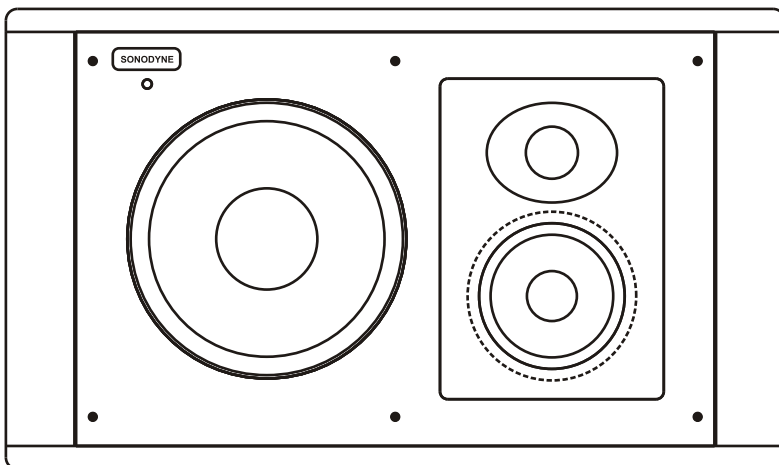


SM 300

3 way triamplified studio monitor | owners manual



Statutory Information



The lightning flash with an arrowhead symbol is intended to warn the user that there is uninsulated (dangerous) voltage inside the unit.



The exclamation mark within an equilateral triangle symbol is intended to alert the user of presence of important operating instructions in the owner's manual accompanying the product.

IMPORTANT SAFETY INSTRUCTIONS

1. The unit should be connected only to a wall outlet providing the correct mains voltage and frequency as printed on the product.
2. Connect the unit to the mains only with the mains cable supplied with the unit.
3. Ensure that the wall outlet is properly earthed, that is, the earth must be connected to a earth bus-bar which connects to other audio equipments and is not shared by noisy equipments like computers, air-conditioners, lighting appliances etc. The earth connection must be checked and certified by a qualified electrical engineer.
4. Do not place the unit on an unstable surface that may topple and cause the unit to fall, thereby causing injury to the user or other people.
5. Do not place the unit outdoors where it may be exposed to strong sunlight, rain or moisture. Do not place it near a water body or sprinkler.
6. Do not cover the unit or block the ventilation holes on the back which may cause it to heat up.
7. Do not place the unit near heat radiating items like stoves, radiator etc.
8. Do not allow liquid or any chemical to spill on or into the product.
9. Do not allow the mains cord to be trodden or pinched particularly at the wall outlets or at the point of entry of the cord into the unit.
10. Do not open the unit or attempt to service it yourself. There is no user-serviceable part inside. Refer servicing to qualified service personnel only.
11. Replace only with the same type and rating of fuse as printed on the product.
12. Do not overload wall outlets that provide power to this unit.

Introduction • Unpacking • Mounting

INTRODUCTION

The SM 300 is a 3-way tri-amplified active monitor. It can be used for broadcast studios, recording studios, professional surround sound systems and a variety of other professional applications.

UNPACKING

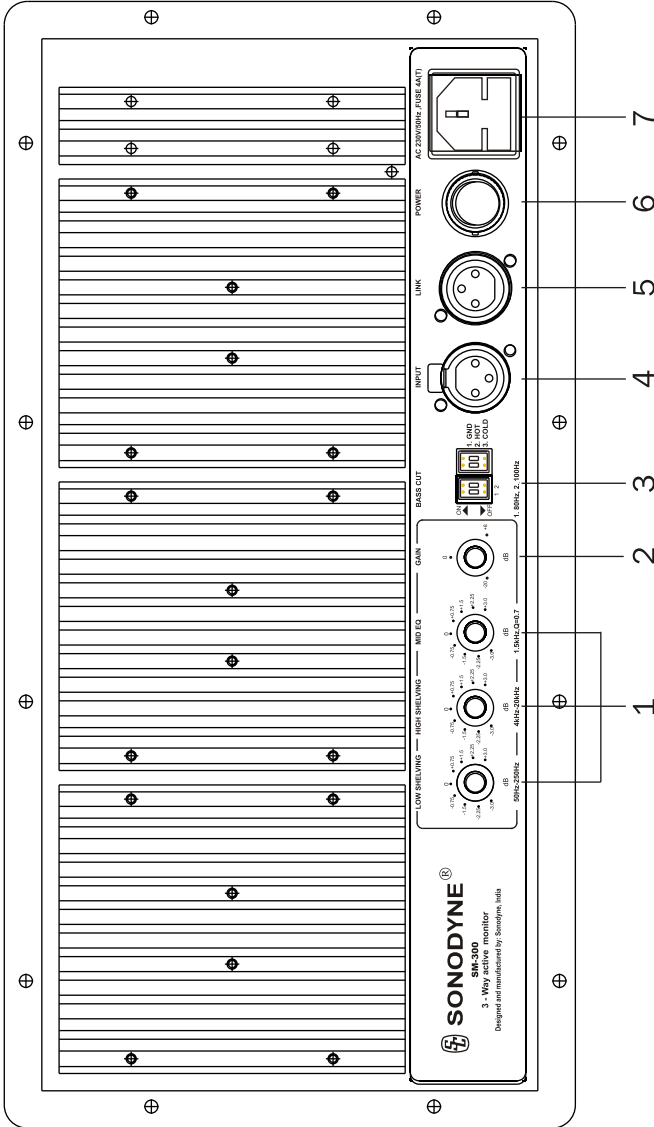
To unpack the unit, open the carton by cutting along the edge of the flaps. Push the flaps wide open. Fold any one flap and tilt the carton on this edge taking care that the flap stays open. Gently turn the carton upside down so that all the 4 flaps stay open and spread out, and the unit comes to rest on the EP buffer. You may need someone to help you with this. Next lift the carton from the unit. Remove the EP buffer on the bottom of the unit, facing you.

Carefully lift the unit from the packing material on which it is resting, strip it of its protective cover and place it in its intended location.

MOUNTING

The SM 300 is designed for horizontal mounting only. There are threaded inserts at the bottom which you can use for securing to the shelf or bracket where you intend to keep it. For details of mounting, refer to Fig. 2 on page 6.

Fig 1: Rear View

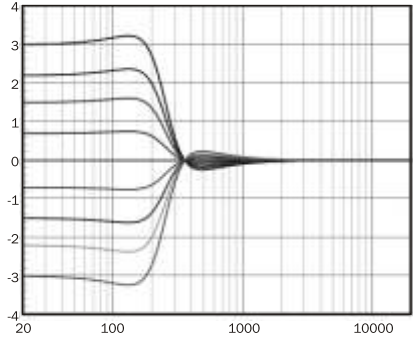


Controls & Switches

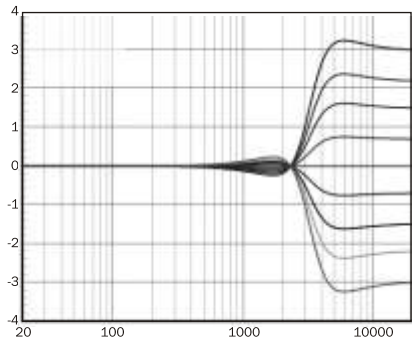
1. EQUALISER CONTROLS

There are 3 types of equalisers available for room compensation - a low-shelving EQ, a high-shelving EQ and a bell EQ. These can be set with the help of the controls provided for each EQ type.

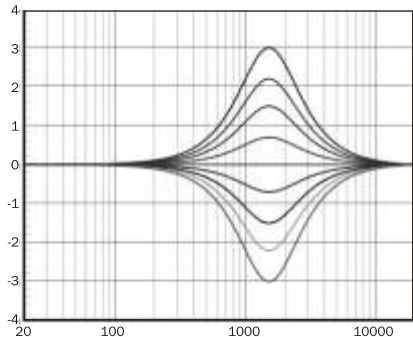
LOW SHELVING EQ: The low-shelving EQ boosts or cuts the frequency band from 50 Hz ~ 250 Hz by an amount set by the control. It has 9 positions, 4 on either side of the center position and allows you to choose a cut from -3dB to 0 dB, in steps of 0.75 dB, (when turned counter-clockwise from center) or a boost from +3 dB to 0 dB, in steps of 0.75 dB, (when turned clockwise from center). The cut is required if you are using the SM 300s for a mix and have mounted the monitor on a console which can create reflections creating boost in the low to low-mid frequency band. The boost may be used to fine-tune the particular frequency band for a certain application.



HIGH SHELVING EQ: The high-shelving EQ boosts or cuts the frequency band from 4 kHz~20 kHz by an amount set by the control. It has 9 positions, 4 on either side of the center position and allows you to choose a cut from -3 dB to 0 dB, in steps of 0.75 dB, (when turned counter-clockwise from center) or a boost from +3 dB to 0 dB, in steps of 0.75 dB, (when turned clockwise from center). The boost is required when you are listening to the SM 300s off-axis, either horizontally, that is with your ear at an angle to the tweeter, either to the left or the right, or vertically, that is with your ear at an angle to the tweeter, either to the top or the bottom. The cut may be useful if the high frequencies seem too bright, or if you want to deliberately tone down the highs in a mix.



BELL EQ: The bell EQ has a center frequency of 1.5 kHz and a Q of 0.7. The control allows you to set the amount of cut or boost. It has 9 positions, 4 on either side of the center position and allows you to choose a cut from -3 dB to 0 dB, in steps of 0.75dB, (when turned counter-clockwise from center) or a boost from +3 dB to 0 dB, in steps of 0.75 dB, (when turned clockwise from center). Since the Q of this EQ is fairly low, it can be used to lay back the mids if they are too forward-sounding, or bring them forward, in case of a reverse situation.



Controls & Switches

2. GAIN

This control adjusts the gain of the SM 300. At the extreme anti-clockwise setting, the gain is lowest, which is -20 dB, and is the highest at the extreme clockwise setting, which is, +8 dB. If you are feeding fairly high signal levels from your mixer or other source equipment, keep the gain control lower than 12 O'clock position, to prevent overloading the input stages of the SM 300 and creating unpleasant distortion.

3. BASS CUT

This consists of 2 DIP switches which when activated, roll off the bass frequencies at 6 dB/octave, at 2 different corner frequencies. Switch labeled 1 has a corner frequency of 80 Hz, and switch 2, 100 Hz.

4. INPUT SOCKET

This is a fully balanced XLR input socket. Pin connections are 1 ground, 2 hot or positive, and 3 cold or negative.

5. LINK

This is wired in parallel to the input socket and is used for looping the signal to another powered speaker/ amplifier.

6. POWER

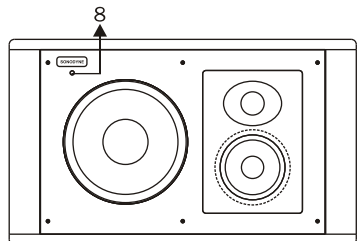
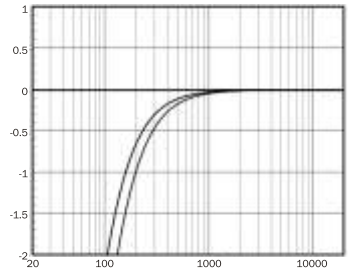
This is a rocker type power switch which turns on power to the system. The ON position is indicated with a dot mark on the switch.

7. IEC AC SOCKET

This is a fused 3-pin IEC AC receptacle for connecting to a wall outlet with the cable supplied. Ensure that the wall outlet is properly earthed, that is, the earth must be connected to a earth bus-bar which connects to other audio equipments and is not shared by noisy equipments like computers, air-conditioners, lighting appliances etc. The earth connection is also required in the interests of your own safety, should any fault occur. Please check that the wall outlet is capable of providing the current requirement of the product, printed on the back panel near the IEC AC socket.

8. LED INDICATOR

This doubles as a power cum clipping indicator. It glows green when power is switched on and changes to red when the internal power amplifier goes into overdrive. The unit must not be operated with the indicator glowing red most of the time, so as not to cause damage to the drive units.



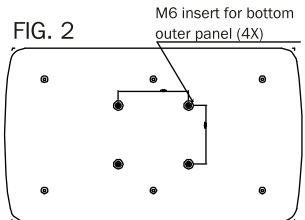
Speaker Placement

DISTANCE FROM WALLS

While placing speakers, make sure that they are at least 50 cm away from any reflecting surface. This will help minimise bumps in the low-frequency response due to reflections, and also ensure that the rear-mounting port is unobstructed. It is also required to ensure that the heat sinks at the back have adequate ventilation, for uninterrupted operation.

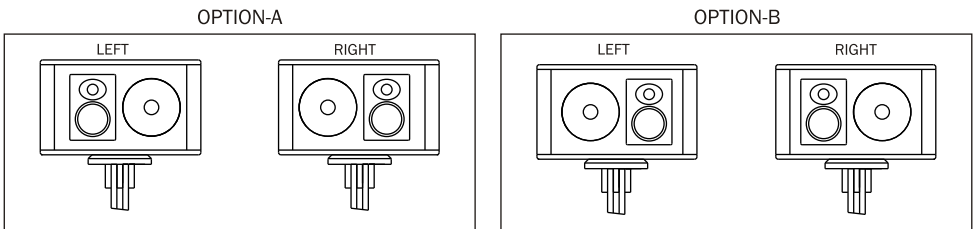
MOUNTING OF SPEAKERS

The speakers may be mounted on brackets fixed to wall, or on stands. The SM 300 has 4 x M6 threaded metal inserts on the bottom for screwing onto a horizontal mounting wall bracket. Alternatively, the speakers may be mounted on dedicated stands available as accessories from Sonodyne. The layout of bottom mounting inserts are shown in Fig. 2



LEFT AND RIGHT UNITS

Since the layout of drive units in the SM 300 is not axi-symmetric with respect to the vertical axis, the front layout of two speakers in a stereo set-up are not identical, but rather, mirror images of the other. You may place the speakers in either of the two ways



VERTICAL MOUNTING

Always ensure that the tweeters of the SM 300 are roughly at ear-level when seated. If the tweeters are well below your ear-level, there will be a loss in the high frequencies (as shown in Fig.3 and Fig. 4). This may be corrected to some extent using the high-shelving control. The angle shown in the response is that subtended between a horizontal line and the line joining the tweeter to the ear centre (x2). A worse situation arises when the tweeters are well above your ear-level, with a dip around 4 kHz taking place due to cancellation of out-of-phase lobes of the tweeter and the mid, in addition to the roll-off of the high frequencies. This cannot be corrected with the on-board equaliser. The dip is highest in the 15° angle position as shown in Fig. 4a. **It is therefore advisable to place the tweeter at or slightly below the ear-level, but never above it.**

Continued ...

Speaker Placement

FIG. 3

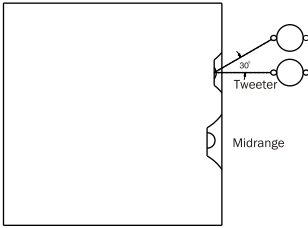


FIG. 4

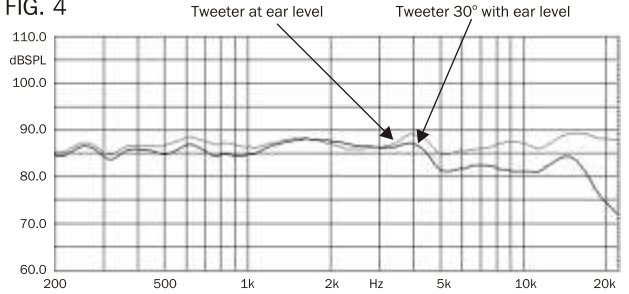
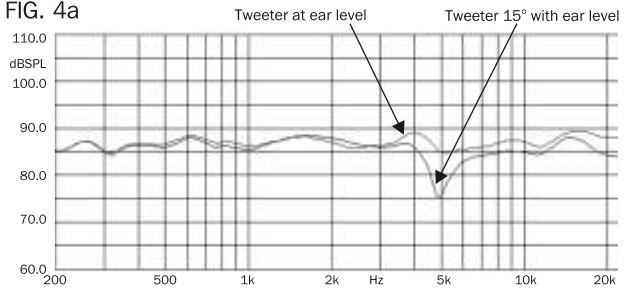


FIG. 4a



HORIZONTAL MOUNTING

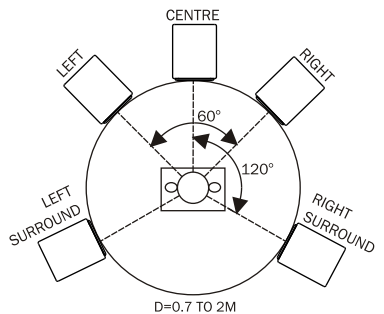
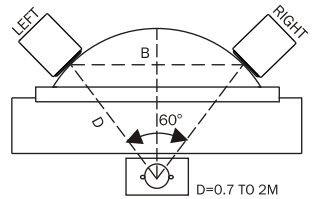
As a guide to correct horizontal placement you may place the speakers as shown in the following sketches, depending upon whether you are using a 2.1 or 5.1 set-up

FIG. 5: 2.1 SETUP

The following sketch shows a 2.1 set-up. The important part here is to place the speakers such that the head and the two speakers lie at the vertices of an equilateral triangle.

FIG. 6: 5.1 SETUP

The following sketch shows a 5.1 set-up. This is an ITU recommended configuration which may vary depending upon the purpose of the control room (audio or film). However, it is recommended to have a symmetrical listening position with the front left and right speakers facing the listener and the surround speakers located at the back of the listener.



Operation

- Connect the output of your mixer or other source equipment to the input (XLR female connector) of the SM 300 using balanced cable which is a 2-core screened cable with XLR connectors on either end. Pin connections are pin 1- earth or ground, pin 2 - hot or positive, and pin 3- cold or negative. If the output of your source equipment is unbalanced, (which however is not recommended because of noise pick-up problems), short pin 3 to pin 1.
- Check that the utility outlet for powering your SM 300 is of matching voltage and frequency printed on the back panel. Also ensure that it is capable of providing the required power, as printed on the back panel, and the earth of the IEC socket is connected to the safety earth of the premises through a separate conductor so that it does not share the earth with noisy equipments such as air-conditioning, lighting equipment or computers.
- Connect the mains cable of the SM 300 supplied with the unit, to the utility wall outlet after you have connected all other equipments. Switch on the console or source equipment first. Switch on power to the SM 300 last. That way, you will not hear any nasty turn-on thumps which may be damaging to your ears and equipment.
- A green indicator on the front of the unit will light up. This indicates that your unit has powered up and is ready for operation.
- Keep all equaliser controls to mid-position, and the bass-cut switches in their OFF position, initially. Leave the gain control also at mid or 0 dB position.
- Play some recorded source material and check that the SM 300 is sounding balanced. Depending on the placement of your speaker and your personal preference for the type of mix you want, you may want to adjust the equaliser controls, which are explained in details under Controls and Switches.
- While setting the gain control, it is best to keep it at the setting matching to the full-scale output of your mixer or source equipment. If you do not have information on the full-scale output of your source, turn up the master level controls to the max setting and adjust the sensitivity control of the SM 300 so that the clip indicator LED just starts to light up. Normally, this should happen between 0 and +3 dB. If it is not, you may need to alter the gain of your source equipment accordingly.

Troubleshooting

SYMPTOM: No power (Green indicator does not light up)

POSSIBLE REMEDIES:

1. Check that the mains cable is properly plugged into the wall outlet.
2. Check that correct voltage is available from the wall outlet.
3. Check that the fuse in the IEC AC socket has not blown. Replace with spare fuse inside the fuse cover if fuse has blown.
4. Check that the power switch is turned on.

SYMPTOM: No sound

POSSIBLE REMEDIES:

1. Check that input cable is plugged in.
2. Check that level control of source equipment is not turned all the way down.
3. Check that signal is present at the output sockets of console or other source equipment.
4. Check that cable connection is OK- there should be continuity for each of the pins between one end and the other.

SYMPTOM: Distorted sound

POSSIBLE REMEDIES:

1. Check whether output level from console or source equipment too high, causing overload of input stages
2. Check for loose cable contacts.

SYMPTOM: Buzz/hum

POSSIBLE REMEDIES:

1. Unplug the input cable or cables one by one, till the buzz disappears. If buzz does not disappear, your SM 300 could be faulty.
2. Check that the cable contacts are OK- replace with a cable that is known to be good.
3. If you are using an unbalanced connection, make sure that pin2 is connected as the live terminal and pin2 and pin3 are tied together at the source end.

Specifications

DESCRIPTION	3 way active studio monitor
TRANSDUCER COMPLEMENTS	1 x 8" Kevlar cone woofer, 1 x 4" Kevlar cone midrange, 1 x 25 mm soft dome tweeter
ENCLOSURE TYPE	Vented
OVERALL FREQUENCY RESPONSE	40 Hz ~ 22 kHz (± 2 dB)
USABLE FREQUENCY RANGE	35 Hz ~ 27 kHz (-10 dB)
MAX. LONG TERM SPL, HALF SPACE	116 dB
HORIZONTAL BEAM WIDTH	85°, averaged between 5~16 kHz
VERTICAL BEAM WIDTH	75°, averaged between 5~16 kHz
THD (@95 dB SPL)	50 Hz ~ 200 Hz, $\leq 3\%$ > 200 Hz, $\leq 1\%$
AMPLIFIER POWER BEFORE CLIPPING	LF: 150 W, MF: 75 W, HF: 75 W
S/N RATIO (AT UNITY GAIN)	> 95 dB, referred to full output
AMPLIFIER THD AT RATED POWER	Less than 0.1%
INPUT	Fully balanced XLR socket with link
INPUT LEVEL FOR 90 dB SPL at 1M	+6 dBu, with gain at mid position
CMRR	> 70 dB
CROSSOVER	400 Hz, 4 kHz
GAIN CONTROL	-20 dB ~ +8 dB
EQs	Low shelving 50 Hz ~ 250 Hz, -3 dB to +3 dB in 0.75 dB steps, High shelving 4 kHz ~ 20 kHz, -3 dB to +3 dB in 0.75 dB steps Mid EQ, 1.5 kHz, -3 dB to +3 dB, Q=2 in 0.75 dB steps
SWITCHES	2 bass roll-off DIP switches: 80 Hz and 100 Hz
PROTECTION	Overcurrent, overheat, RFI, switch-on/off transients
POWER CONSUMPTION	480 VA max
CABINET MATERIAL	Sides: Extruded aluminium, Top/bottom/front/rear: MDF
FINISH	Black painted
MECHANICAL DIMENSION (WxHxD) mm	508 x 300 x 295
NET WEIGHT	25 Kg
MOUNTING OPTIONS	4 x M6 inserts on bottom plate

Due to continuous improvements, all specifications are subject to change



CELEBRATING 40 YEARS OF AUDIO INNOVATION

A product of the Mukherjee Innovation Centre

Manufactured by Sonodyne Technologies Pvt Ltd, 98 NB Block E New Alipore, Kolkata 700053, INDIA
Tel: +91 33 23990418, 23983406; Fax: +91 33 23967243; E-mail: response@sonodyne.com
Please visit us at www.sonodyne.com