

CONTENTS (ENGLISH)		Page No
1	INTRODUCTION	2
2	UNPACKING	2
3	OVERVIEW	2
3.1	WT15	3
3.2	WT2	3
3.3	WT3	3
4	SAFETY FIRST	3
4.1	Tripod Mounting	4
4.2	Stacking	4
4.3	Rigging and suspension	4
5	AMPLIFICATION	5
6	CONNECTIONS	6
7	CABLE LENGTHS	7
8	SYSTEM CONFIGURATIONS	7
9	WARRANTY	8
10	TECHNICAL SPECIFICATIONS	9



The Martin Experience

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Martin Audio – WAVEFRONT THEATRE SERIES



This equipment conforms to the requirements of the EMC Directive 89/336/EEC, amended by 92/31/EEC and 93/68/EEC and the requirements of the Low Voltage Directive 73/23/EEC, amended by 93/68/EEC.

Standards Applied	EMC Emission	EN55103-1:1996
	Immunity	EN55103-2:1996
	Electrical Safety	EN60065:1993

1 INTRODUCTION

Thank you for purchasing a Martin Audio Wavefront Theatre Series system. The Theatre Series is a dedicated range of powerful yet compact loudspeakers designed to meet the unique demands of theatre sound reinforcement.

2 UNPACKING

Each Martin Audio loudspeaker is built to the highest standard and thoroughly inspected before it leaves the factory. After unpacking the system, examine it carefully for any signs of transit damage and inform your dealer if any such damage is found. It is suggested that you retain the original packaging so that the system can be repacked at a future date if necessary.

Please note that Martin Audio and its distributors cannot accept any responsibility for damage to any returned product through the use of non-approved packaging.

3 OVERVIEW

The Wavefront Theatre Series consists of the WT15 miniature speaker, the WT2 compact full-range system and the WT3 compact 3-way system. For optimum performance it is recommended that Wavefront Theatre Series loudspeakers are used with the WX3A or MX5 System Controllers or an appropriate digital controller such as the Martin Audio DX1. Please refer to the controller user guide for information on connections and limiter settings.

3.1 WT15

The miniature WT15 is only 11" (280mm) high, yet is capable of producing extended bandwidth and high output levels. Its twin 5" (125mm) drivers are arranged in an innovative 2-way configuration in which a 5" (130mm) ICT (Inductively Coupled Transducer) full-range device is augmented by a second 5" driver operating over the bass and mid-range region.

The WT15 features externally switchable 4 or 16 ohm operation. Its input configuration is also switchable, allowing daisy-chaining of cabinets – even when fed with different input signals.

It is fitted with 3/8" threaded inserts to enable its use on a microphone stand or with an under-balcony yoke.

3.2 WT2

The WT2 is a powerful theatre system which has been designed to meet the industry requirement for a high performance, compact 2-way system. It features a 12" (305mm) bass driver and a 70 x 40 degree high frequency horn. Active or passive operation is selected by a switch on the rear of the enclosure. The WT2 is capable of extremely smooth reproduction with good articulation at all power levels.

3.3 WT3

The WT3 is an innovative full-range system achieving true three-way performance from an enclosure only 28" (711mm) high. The low frequency driver is a powerful 15" (380mm) device cooled by a heat exchange system to reduce power compression.

Midrange is produced by a unique 6.5" (165mm) mid horn developed to overcome the power and distortion limitations of traditionally used large format compression drivers whilst high frequencies are produced by a 1" (25mm) compression driver. Mid and HF dispersion patterns are 65 x 40 degrees. A switch on the rear panel of the WT3 selects either 3-way bi-amp (650Hz active and 3.3kHz passive crossover) or full 3-way tri-amp operation.

4 SAFETY FIRST

It is important that loudspeaker systems are used in a safe manner. Please take some time to review the following points concerning safe use of Wavefront Theatre Series loudspeakers.

Professional loudspeakers are capable of producing extremely high sound levels and should be used with care. Hearing loss is cumulative and can result from levels above 90dB if people are exposed for a long period. Never stand close to loudspeakers driven at high level.

4.1 Tripod Mounting

The WT2 and WT3 incorporate a pole mounting socket to facilitate mounting on tripod stands between each speaker. When using stands, the following precautions are advised:

Ensure that that stand will support the weight of the speaker by checking the stand manufacturers rating.

Make sure that the stand is placed on a level surface and that its legs are fully extended.

Do not place more than one speaker on each stand.

Run cables so that they do not present a trip hazard which could pull the speaker over.

When used outdoors in the wind, it may be necessary to add some weight to the base of the stand.

When using a pole mount with a sub-bass system, observe similar precautions.

4.2 Stacking

Ensure that the floor or stage is level and solid.

Do not stack speakers too high outdoors where winds could topple the stack.

Be aware that speakers producing very high power levels can move or creep. To avoid this, place friction material between the floor and speaker and between each speaker.

4.3 Rigging and Suspension

WARNING: Suspending the system should only be done by qualified personnel following safe rigging practices. Secure fixings to the building structure are vital. Seek help from architects, structural engineers or other specialists if in any doubt.

The WT2 and WT3 are provided with threaded inserts to allow the suspension of a single enclosure. **Never suspend one enclosure from another to form an array or cluster using these fittings.** The enclosures are provided with optional MAN flying points for array construction.

The common practice of using commercially available eye bolts for suspension should only be undertaken with great caution. Eye bolts are strongest along the thread axis. Angling the enclosures will result in an angle pull and it is important to use eye bolts that are safe in these circumstances. Only forged shoulder eye bolts should be considered and it is important that the thread length is at least 30mm. A flat washer should be inserted between the eyebolt and the enclosure. **Formed eye bolts i.e. those which are formed from a steel rod bent into an eye should be avoided.**

5 AMPLIFICATION

Wavefront Theatre Series loudspeakers are designed to be used with professional power amplifiers capable of producing the following power outputs into 4 ohms:

WT15	4 ohm	50-100W
WT15	16 ohm	200-400W
WT2		400-600W
WT3		400-800W

Care should be taken to avoid amplifier clipping. It is important to understand that a low power amplifier driven into clipping is more likely to damage a loudspeaker than a higher power amplifier used within its ratings. This is because music signals have a high peak-to-average "crest" factor. When an amplifier is severely overdriven, its output waveform is clipped (its peaks are squared off) – reducing the crest factor. In extreme cases, the waveform can approach that of a square wave. An amplifier is normally capable of producing far more power under these conditions than its undistorted rated power output. The use of very high power amplifiers with outputs greater than those recommended is discouraged.

Care should be taken to avoid switch-on surges, which can result in momentary power peaks in excess of specified ratings. When powering up a sound system it is important to switch on the amplifiers after the mixer and control electronics have stabilised. When powering down the system, reverse the sequence and switch off the amplifiers first.

6 CONNECTIONS

Each connector panel has two Neutrik Speakon connectors (NL4 for WT15 and WT2, NL8 for WT3) wired in parallel with each other. The second connector allows use of a short link lead to power another parallel loudspeaker. The connectors are wired as follows:

NL4 Pin WT15 - Inputs switchable

1-	Input 1 -ve
1+	Input 1 +ve
2-	Input 2 -ve
2+	Input 2 +ve

<u>NL4 Pin</u>	<u>WT2 Passive</u>	<u>WT2 Active</u>
1-	Input -ve	Low -ve
1+	Input +ve	Low +ve
2-	N/C	High -ve
2+	N/C	High +ve

<u>NL8 Pin</u>	<u>WT3 Bi-amp</u>	<u>WT3 Tri-amp</u>
1-	Low -ve	Low -ve
1+	Low +ve	Low +ve
2-	Mid/High -ve	Mid -ve
2+	Mid/High +ve	Mid +ve
3-	N/C	High -ve
3+	N/C	High +ve
4-	N/C	N/C
4+	N/C	N/C

7 CABLE LENGTHS

When connecting loudspeaker systems to an amplifier, it is recommended that the return resistance of the cable used is less than one tenth of the nominal impedance of the system or systems in parallel. The table below gives an indication of the maximum permissible cable runs for various conductor cross-sectional areas.

<u>Conductor CSA</u>	<u>Maximum Cable Run</u>		
	4 ohms	8 ohms	16 ohms
1.0mm ²	11m	22m	44m
1.5mm ²	17m	34m	68m
2.0mm ²	22m	44m	88m
2.5mm ²	29m	58m	116m
4.0mm ²	44m	88m	176m
6.0mm ²	66m	132m	264m

8 SYSTEM CONFIGURATIONS

The WT15, WT2 and WT3 may be used to cover the full-frequency range – either distributed singly or arrayed in multiples. The WX3A and DX1 controllers provide appropriate system-specific low frequency equalisation for full-frequency operation. Where additional low frequency output is required, a WS2A sub-bass system driven from a separate amplifier fed from the sub-bass output of a WX3A or DX1 controller can be added.

Wavefront Theatre Series loudspeakers combined with the appropriately configured controller exhibit an essentially flat on-axis frequency response. Equalisation to compensate for a particular acoustic environment may be performed where required. Where loudspeakers are arrayed, they may benefit from a degree of equalisation to reduce the effect of the low/mid build up and tilting of the response inherent in the use of multiple arrayed enclosures.

9 WARRANTY

Martin Audio Wavefront Theatre Series products are warranted against manufacturing defects in materials or craftsmanship over a period of 5 years from the date of original purchase. During the warranty period Martin Audio will, at its discretion, either repair or replace products which prove to be defective provided that the product is returned in its original packaging, shipping prepaid, to an authorised Martin Audio service agent or distributor.

Martin Audio Ltd. cannot be held responsible for defects caused by unauthorised modifications, improper use, negligence, exposure to inclement weather conditions, act of God or accident, or any use of this product that is not in accordance with the instructions provided by Martin Audio.

Martin Audio is not liable for consequential damages.

This warranty is exclusive and no other warranty is expressed or implied.

This warranty does not affect your statutory rights.

10 TECHNICAL SPECIFICATIONS

WT15

TYPE	Ultra-compact, two-way ICT™
FREQUENCY RESPONSE	120Hz-20kHz ± 3dB
LOW FREQUENCY LIMIT	-10dB @ 80Hz
DRIVERS	1 x 5" (125mm) full-range ICT™ driver 1 x 5" (125mm) bass/mid driver
RATED POWER	75W AES, 300W peak
RECOMMENDED AMPLIFIER	50-100W into 4 ohms (16 ohms)
SENSITIVITY	91dB 1 Watt/1metre
MAXIMUM SPL	108dB continuous, 114dB peak
IMPEDANCE	Externally switchable 4 or 16 ohms
DISPERSION	80 degs horizontal, 80 degs vertical (-6dB)
CONNECTORS	2 x Neutrik Speakon NL4MP Input externally switchable between pins 1&2
FITTINGS	2 x 3/8" flush mounted nut plates on base and top 2 x M4 inserts for Omnimount 50
DIMENSIONS	(W) 172mm x (H) 282mm x (D) 172mm (W) 6.8ins x (H) 11ins x (D) 6.8ins
WEIGHT	5kg (11lbs)
SHIPPING DIMENSIONS (Packed in pairs)	(W) 390mm x (H) 370mm x (D) 200mm (W) 15.4ins x (H) 14.5ins x (D) 7.9ins
SHIPPING WEIGHT (Packed in pairs)	9kg (19.8lbs)

WT2

TYPE	Compact 2-way trapezoidal, switchable active/passive
FREQUENCY RESPONSE	70Hz-18kHz \pm 3dB
LOW FREQUENCY LIMIT	-10dB @ 52Hz
DRIVERS	12" (305mm) dia. / 3" (75mm) voice coil 1" (25mm) exit HF compression driver
RATED POWER	LF/FR: 400W AES, 1600W peak HF: 60W AES, 240W peak
RECOMMENDED AMPLIFIER	400-600W into 4 ohms
SENSITIVITY	LF/FR: 98dB 1 Watt/1 metre HF: 107dB 1 Watt/1 metre
MAXIMUM SPL	123dB continuous, 129dB peak
IMPEDANCE	FR, LF & HF: 8 ohms nominal
DISPERSION	70 degs horizontal, 40 degs vertical (-6dB)
CROSSOVER	2kHz active or internal passive
CONNECTORS	2 x Neutrik Speakon NL4MPR
FITTINGS	8 x M8 threaded inserts 1 x pole mounting socket 2 x MAN blanking plates 2 x rear kelp fittings 2 x front lid fittings
DIMENSIONS	(W) 365mm x (H) 554mm x (D) 364mm (W) 14.4ins x (H) 21.8ins x (D) 14.3ins
WEIGHT	24.5kg (54lbs)
SHIPPING DIMENSIONS	(W) 460mm x (H) 660mm x (D) 460mm (W) 18.1ins x (H) 26ins x (D) 18.1ins
SHIPPING WEIGHT	24kg (52.9lbs)

WT3

TYPE	Compact 3-way trapezoidal, switchable bi-amp/tri-amp
FREQUENCY RESPONSE	55Hz-18kHz \pm 3dB
LOW FREQUENCY LIMIT	-10dB @ 45Hz
DRIVERS	15" (380mm) dia. / 3" (75mm) voice coil 6.5" (165mm) horn loaded mid-range 1" (25mm) exit HF compression driver
RATED POWER	LF: 500W AES, 2000W peak MF/(MF+HF bi-amp): 150W AES, 600W peak HF: 60W AES, 240W peak
RECOMMENDED AMPLIFIER	400-800W into 4 ohms
SENSITIVITY	LF: 100dB 1 Watt/1 metre MF/(MF+HF bi-amp): 107dB 1 Watt/1 metre HF: 105dB 1 Watt/1 metre
MAXIMUM SPL	127dB continuous, 133dB peak
IMPEDANCE	LF: 8 ohms nominal MF/(MF+HF bi-amp): 16 ohms nominal HF: 16 ohms nominal
DISPERSION	65 degs horizontal, 40 degs vertical (-6dB)
CROSSOVER	Bi-amp 650Hz, 3.3kHz internal passive Tri-amp 650Hz, 4kHz
CONNECTORS	2 x Neutrik Speakon NL8MPR
FITTINGS	8 x M8 threaded inserts 1 x pole mounting socket 2 x MAN blanking plates 2 x rear kelp fittings 2 x front lid fittings
DIMENSIONS	(W) 435mm x (H) 708mm x (D) 425mm (W) 17.1ins x (H) 27.9ins x (D) 16.7ins
WEIGHT	32kg (70.5lbs)
SHIPPING DIMENSIONS	(W) 550mm x (H) 790mm x (D) 550mm (W) 21.7ins x (H) 31.1ins x (D) 21.7ins
SHIPPING WEIGHT	36kg (79.4lbs)

Due to our policy of continuous improvement all specifications are subject to change without notice.

Wavefront Theatre Series

WT15/WT2/WT3



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Wavefront Theatre Series

WT15/WT2/WT3

User's Guide



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