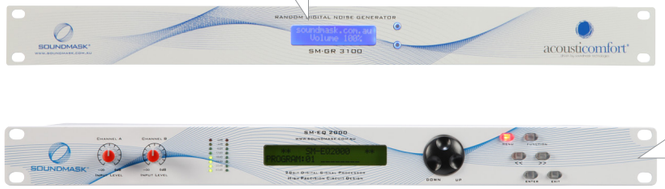
SOUNDMASK®

PRODUCT CATALOGUE

www.soundmask.com.au

CONTENTS

Purpose built random digital generator is low powered, self-contained and confined to 1U rack space.



Stereo equaliser with 20 selectable frequencies per channel, used to shape output from generator.

Digital distributor allows easy signal routing through software.

Run a whole building using the digital amplifier – up to 800 transducers across eight zones.

Simple five channel volume control for convenient zoning.

INTRODUCTION

Welcome to Soundmask's product catalogue.
In these pages you will find each product in the current Soundmask range, along with specifications and a brief example of how each product is usually integrated into a Soundmask system.

Soundmask's systems have come a long way since we started business in 1989. Our first rudimentary system comprised a cylindrical tin casing enclosing the speaker (top right) which was connected through an equalizer to white and pink noise chips. Comparing the current model (bottom right) with that tin cylinder, which was followed by a spun aluminium casing, neatly demonstrates how far we have come, with our ongoing commitment to innovation and development.

During more than 25 years of research and development, Soundmask's systems have been refined with acoustics, ease of use, lower costs, energy efficiency as well as aesthetics being our key priorities. We know that with speech privacy and distracting noise equal problems in our modern world, you will find our tried and tested Soundmask systems are perfect for your project.

If you have any questions, please contact our head office or locate your nearest distributor via our website www.soundmask.com.au

CONTACT

www.soundmask.com.au

1300 734 168 (within Australia)

+61 3 9879 5355

megan@soundmask.com.au

Soundmask Australia Pty Ltd
PO Box 4068
Balwyn VIC 3103
AUSTRALIA

PRODUCT CATALOGUE

RANDOM DIGITAL SOUND GENERATOR

MODEL SM-GR-3100

Soundmask's rack generator is the backbone of Soundmask's systems and features a microcontroller controlled digital random noise generator with an effective frequency range of 20Hz to 20kHz.

The digitally generated Gaussian noise is passed through a spectrum shaper to flatten its response through the midrange, corresponding to human speech frequencies.

SPECIFICATIONS

Model	SM-GR-3100
Generator	› Microcontroller based digital random noise generator › Blue LCD display › Digital button lock to preserve settings
Amplifier	› PWM oscillator is up to 1.0M › 50W x 2 RMS into 6W with Vcc 24V › 50W x 2 RMS into 8W with Vcc 28V › 24-28V Vcc Supply Voltage Operation › Full Bridge (BTL) output Amplifier › Integrated Short Circuit Protection › Integrated Thermal shutdown › Start Up De-pop Circuit › Efficiency up to 90% › Frequency response 20Hz-20kHz › UL/CSA/CE Mark compliance
Power	› Power in 110 – 240V AC 50/60Hz › Fuse T800mA/250V › Power output to speakers 7W
Dimensions & Weight	483 x 155 x 45 mm, 2 Kg
Compliance	
Safety information	Mount unit in locations that provide unobstructed air movement to minimise the risk of overheating.

EXAMPLE OF USE

Soundmask's rack generator is the most versatile generator, able to connect with any of Soundmask's other hardware. It is typically the first choice for installations requiring more than around 30 transducers. The unit is installed in a rack (above right) with other electrical components.

Retrofitting the office of United Super was a typical installation where one SM-GR-3100 could service the entire space. Soundmask was approached by CBUS's trustee, seeking a solution to speech privacy and noise problems in its head office. The primary issues were within the board room and meeting rooms within the open plan area, where private conversations were clearly audible from outside (top left). Further, the open plan office area was filled with distracting noise, which can decrease staff productivity and increase workplace stress and health problems.

Soundmask installed a Soundmask system that reached throughout the entire level, solving CBUS's speech privacy problems and ensuring that CBUS complies with the Model Work Health & Safety Act in respect of its workers' noise-related stress levels.

PRODUCT CATALOGUE

RANDOM DIGITAL SOUND GENERATOR

MODEL SM-GS-3200

Soundmask's SM-GS-3200 is a microcontroller controlled digital random noise generator. The digitally generated Gaussian sound is passed through a spectrum shaper to flatten its response through the midrange, corresponding to human speech frequencies. The digital amplifier is capable of driving 50 Soundmask transducers.

SPECIFICATIONS

Model	SM-GS-3200
Generator	› Microcontroller based digital random noise generator › Blue LCD display › Digital button lock to preserve settings
Amplifier	› PWM oscillator is up to 1.0M › 50W x 2 RMS into 6W with Vcc 24V › 50W x 2 RMS into 8W with Vcc 28V › 24-28V Vcc Supply Voltage Operation › Full Bridge (BTL) output Amplifier › Integrated Short Circuit Protection › Integrated Thermal shutdown › Start Up De-pop Circuit › Efficiency up to 90% › Frequency response 20Hz-20kHz
Power	› External power in 110 – 240V AC 50/60Hz › Output 24V - 2A
Dimensions & Weight	200 x 190 x 35 mm, 900 g
Compliance	RoHS
Safety information	Mount unit in locations that provide unobstructed air movement to minimise the risk of overheating.

EXAMPLE OF USE

Soundmask's shelf generator is perfect for small projects like medical suites or small offices. Often such spaces have problems with thin walls or open plan reception areas where speech privacy is a priority.

Another advantage of the shelf generator is its ease of operation, so it can either be adjusted to ramp up when the device is switched on for a more acoustically comfortable start up, or can be manually operated by the customer.

One such example is the Nutrition Assessment Clinic where the walls are thin and conversations were perceptible. In fact, the problem was so bad that our dietician client lost one customer due to the lack of speech privacy.

We installed an in-ceiling Soundmask system with the shelf generator and speakers, ensuring that her clients can speak freely without the concern that they would be overheard.

The shelf generator is often paired with the "cut in" transducers (see page 19 for details) and is small enough to be placed in a locked cabinet or even on the wall (pictured).

PRODUCT CATALOGUE

DIGITAL EQUALIZER

MODEL SM-EQ-2000

Soundmask's SM-EQ-2000 is used to shape the output of the SM-GR-3100. Specifically, the SM-EQ-2000 is a third Octave Digital Equaliser which connects to the generator via two XLR connectors.

The random sound is then amplified through a 50W full bridge digital amplifier capable of driving 100 Soundmask transducers. The generator's output can be adjusted to ramp up when the device is switched on for a more acoustically comfortable start up.

SPECIFICATIONS

Model	SM-EQ-2000
Input	2 channels, 10kOhm impedance
Output channels	2 channels, 50 Ohm impedance
Action filters	2 x 20 EQ filters with selectable frequency and band width.
Nominal level (input/output)	+4dBm
DAC (input/output)	24-Bit
Programs	100 pre-defined and 100 user-defined programs
Signal to noise ratio	105dB (unweighted)
Power input	Power input: 110/220-230V AC 50/60Hz 20VA Via external power supply
Frequency response	20Hz 20kHz
Dimensions & Weight	483 x 155 x 45 mm, 2.45 kg
Compliance	
Safety information	Mount unit in locations that provide unobstructed air movement to minimise the risk of overheating.

EXAMPLE OF USE

Soundmask's SM-EQ-2000 is primarily used to shape sound for special acoustic environments, like the Hamilton Call Center (open plan area pictured top left with rack set-up right).

Soundmask's generators are pitched to a flat mid-range signal, which complements human speech frequencies. However, in a number of cases, acoustic consultants prefer to change certain frequencies to suit the space. The SM-EQ2000 allows the user to choose as many as 20 frequencies within a certain zone.

Soundmask's SM-EQ-2000 allows the preselection of up to 20 frequencies to make any necessary changes required for the space in the controlled area.

In the example, the call center required different frequencies for the meeting rooms, private offices and the dual purpose open plan call center/training room. The treated space was customised with different zones, using Soundmask's Zone Distributor (SM-DR-5000) and the sound was shaped using the presets.

Note: Refer to the Operating Manual for further details.

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DIGITAL DISTRIBUTOR

MODEL SM-DX-4800

The SM-DX-4800 features 4 channel input and 8 channel output, selectable 6 bands of parametric EQ per channel, multiple crossover selections and full function limiters.

The unit also features remote computer control through a LAN connection.

SPECIFICATIONS

Model	SM-DX-4800
Input	› 6-Band Parametric Equalizers › Full 5-segment LEDs
Output channels	› 6-Band Parametric Equalizers › Full 5-segment LEDs › Full-Function Limiters
Other Features	› 32-bit (40-bit floating pt) DSP › 24-bit A/D & D/A Converters › Backlit LCD Display › Storage up to 30 Prog setups › "One Touch" easy access setup
Frequency Resolution	Accurate 1 Hz
Power input	Voltage input is 100-240VAC, 50-60Hz, 0.8A. Connects via external power supply.
Frequency response	20Hz 20kHz
Dimensions & Weight	483 x 155 x 45 mm, 2.45 kg
Compliance	
Safety information	Mount unit in locations that provide unobstructed air movement to minimise the risk of overheating.

EXAMPLE OF USE

Where powerful soundmasking service is required, for example in highrise buildings, Soundmask's Digital Distributor (SM-DX-4800) paired with the Digital Amplifier (SM-DA-8000) can couple with just one generator to power up to 800 transducers with 8 independent zones.

In the set-up (pictured below), one Rack Generator (SM-GR-3100) and one Digital Equalizer (SM-EQ-2000) are used in order to provide more power and to further shape the sound. Each Ceiling Transducer (SM-T-1200) pictured represents 100 transducers.

EXAMPLE LAYOUT

RANDOM DIGITAL NOISE GENERATOR SM-GR-3100

DIGITAL EQUALIZER SM-EQ-2000

DIGITAL DISTRIBUTOR SM-DX-4800

DIGITAL AMPLIFIER SM-DA-8000

CEILING TRANSDUCER SM-T-1200

NOTES
› Each SM-T-1200 pictured represents 100 transducers.
› The SM-DA-8000 is capable of servicing up to 800 transducers.
› Diagram not to scale.

PRODUCT CATALOGUE

ZONE DISTRIBUTOR

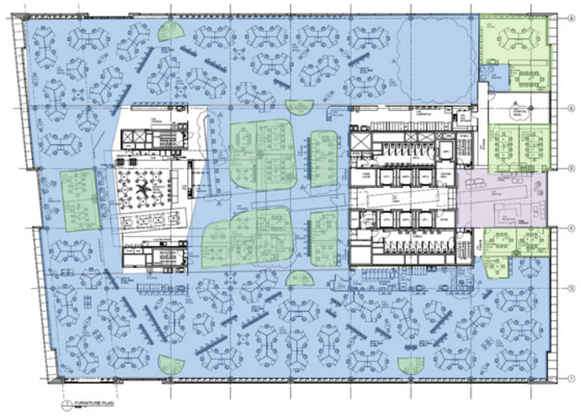
MODEL SM-DR-5000

Soundmask's Zone Distributor can be used where separate areas have different needs, but the client wants to spare the expense of multiple generators. The unit is a five channel volume control, each channel with separate attenuator.

It is a single rack unit designed for convenient installation. Each channel has a maximum loading capability of 200 watts.

SPECIFICATIONS

Model	SM-DR-5000
Power requirements	~240V/50Hz 24DC (Optional)
Dimensions	484 x 144 x 44 mm
Net weight	4.6Kg
Gross weight	5.9Kg
Compliance	RoHS FC CE
Safety information	Mount unit in locations that provide unobstructed air movement to minimise the risk of overheating.



EXAMPLE OF USE

AMP Financial Services wanted to achieve a Green Star office space. This requires Green Star compliant materials and energy efficient appliances and fittings.

The space, however, had noise problems: some areas were too quiet and some areas were too noisy. Also, as an insurance company, speech privacy was important. Instead of using panel and tile acoustic treatments, AMP engaged us to install a Soundmask system to good effect, and with substantial cost savings.

Using a Soundmask zone distributor allowed the client to "zone" different spaces, customizing the level of soundmasking in each space and smoothing the overall sound quality.

The diagram (above) demonstrates the different zones: the blue areas represent the general office area, the green areas represent the conference areas, the grey areas represent the reception and the white areas represent the atrium (above left) and lift core.

PRODUCT CATALOGUE

DIGITAL AMPLIFIER

MODEL SM-DA-8000

The SM-DA-8000 is an 8 channel digital amplifier, with an output of 50 watts RMS per channel @ 8 ohms. It features individual channel level control on the front panel, XLR inputs (received from the SM-DX-4800) for each channel and stereo banana jack outputs. Being digital, this unit is extremely efficient and delivers uncoloured signal direct to the transducer.

SPECIFICATIONS

Model	SM-DA-8000
Amplifier (per channel)	› PWM oscillator is up to 1.0M › 50W x 2 RMS into 6W with Vcc 24V › 50W x 2 RMS into 8W with Vcc 28V › 24-28V Vcc Supply Voltage Operation › Full Bridge (BTL) output Amplifier › Integrated Short Circuit Protection › Integrated Thermal shutdown › Start Up De-pop Circuit › Efficiency up to 90% › Frequency response 20Hz-20kHz › UL/CSA/CE Mark compliance
Power	Power in 110 – 240V AC 50/60Hz
Dimensions & Weight	483 x 155 x 45 mm, 2.5 Kg
Compliance	
Safety information	Mount unit in locations that provide unobstructed air movement to minimise the risk of overheating.

EXAMPLE OF USE

Soundmask's SM-DA-8000 was designed for large multi-storey installations. The SM-DA-8000 has the ability to amplify eight signals in and out, with each channel amplifying up to 100 transducers. Further, the SM-DA-8000 was designed to complement Soundmask's Digital Distributor (SM-DX-4800), which has one signal in and eight out.

Soundmask's SM-DA-8000 offers the latest in digital amplification with crisp, clean, superior sound reproduction and uncoloured signal. This ensures that the randomized digital sound of Soundmask's Rack Generator (SM-GR-3100) is replicated rather than distorted. Maintaining the sound, including any shaping from Soundmask's Digital Equalizer (SM-EQ-2000), affords a comfortable background mask throughout the entire high rise building.

The system can service eight floors with up to 800 transducers, offering a cost effective, energy efficient solution to noise problems.

EXAMPLE LAYOUT

RANDOM DIGITAL NOISE GENERATOR SM-GR-3100

DIGITAL EQUALIZER SM-EQ-2000

DIGITAL DISTRIBUTOR SM-DX-4800

DIGITAL AMPLIFIER SM-DA-8000

CEILING TRANSDUCER SM-T-1200

NOTES › Each SM-T-1200 pictured represents 100 transducers.
› The SM-DA-8000 is capable of servicing up to 800 transducers.
› Diagram not to scale.

PRODUCT CATALOGUE

CEILING TRANSDUCER

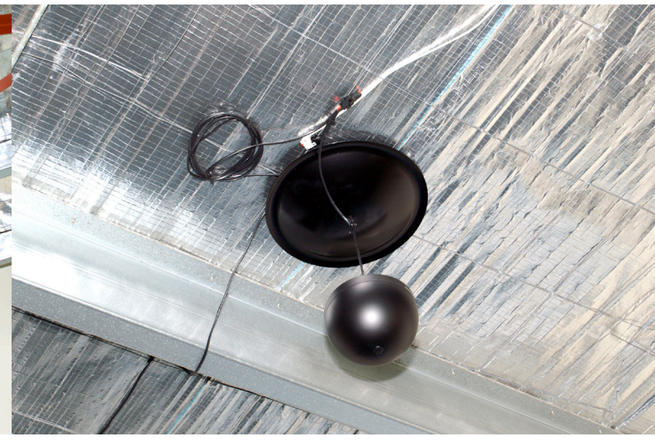
MODEL SM-T-1200

Soundmask's transducers are purpose designed and manufactured for continuous sound masking service. The SM-T-1200 comes complete with a 500mm transducer lead with inlet and outlet connections. A variable slide fitting for attachment to the ceiling is fixed to the lead which is normally set at 300mm. Cables are pre-cut for easy installation with mating plugs to ensure uniform phase in the wiring (pictured right). All Soundmask transducers are manufactured with halogen-free wiring.

Note: Also available as 6.5" models, SM-T-1650 and SM-TH-1650. See specifications for detail.

SPECIFICATIONS

Model	SM-T-1200
Inclusions	› 6 metre connection lead with matching plugs › 6 step rotary switch including off position › Mounting cable › Built in crossover and transformer › Heat proof enclosure
Colours	Black or White
Speaker	4" woofer with dual neodymium magnet; 8ohm impedance
Dimensions & Weight	180 x 115 mm, 0.8 kg
Compliance	RoHS UL94.V-0. Manufactured to ISO 9001:2000 Halogen-free wiring



EXAMPLE OF USE

The in ceiling system is the most commonly requested Soundmask system. Installed within suspended ceilings, the system is concealed overhead either during construction (pictured above left) or retrofitted (pictured above right with acoustic disc).

The Commonwealth Bank of Australia head office required the installation, during construction, of over 2000 ceiling transducers, some with Acoustic Discs. Consisting of two nine-storey buildings and built to accommodate over 4,500 staff, it conforms to the 6-star Green Energy rating standard, and the 5 Star NABERS (National Australian Built Environment Rating System) Energy rating.

Its ultra-efficient design, with such features as noiseless chilled beam air conditioning and fresh air systems, meant that the interior was so quiet that any small sound would be a distraction, and any conversations would be easily overheard.

As with other "green" buildings, installing a Soundmask system throughout each high rise tower introduces a comfortable background sound to reduce distracting noise and create speech privacy in an energy efficient manner.

UNDER FLOOR TRANSDUCER

MODEL SM-T-2200

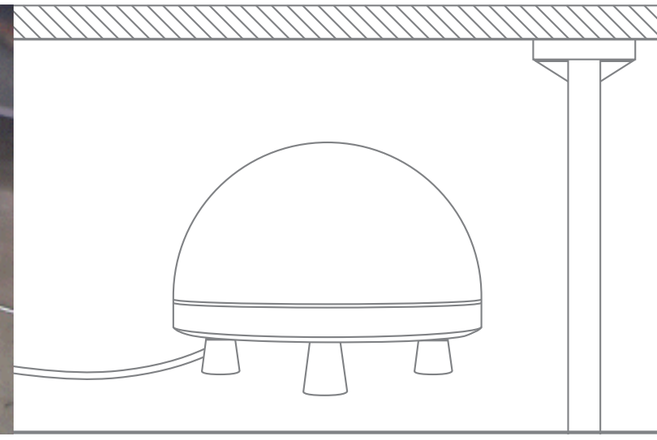
Soundmask's transducers are purpose designed and manufactured for continuous sound masking service. The SM-T-2200 comes complete with a six metre connecting cable (pictured above) with inlet and outlet connections.

Cable connectors are pre-cut for easy installation. All Soundmask transducers are manufactured with halogen-free wiring.

Note: Also available as 6.5" model SM-TU-1650. See specifications for detail.

SPECIFICATIONS

Model	SM-T-1200
Inclusions	› 6 metre connection lead with matching plugs › 6 step rotary switch including off position › Mounting cable › Built in crossover and transformer › Heat proof enclosure
Colours	Black or White
Speaker	4" woofer with dual neodymium magnet; 8ohm impedance
Dimensions & Weight	180 x 130 mm, 0.8 kg
Compliance	RoHS UL94.V-0. Manufactured to ISO 9001:2000 Halogen-free wiring



EXAMPLE OF USE

The under floor system is installed below a raised floor using Soundmask's SM-T-2200 transducers. Under floor systems are used where the air-conditioning and other services are all installed in the under floor system as there are no suspended ceilings (where a traditional system would be placed).

The Council House 2 ("CH2") building is an example of a green building where the office environment was so quiet that it required the introduction of a Soundmask system — to impart a level of non-intrusive sound to the office environment. In this case, the transducers are located under the Tasman Access floor. This floor was manufactured from steel and concrete composite (pictured above left). This requires powerful transducers to ensure the correct penetration of sound.

Using Soundmask's under floor transducer in an under floor Soundmask system has proved extremely successful in introducing a non-intrusive background sound giving comfort and speech confidentiality, and reducing the intrusion of surrounding noise in the "world's greenest office building'.

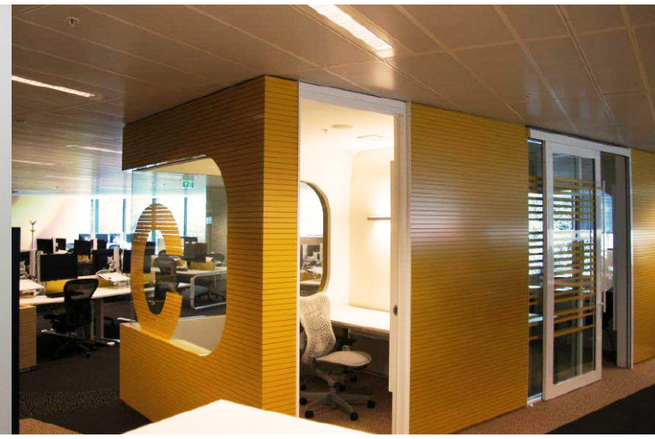
CUT IN TRANSDUCER

MODEL SM-TC-1265

Soundmask's transducers are purpose designed and manufactured for continuous sound masking service. Soundmask's cut-in transducers are suitable where suspended in-ceiling systems are not practical, and where more directional sound is required. This transducer exhibits excellent low frequency performance.

SPECIFICATIONS

Model	SM-TC-1265
Inclusions	› 6 m cable for easy installation › Transformer › Heat proof enclosure
Colours	White only
Speaker	6.5" driver with neodymium magnet 7.2 Ω impedance ± 10% Frequency response fo ~ 11 K Hz 85 db sensitivity ± 2dB 40W RMS, 80W MAX
Dimensions & Weight	240 x 150 mm, 1.02 kg
Compliance	RoHS UL94.V-0. Manufactured to ISO 9001:2000



EXAMPLE OF USE

Cut-in transducers are typically used in smaller offices like medical suites where plaster ceilings restrict the ability to install ceiling transducers, and where speech privacy is required at a low cost. The shallower SM-T-1265 is also suitable for installation in walls.

Southport Anaesthetic Specialists is a small medical practice where a number of consultants and their secretaries share offices. The main concern was the open plan reception area where five secretaries share a small space with no physical barriers between them. In particular, speech privacy was compromised with health information being gathered at the reception desk and via telephone. Soundmask installed five "cut-in" transducers (top right) and a shelf generator, solving the practice's speech privacy problems and minimising distracting noise between the secretaries.

Cut-in transducers are not limited, however, to a smaller system. Like all Soundmask transducers, they are purpose built for soundmasking service. This means that they can also be used to excellent effect within a larger system design — for example the "Quiet Room" in the Commonwealth Bank Headquarters (pictured above), where a different transducer was more appropriate for the "space within a space".

ACOUSTIC DISC

MODEL SM-TD-1300

Soundmask's Acoustic Disc can be used in an open area or where there are no reflective surfaces, for example in green buildings where thermal or sound absorbent materials are applied to the underside soffit of the structural ceiling.

The disc has been specifically designed to reflect sound evenly throughout the space. When positioned above the suspended transducer, Soundmask's acoustic disc can open up the speaker grid and enhances sound distribution throughout the system.

The disc is typically used with Soundmask's SM-T-1200 transducer, but can be used with any of Soundmask's "hung" transducers.

SPECIFICATIONS

Model	SM-TD-1300
Materials	ABS plastic
Dimensions	345 x 40 mm
Weight	0.15 kg
Colours	Black or White
Compliance	RoHS UL94.V-0. Manufactured to ISO 9001:2000

EXAMPLE OF USE

Open area or open ceiling systems offer the option of a Soundmask system where an under floor or ceiling system cannot be installed. For example, in lofted ceilings, like heritage buildings that have been retrofitted. The Sydney Opera House Box Office offered one such venue: the premises are within a listed heritage building with a vaulted (saw tooth) ceiling structure, so any modifications need to conform to these requirements.

Soundmask used an open ceiling Soundmask system using exposed transducers with acoustic discs for an even spread of sound. The transducers blended with the existing light fittings to ensure that they were visually non-intrusive. The result of the open ceiling Soundmask system (pictured top) was to increase the comfort zone in a very busy office and ensure that staff could take customer calls without distraction from surrounding colleagues and other office noise.

Acoustic discs can also be installed in the ceiling. This is particularly useful in Green Buildings where materials are non-reflective, for example where the soffit is covered with polyester thermal panels. A SM-T-1200 transducer is installed with acoustic discs in the acoustically transparent ceilings with pressed metal drop in tiles with a punched pattern.

SOUNDMASK®

CONTACT

www.soundmask.com.au

1300 734 168 (within Australia)

+61 3 9879 5355

megan@soundmask.com.au

Soundmask Australia Pty Ltd
PO Box 4068
Balwyn VIC 3103
AUSTRALIA

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