adjustable in increments of no more than 0.5 dBA at each master unit (controlling 1 to no more than 3 speakers), over a range of at least 45 dBA @ 1m.
  5. The central volume control shall provide at least a 20 dBA volume range.
  6. After adjustment, the system shall provide a spatial uniformity of  $\pm\frac{1}{2}$ dBA for the masking volume with furnishings in place.
- C. Paging Performance
1. The paging volume shall be digitally adjustable with at least 8 increments of no more than 2.0 dBA increments at each master unit (controlling 1 to no more than 3 speakers)
  2. The paging volume control shall provide an off position at each master unit.
  3. The system shall allow for hardwired paging zones independent of timer zones.
- D. Timer Performance
1. The timer shall enable masking volume levels to be automatically adjusted according to a programmed schedule or schedules.
  2. The timer shall be calendar-based.
  3. The timer shall provide automatic daylight saving time adjustments.
  4. The timer shall provide an acclimatization process that automatically increases the masking volume over a period of time according to a user programmed schedule. The system should allow for independent acclimatization schedules for each timer zone.
  5. The timer shall provide at least four independent timer zones.
  6. The timer shall allow independent timer schedules for each day of the week.
  7. The timer shall allow variable rates of volume adjustment.
  8. The system shall allow for hardwired timer zones independent of paging zones.
- E. Security Performance
1. The timer shall be contained in a key locked metal enclosure.
  2. Access to the timer functions shall be password protected.
  3. No physical controls shall be located on the master units, to prevent tampering.
  4. Master units shall provide configuration mode protection via an activation password.

## 1.5. SUBMITTALS

- A. Product Data: Manufacturer's specifications and installation instructions
- B. System Design: Schematics of the system showing quantity and location of system components and related cabling and accessories
- C. Warranty Documents: Warranty documents covering the system components.

## 1.6. QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum of 10 years manufacturing sound masking systems.
- B. System Design – Performed by an approved manufacturer representative.
- C. Installer Qualifications – Approved by manufacturer representative and are trained with the specified products or have demonstrated experience with the installation of similar products to those specified.
- D. System Adjustment – Done by an approved manufacturer representative or trained contractor
- E. Single Source Responsibility – Source master units, central volume control master units, satellite units, remote controls, and timers from a single manufacturer.

## 1.7. DELIVERY, STORAGE AND HANDLING

- A. Protect from moisture during shipping, storage and handling.
- B. Deliver in manufacturer's original unopened and undamaged packages with manufacturer's labels legible and intact.
- C. Inspect manufacturer's packages upon receipt.
- D. Handle packages carefully.

## 1.8. WARRANTY AND MAINTENANCE

- A. Provide a written warranty that products installed shall be free from defects in parts or assembly for a 5-year period from date of completion of installation.

## 2. PART TWO – PRODUCTS

### 2.1. MANUFACTURERS

- A. Acceptable Manufacturer: K.R. Moeller Associates Ltd.; 3-1050 Pachino Court, Burlington, Ontario L7L 6B9 Canada. Toll Free: 1-866-564-4766. Tel: (905) 332-1730. Fax: (905) 332-8480. Email: [info@accumask.com](mailto:info@accumask.com). Web: [www.accumask.com](http://www.accumask.com).
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered provided that the all performance requirements in Section 1.4 of this specification are met. Other manufacturers seeking approval must provide a signed compliance statement from an executive officer of the manufacturer.

### 2.2. SYSTEM COMPONENTS

General System Overview: The sound masking and paging system shall be a decentralized system with digital output adjustment at each master unit via remote control. The system shall be comprised of a selection of a) distributed master units; b) distributed central volume control master units; c) distributed satellite units; d) programmable timers; e) power transformers; and f) remote controls.

- A. Each master unit shall provide:
  - 1. An independent masking sound generator
  - 2. A digital adjustment for the masking spectrum
  - 3. A digital adjustment for the masking volume
  - 4. A digital adjustment for the paging volume
  - 5. A paging signal input
  - 6. A timer/central volume control signal input
  - 7. An audio amplifier
  - 8. An infrared remote control receiver
  - 9. Audio indicators for all output settings
  - 10. Chain mounts allowing on-site adjustment of speaker orientation (upward/downward)
  - 11. A damped metal enclosure

12. Enclosure dimensions no greater than:

- i. Diameter 6.0 inches; 15.5 cm
- ii. Height 3.75 inches; 9.5 cm

13. A loudspeaker driver with:

- i. Diameter 4.0 inches; 10.0 cm
- ii. Power Rating 25 Watts RMS
- iii. Sensitivity 87 dBA @ 1W / 1m
- iv. Frequency Response 100 - 10,000 Hz (+/- 6 dB)
- v. Impedance 16 Ohms
- vi. Magnet Structure Weight 17.6 oz; 500 g

14. A suspension chain 20 inches (50.8 cm) or more in length and tool-less length adjustment clip

B. Each central volume control master unit shall provide:

1. An independent masking sound generator
2. A digital adjustment for the masking spectrum
3. A digital adjustment for the masking volume
4. A digital adjustment for the paging volume
5. An analog adjustment for central volume (optional external wall mounted control)
6. A paging signal input
7. A timer/central volume signal input
8. An integrated, restorable ramp-up timer providing a 10dBA rise over a 14-day period
9. An audio amplifier
10. An infrared remote control receiver
11. Audio indicators for all digital output settings
12. Chain mounts allowing on-site adjustment of speaker orientation (upward/downward)
13. A damped metal enclosure
14. Enclosure dimensions no greater than:

- i. Diameter 6.0 inches; 15.5 cm
- ii. Height 3.75 inches; 9.5 cm

15. A loudspeaker driver with:

- i. Diameter 4.0 inches; 10.0 cm
- ii. Power Rating 25 Watts RMS
- iii. Sensitivity 87 dBA @ 1W / 1m
- iv. Frequency Response 100 - 10,000 Hz (+/- 6 dB)
- v. Impedance 16 Ohms
- vi. Magnet Structure Weight 17.6 oz; 500 g

16. A suspension chain 20 inches (50.8 cm) or more in length and tool-less length adjustment clip

C. Each satellite unit shall provide:

1. A damped metal enclosure
2. Chain mounts allowing on-site adjustment of speaker orientation (upward/downward)
3. Enclosure dimensions no greater than:

- i. Diameter 6.0 inches; 15.5 cm
- ii. Height 3.75 inches; 9.5 cm

4. A loudspeaker driver with:
  - i. Diameter 4.0 inches; 10.0 cm
  - ii. Power Rating 25 Watts RMS
  - iii. Sensitivity 87 dBA @ 1W / 1m
  - iv. Frequency Response 100 - 10,500 Hz (+/- 6 dB)
  - v. Impedance 16 Ohms
  - vi. Magnet Structure Weight 17.6 oz; 500 g
5. A suspension chain 20 inches (50.8 cm) or more in length and tool-less length adjustment clip

D. Each programmable timer shall provide:

1. A keypad interface allowing programming of timer settings
2. A backlit 4x20 character LCD display
3. Four or more zone outputs
4. A key locked metal enclosure
5. A backup battery
6. Mounts for wall suspension
7. Enclosure dimensions no greater than:
  - i. Width 11.0 inches; 28.0 cm
  - ii. Height 9.25 inches; 23.5 cm
  - iii. Depth 3.125 inches; 8.0 cm

E. Each power transformer shall provide:

1. UL listed or equivalent Class 2 AC power supply with 18V 37VA output.

F. Each remote control shall provide:

1. Infrared control of the master unit output
2. Controls for masking spectrum adjustment
3. Controls for masking volume adjustment
4. Controls for paging volume adjustment

### 3. PART THREE - EXECUTION

#### 3.1. SYSTEM DESIGN

- A. Design system according to manufacturer's specifications.

#### 3.2. EXAMINATION

- A. Ensure that facility build out is at a stage suitable for the system installation.
- B. Ensure that facility is constructed according to plans including wall locations, ceiling types and plenum barriers.
- C. Ensure that the plenum height is appropriate as per manufacturer's recommendations and as per plan.
- D. Ensure power requirements have been provided as per plan.
- E. Ensure sufficient space for centrally located components is available as per plan and manufacturer's specifications.
- F. Ensure any third-party components required to be interfaced with the system have been provided.

### **3.3. PERMITS**

- A. Obtain necessary permits for installation work.

### **3.4. INSTALLATION**

- A. Follow all applicable codes for the area
- B. Follow manufacturer's recommendations regarding installation as found in the *AccuMask Sound Masking System Installation Manual*
- C. Follow the system design for location of loudspeakers and wiring
- D. Record any necessary changes to the system design on the plan
- E. Ensure that supplementary materials used meet applicable safety standards

### **3.5. FIELD QUALITY CONTROL**

- A. Ensure that plenum heights meet the minimum recommended by the manufacturer for the loudspeakers
- B. Ensure that distance between the top of the loudspeaker and the deck meets manufacturer's minimum specifications
- C. Ensure that loudspeakers are suspended in a level manner
- D. Ensure that loudspeakers are not obstructed as much as possible
- E. Ensure cables are properly supported in the ceiling
- F. Ensure cables are securely terminated

### **3.6. SYSTEM ADJUSTMENT**

- A. Follow manufacturer's recommendations for system settings as found in the *AccuMask User Manual*

### **3.7. CLEANING**

- A. Ensure that empty packaging is removed.
- B. Ensure that any material waste is removed
- C. Ensure the product is clean and presentable where required

### **3.8. DEMONSTRATION AND TRAINING**

- A. Demonstrate operational system to customer by walking the space
- B. Demonstrate functionality of the system to the customer or customer's representative
- C. Train customer employee to maintain system as required

### **3.9. TESTING AND REPORTING**

- A. Test area for consistency of masking volume and quality
- B. Verify that paging zoning and levels are appropriate and as per plan
- C. Test masking volumes with mechanicals off and with space unoccupied
- D. Provide a printed report detailing system settings