

TANNOY

i7

USER MANUAL

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1. Introduction

The Tannoy i7 installation loudspeaker is designed for use in applications requiring high quality music and speech, where wide and controlled coverage is required.

The i7 comprises four 100mm (4") low frequency (LF) drivers and one 25mm (1") high frequency (HF) unit. The LF and HF sources are placed in an array, resulting in a wide horizontal dispersion and narrow vertical dispersion. These are combined with a smooth uniform frequency response.

The shallow cabinet profile of the i7 loudspeaker allows flexible and discreet installation close to a wall or ceiling. Installation is made simple with a range of flexible mounting and flying hardware.

The controlled dispersion characteristics of the loudspeaker (110°x70°) allows the i7 to be used in highly reverberant environments, by directing the sound into the desired space, whilst minimising reflections from adjacent walls or ceilings.

Located in the enclosure is a Tannoy THP60 multi-tap transformer for distributed-line operation. The transformer provides high system sensitivity, a wide bandwidth and dynamic range, with very low insertion loss.

The i7 can easily be switched from operating either as a low impedance (8Ω) or 100V/70.7V distributed-line system, this selection being made (along with the transformer tapping options) via a single rotary switch located on the rear termination panel for quick and simple commissioning.

For applications requiring extended low frequency enhancement, a range of Tannoy sub-bass systems are available and can be used in conjunction with the i7.

2. Unpacking

Every Tannoy i7 product is carefully tested and inspected before being packaged and leaving the factory. After unpacking your loudspeaker, please inspect for any exterior physical damage, and save the carton and any relevant packaging materials in case the loudspeaker again requires packing and shipping. In the event that damage has been sustained in transit, notify your dealer immediately.

3. Low Impedance or 70.7/100V distributed line operation?

The i7 can be used as either an 8Ω low impedance or 70.7/100V distributed-line system. The operation mode is selectable via a single rotary switch located on the rear of the cabinet.

Low impedance mode is recommended if the cable runs are relatively short and the number of speakers is small. If, on the other hand, the cable runs are long and the number of speakers large, then a distributed line system is ideal.

The main advantage when operating in low-impedance mode, is the wider frequency and dynamic range the speaker is able to deliver. If, however, the cable runs are long then the sound quality may be compromised due to the increase in cable resistance and the resulting power losses. To keep the load to the amplifier manageable, it is also recommended that a small number of speakers be used, thus avoiding complex series/parallel combinations.

When the number of speakers is large over long cable runs, it is recommended that a distributed (70.7V/100V) system be used. For distributed line, the cable need not have a large cross sectional area as for low impedance, resulting in savings in cable cost. All speakers are placed in parallel with the output of the amplifier, allowing easy installation. Please refer to section 5.2 for installation guidelines. The wattage tappings can be individually adjusted, giving more flexibility within an installation.

4. Amplification and Power Selection (Low Impedance Mode)

As with all professional loudspeaker systems, the power handling is a function of voice coil thermal capacity. Care should be taken to avoid running the amplifier into clip (clipping is the end result of overdriving any amplifier). Damage to the loudspeaker will be sustained if the amplifier is driven into clip for any extended period. Headroom of at least 3 dB should be allowed. When evaluating an amplifier, it is important to take into account its behaviour under low impedance load conditions. A loudspeaker system is highly reactive and with transient signals it can require more current than the nominal impedance would indicate.

Generally, higher power amplifier running free of distortion will do less damage to the loudspeaker than a lower power amplifier continually clipping. It is also worth remembering that a high powered amplifier running at less than 90% of output power generally sounds a lot better than a lower power amplifier running at 100%. An amplifier with insufficient drive capability will not allow the full performance of the loudspeaker to be realised.

It is important when using different manufacturers amplifiers in a single installation that they have very closely matched gains, the variation should be less than +/-0.5dB. This precaution is important to the overall system balance when only a single compressor/limiter or active crossover is being used with multiple cabinets; it is therefore recommended that the same amplifiers be used throughout.

When running low impedance loudspeakers in parallel, care must be taken not to allow the impedance to drop too low, as damage may be sustained by the amplifier. Most low impedance amplifiers will be able to handle loads of 2Ω to 8Ω. This means that when using a 4Ω amplifier, 2 x i7 may be connected in parallel per input, although care should be taken as impedance varies with frequency and at some frequencies the impedance will drop to below 8Ω. For examples simple series/parallel combinations, please see Figures 4a, 4b and 4c.

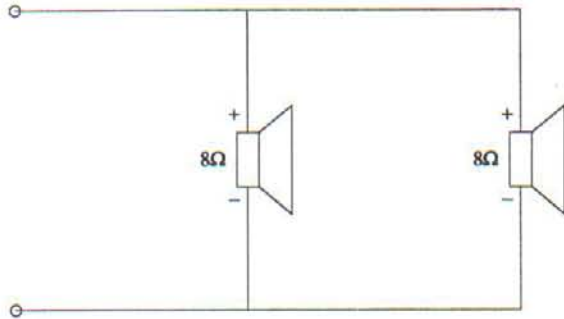


Figure 4a: Simple parallel connection: 4Ω

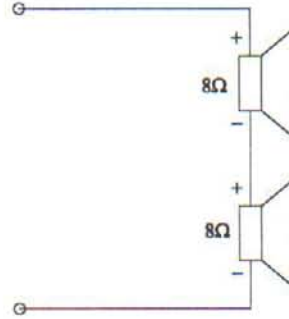


Figure 4b: Simple series connection: 16Ω

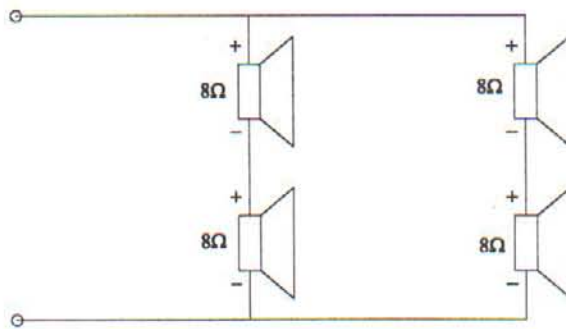


Figure 4c: Series Parallel Combination: 8Ω

When operating in low impedance mode the rotary switch on the back of the cabinet as shown in Figure 4d, below should be set to '8 ohm'

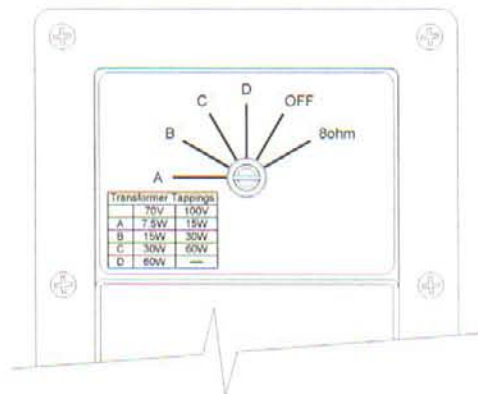


Figure 4d

4.1. Connectors & Cabling for Low Impedance Operation

The i7 is fitted with 4-pole Neutrik Speakon™ connectors. Speakon has the following advantages over EP and XLR type connectors: All terminations are solderless; this makes life easier at the time of installation or when field servicing is required. Contacts will accept 6 sq. mm wire with an outside diameter of up to 15mm and a current rating of 30 Amps. The pins of the 2 Speakon sockets identified input/output on the rear of the input panel are paralleled within the enclosure. Tannoy have adopted the conventional wiring standard for the i7 product :-

Pin 1+ is Positive
Pin 1- is Negative

For a worldwide list of Neutrik distributors see <http://www.neutrik.com/>

Cable choice consists mainly of selecting the correct cross sectional area in relation to the cable length and the load impedance. A small cross sectional area would increase the cables' series resistance, inducing power loss and response variations (damping factor).

Connectors should be wired with a minimum of 2.5 mm² (13 gauge) cable. This will be perfectly satisfactory under normal conditions. In the case of very long cable runs the wire size should exceed this, refer to the following table for guidance: -

CABLE RUN (m)	C.S.A. OF EACH CONDUCTOR (mm ²)	AWG	CABLE RESISTANCE Ω	% POWER LOSS INTO 4Ω LOAD	dB LOSS INTO 4Ω LOAD	% POWER LOSS INTO 8Ω LOAD	dB LOSS INTO 8Ω LOAD
10	2.5	13	0.13	3.9	0.17	2.0	0.09
	4	11	0.08	2.5	0.11	1.3	0.06
	6	9	0.05	1.6	0.07	0.8	0.04
25	2.5	13	0.33	9.3	0.42	4.9	0.22
	4	11	0.21	6.1	0.27	3.1	0.14
	6	9	0.13	3.9	0.17	2.0	0.09
50	2.5	13	0.66	17.0	0.81	9.3	0.42
	4	11	0.41	11.4	0.53	6.1	0.27
	6	9	0.26	7.5	0.34	3.9	0.17
100	2.5	13	1.31	29.1	1.49	17.0	0.81
	4	11	0.83	20.5	1.00	11.4	0.53
	6	9	0.52	14.0	0.65	7.5	0.34

5. Voltage and Power Selection (Distributed Line Operation)

When using 70.7V or 100V distributed-line systems, the transformer can be tapped at 60W, 30W and 15W, with an extra 7.5W tapping for 70.7V line systems. The taps are selected via the rotary switch shown in **Figure 4d**.

When the relevant voltage tapplings have been selected, add the individual power in Watts at all speakers and select an amplifier with a rating equal to or exceeding the total power in Watts. All of the transformer primaries should be connected in parallel to the output of this amplifier. If for example, you select the 7.5-watt transformer tap, it means that at full rated amplifier output the speaker will receive the full 7.5 watts. If the amplifier gain is reduced, each speaker will receive a

proportional amount of power, maintaining the overall system balance.

It is recommended that a generous power safety margin (3dB of headroom) be left so that the system does not have to operate continuously at its full rated output power

In order to comply with relevant fire safety regulations (i.e. BS 5839:1998), it is required that in the event of fire, that failure of the circuit to which the loudspeaker is connected does not occur before evacuation of the building is complete. Suitable measures include:

- a) use of terminal blocks (for connection to primary) with a melting point of not less than 650°C, for example constructed from ceramic materials;
- a) use of terminal blocks of a lower melting point but protected

5.1 Connectors and Cabling for Distributed Line Operation

Connections are identical to those used in low impedance mode, via the 4-pole Neutrik Speakon™ connectors (see section 4.1):

Pin 1+ is Positive
Pin 1- is Negative

Distributed line systems are much more efficient in power transfer and do not require as large cables as in low impedance mode. This can create significant savings in cable costs. Refer to the following table for guidance in cable length versus power loss. A power loss of 11% amounts to a loss of 0.5db, and 50% to a loss of 3dB.

CABLE RUN (m)	C.S.A. OF EACH CONDUCTOR (mm)	AWG	CABLE RESISTANCE Ω	% POWER LOSS INTO		% POWER LOSS INTO		% POWER LOSS INTO	
				70V 60W 100V N/C	70V 30W 100V 60W	70V 15W 100V 30W	70V 7.5W 100V 15W		
100	1	17	3.3	4.8	2.4	1.2	0.6		
	1.5	15	2.1	3.1	1.5	0.8	0.4		
	2.5	13	1.3	2.0	1.0	0.5	0.2		
500	1	17	16.6	20.3	11.1	5.9	3.0		
	1.5	15	10.4	13.7	7.2	3.8	1.9		
	2.5	13	6.6	9.1	4.7	2.4	1.2		
1000	1	17	33.2	33.7	19.9	11.1	5.9		
	1.5	15	20.8	24.1	13.5	7.2	3.8		
	2.5	13	13.1	16.7	9.0	4.7	2.4		
5000	1	17	166	71.8	55.5	38.4	23.7		
	1.5	15	104	61.4	43.8	28.1	16.3		
	2.5	13	65.7	50.1	33.0	19.8	11.0		

Distributed line operation is a good choice when so many speakers are used that the impedance would be too low to run from a low impedance amplifier.

For distributed line (70.7/100V) operation, the rotary switch can be adjusted to select the wattage required. The table below shows the rotary positions (moving clockwise) for 70.7 and 100V operation.

Position (Clockwise)	70.7V line Watts	100V line Watts
A	7.5	15
B	15	30
C	30	60
D	60	N/C

Figure 5b demonstrates the method of connecting the speakers to a distributed line amplifier.

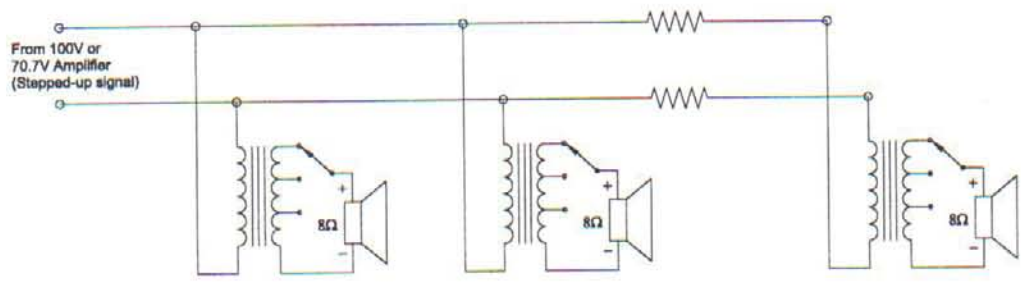


Figure 5b

6. Polarity Checking

It is most important to check the polarity of the wiring. A simple method of doing this without a pulse based polarity checker for LF units is as follows: Connect two wires to the +^{ve} and -^{ve} terminals of a PP3 battery. Apply the wire that is connected to the +^{ve} terminal of the battery to the speaker cable leg that you believe to be connected to the red speaker terminal and likewise the -^{ve} leg of the battery to the black speaker terminal.

If you have wired it correctly, the LF drive units will move forward, indicating the wiring is correct. All that remains now is to connect the +^{ve} speaker lead to the +^{ve} terminal on the amplifier and the -^{ve} lead to the -^{ve} terminal on the amplifier. If however the LF drivers move backwards, the input connections need to be inverted.

If problems are encountered, inspect the cable wiring in the first instance. It should also be noted that different amplifier manufacturers utilise different pin configurations and polarity conventions, if you are using amplifiers from more than one manufacturer, check the polarity at the amplifiers as well as the loudspeakers.

7. Equalisation

The i7 is designed to need no equalisation or correction to overcome system limitations. As a result, it will only need equalisation to compensate for difficult acoustic environments.

Excess equalisation can reduce system headroom, and introduce phase distortion resulting in greater problems than it cures. If equalisation is required then it should be applied gently and smoothly. Violent equalisation will be detrimental to the overall sound quality. If the loudspeakers were being used consistently at high levels it would be beneficial to introduce a high-pass filter at 60 - 95Hz to protect the loudspeaker from any unnecessary subsonic frequencies.

8. Dimensions

***Note** : When using the i7 with subs, set crossover point @ 90 - 130Hz
(24dB/oct LR)

11. Rigging & Suspension



11.1 General Safety Advice

The Tannoy Professional hardware covered in this guide has been designed to offer quick, simple, cost effective and secure solutions for mounting specifically the Tannoy i7 professional loudspeaker.

This hardware has been designed and manufactured with a high safety load factor for its specific role. To ensure the safest possible use of the hardware covered in this guide, it must be assembled in strict accordance with the instructions specified. The information in these manuals relating to the assembly and the safe use of these accessories must be understood and followed. The installation of Tannoy Professional loudspeakers using the dedicated hardware should only ever be carried out by fully qualified installers, in accordance with all the required safety codes and standards that are applied at the place of installation.

WARNING: As the legal requirements for flying change from country to country, please consult you local safety standards office before installing any product. We also recommend that you thoroughly check any laws and bylaws prior to commencing work.

Tannoy Professional hardware has been designed for use with specific Tannoy Professional loudspeakers, and is not designed or intended for use with any other Tannoy Professional products, or any other devices. Using Tannoy Professional hardware for any purpose other than that indicated in this guide is considered improper use. Such use can be very dangerous as overloading, modifying, assembling in anyway other than that clearly stated in the manual, or damaging Tannoy Professional hardware will compromise safety.

The component parts of any Tannoy Professional hardware device must only be assembled using the accessory kits supplied and in strict compliance with the user manual. The use of other accessories or non-approved methods of assembly may result in an unsafe hardware system by reducing the load safety factor. Welding, or any other method of permanently fixing hardware components together or to the integral fixing points in the cabinet should never be used.

Whenever a Tannoy Professional loudspeaker is fixed to a surface using a Tannoy Professional hardware device, the installer must ensure that the surface is capable of safely and securely supporting the load. The hardware employed must be safely, securely, and in accordance with the manual, attached both to the loudspeaker and to the surface in question, using only the fixing holes provided as standard and covered in the manual. Secure fixings to the building structure are vital. Seek help from architects, structural engineers or other specialists if in any doubt.

All loudspeakers flown in theatres, nightclubs, conference centre or other places of work and entertainment must, be provided with

an independent, correctly rated and securely attached secondary safety - in addition to the principle hardware device. This secondary safety must prevent the loudspeaker from dropping more than 150mm (6") should the principle hardware device fail.

11.2 i7Y - Wall mount Bracket

Only the screws, fasteners, and washers specified on *Figure 11a*. Should be used to assemble the i7Y

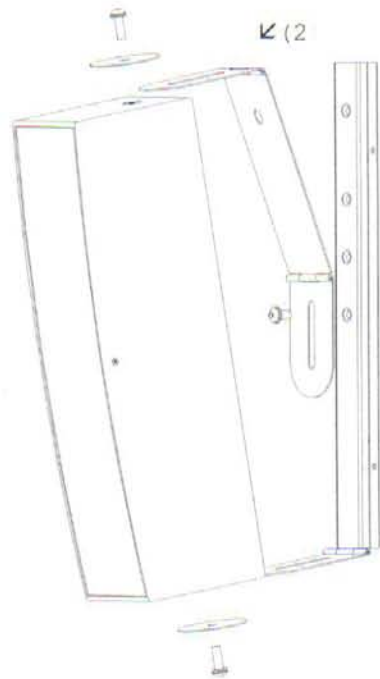


Figure 11a



Figure 11b

The Main body of the bracket (1) should be fixed first to the wall in the desired location using all six fixing points. Secure fixings to the building structure are vital; ensure the structure will accept the combined load of the speaker and bracket. The top portion of the bracket (2) is fixed to the main body using the bolt provided in one of the four fixing points shown, according to the desired angle. Fine-tuning of this angle is achieved by sliding the top part of the bracket in the slot shown in *Figure 11a*.

The loudspeaker can then be attached to the bracket as shown using the fixing hardware provided. If no downward angle is desired, the i7Y bracket can be assembled as shown in *Figure 11b* before attaching

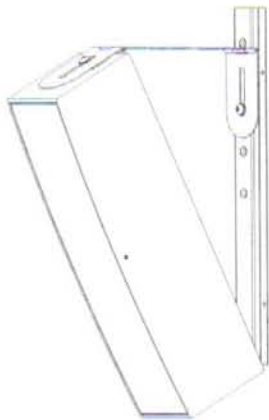


Figure 11c

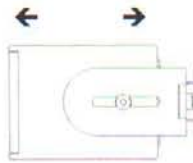


Figure 11d

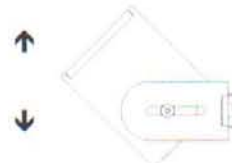
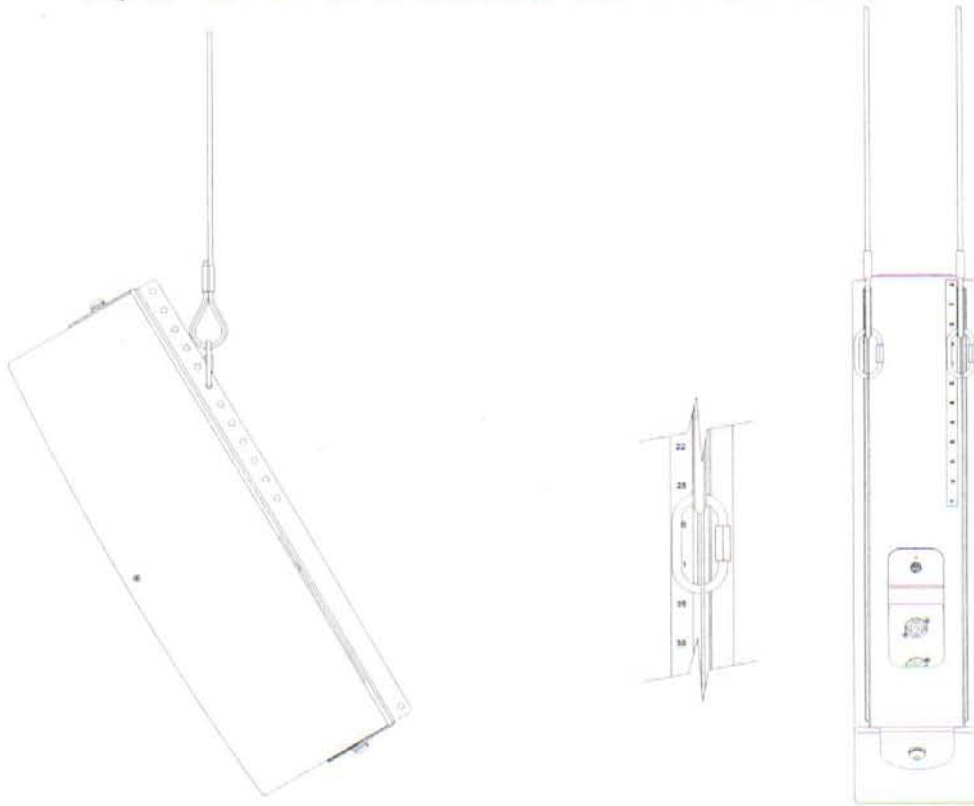


Figure 11e

The i7's proximity to the wall can be adjusted to allow aiming of the loudspeaker in the horizontal plane (*Figures 11d & 11e*).

11.3 i7 MAB- Multiple Angle Bracket

The i7 MAB is designed to provide a number of flexible mounting angles when the i7 is suspended from overhead cables.



The i7 MAB is attached to the cabinet as shown with the supplied hex socket screws and washers supplied. Remove the original M10 counter sunk screws from the top and bottom of the i7, position the bracket with the marked hanging holes to the top of the cabinet, then replace these counter sunk screws with the hardware supplied.

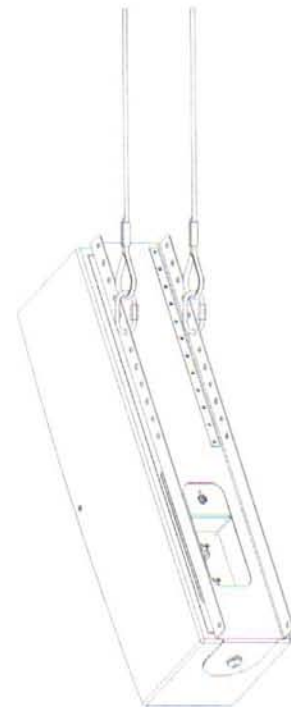
To achieve the desired angles as marked on the bracket, only use pairs of holes adjacent to one another.

It is imperative for safety reasons that two threaded and correctly rated 'Quick Link' fasteners linked to two independently fixed straps are used per cabinet.

The correct method is shown in the figures opposite.

A local building inspector should approve any overhead installations.

The following angles can be achieved:
19, 22, 25, 28, 31, 35, 39, 45, 52, 63, 76 and 91 degrees from vertical.



12. i7 Service Parts & Accessories

Part Number	Description
7900 0458	LF Driver Type 1687
7900 0545	HF Unit Type 0270
7300 0924	Crossover Type 1454
8001 3210	i7Y - Wall mount Bracket (Black)
8001 3211	i7Y - Wall mount Bracket (White)
8001 3220	i7 MAB- Multiple Angle Bracket (Black)
8001 3221	i7 MAB- Multiple Angle Bracket (White)
250V UK 8001 1930	Tannoy TDX2 Digital System Controller 90 -
250V EUR 8001 1940	Tannoy TDX2 Digital System Controller 90 -
250V USA 8001 1950	Tannoy TDX2 Digital System Controller 90 -

13. Warranty

No maintenance of the i7 loudspeaker is necessary.

All Tannoy professional loudspeaker products are covered by a 5-year warranty from the date of manufacture subject to the absence of misuse, overload or accidental damage. Claims will not be considered if the serial number has been altered or removed. Work under warranty should only be carried out by a Tannoy Professional dealer or service agent. This warranty in no way affects your statutory rights. For further information, please contact your dealer or distributor in your country. If you cannot locate your distributor, please contact Customer Services, Tannoy Ltd at the address given below.

Customer Services
Tannoy Ltd.
Rosehall Industrial Estate
Coatbridge
Strathclyde
ML5 4TF
Scotland
Telephone: 01236 420199 (National)
+44 1236 420199 (International)
Fax: 01236 428230 (National)
+44 1236 428230 (International)
E-Mail: prosales@tannoy.com

DO NOT SHIP ANY PRODUCT TO TANNOY WITHOUT PREVIOUS AUTHORISATION

Our policy commits us to incorporating improvements to our products through continuous research and development. Please confirm current specifications for critical applications with your supplier.

14. Declaration of
Conformity



The following apparatus is/are manufactured in the United Kingdom by Tannoy Ltd of Rosehall Industrial estate, Coatbridge, Scotland, ML5 4TF and conform(s) to the protection requirements of the European Electromagnetic Compatibility Standards and Directives relevant to Domestic Electrical Equipment. The apparatus is designed and constructed such that electromagnetic disturbances generated do not exceed levels allowing radio and telecommunications equipment and other apparatus to operate as intended, and, the apparatus has an adequate level of intrinsic immunity to electromagnetic disturbance to enable operation as specified and intended.

Details of the Apparatus:
Loudspeaker

Tannoy Contractor

Associated Technical File:
Applicable Standards:

Model Number: i7
EMCi7
EN 50081-1 Emission
EN 50082-1 Immunity
EN 60065

Electrical Safety:

Signed:

A handwritten signature in black ink, appearing to read 'G. Hawley', written over a horizontal line.

Position:

Engineering Director
Tannoy Professional

Date:

20/10/2003

For Tannoy Ltd



Tannoy United Kingdom 428230	E: enquiries@tannoy.com	T: +44 (0) 1236 420199	F: +44 (0) 1236
Tannoy North America	E: inquiries@tannoyna.com	T: (519) 745 1158	F: (519) 745 2364

Tannoy adopts a policy of continuous improvement and product specification is subject to change.

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