

## General Description:

The TM Series transformers are high quality, universal, line matching transformers designed specifically to allow efficient matching of Electro-Voice public address speakers in virtually any sound distribution application using 25, 70.7, or 100-volt lines.

The TM Series transformers feature the latest in transformer design techniques. Each unit features a uniform frequency response,  $\pm 1$  dB from 60 to 10,000 Hz, with better than .1% THD at 1,000 Hz and a maximum THD of 5% at 60 Hz, so that the sound quality does not change when a transformer is used. Each unit is conservatively rated for its respective power handling capacity. Insertion loss is less than 1.5 dB for best use of amplifier power and driver efficiency.



TM15

TM30

(TM60 not shown)

## Applications:

Several purposes are served by using 25, 70.7, or 100-volt line matching when installing speakers. By choosing the 70.7 or 100-volt systems, with their relatively high impedance lines (well above nominal speaker impedance), power losses in long speaker lines are vastly reduced. This can mean a substantial savings in amplifier cost. Smaller wire can also be used without excessive power loss. Because the TM series transformers have various wattage taps, the amount of power being fed to any speaker or group of speakers can be adjusted easily without the use of resistive networks that "soak up" power and reduce the efficiency of the system. In addition, a more powerful amplifier can be substituted at any time for the existing amplifier without upsetting the loudness balance between various speakers. Additional speakers can also be added or wattage taps can be increased, up to the rated amplifier output, without affecting the loudness of the speakers already installed. The same advantages apply to the 25-volt line operation except that line losses are increased considerably due to the greater current flow. Note that in some localities building codes permit 25-volt lines to be run without conduit, while 70.7 and 100-volt lines must have this costly additional protection. Thus, a 25-volt system may prove to be the more economical approach even though the additional amplifier power or larger gauge cable is required. (Continued on Page 2)

## Technical Specifications:

Frequency Response (all models):	$\pm 1$ dB, 60-10,000 Hz $\pm 2$ dB, 35-20,000 Hz
Insertion Loss:	TM15: -1.5 dB TM30: -1.5 dB TM60: 1.0 dB
Distortion at Full Rated Power:	<5%: 60 Hz <.1%: 1000 Hz
Wattage Rating of Primary Taps:	See Figure 2
Primary Impedance (all Taps):	See Figure 2
Secondary Impedance Speaker Taps (all models):	8-16 Ohms
Input Connections, TM15, TM30:	Solder Terminals Located on Sides of Transformer
Input Connections, TM60:	.205 Faston Tabs
Dimensions (H x W x D):	TM15: 2.38" x 2.88" x 1.88" (60.3mm x 73.0mm x 47.6mm)
	TM30: 2.75" x 3.13" x 2.00" (69.9mm x 79.4mm x 50.8mm)
	TM60: 3.06" x 3.56" x 2.50" (77.7mm x 90.6mm x 63.5mm)
Mounting Hole Centers:	TM15: 2.38" (60.3mm) TM30: 2.81" (71.4mm) TM60: 3.13" (79.4mm)
Shipping Weight:	TM15: 1lb (.45kg) TM30: 1lb 8oz (.68kg) TM60: 2lb 4oz (1.02kg)

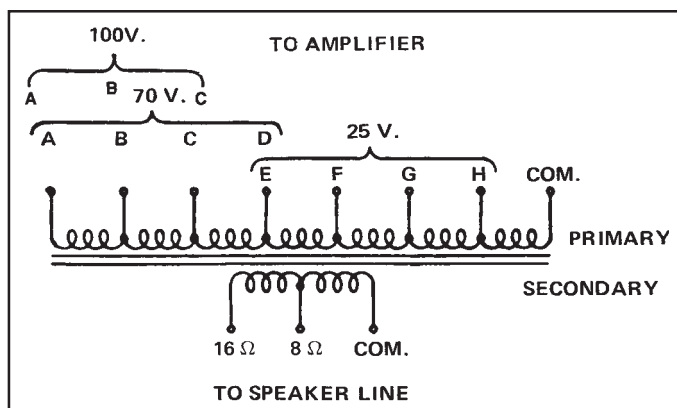
## Applications (cont'):

After choosing between 25, 70.7, and 100-volt operation, selecting the proper transformer is relatively simple. First, determine the maximum power in watts needed at each speaker location. Choose a transformer (or transformers) which will include this wattage tap. Next, add the individual wattages required at all speakers and select an amplifier having a rating equal to or exceeding the total wattage required. All transformer primaries should be connected in parallel to the output of this amplifier and the secondary of each transformer should exactly match the rated impedance of its speaker, with the amplifier connected to the common terminal and the indicated primary tap (see Figures 1 and 2).

Selecting the 5-watt transformer tap (for example) means only that, at the full rated amplifier output, the speaker will receive the full five watts. If the volume control on the amplifier is turned down, each speaker will get a proportional amount of power, so that the system balance will not change.

It is suggested that, when computing amplifier wattage requirements for a system, a generous "safety margin" in terms of wattage be included, so that the system need not operate continuously at its full rated output. This will allow reserve power to be used if the ambient noise levels should rise and to accommodate minor discrepancies in efficiency of any of the components.

The choice of a wattage tap should not exceed the power handling of the speaker, but in many instances may be substantially less. It may sometimes be desirable to use, for example, a 50-watt driver on a 10-watt tap to enjoy the added reliability thus available from this driver. It may be helpful to consider wattage taps on the individual transformers in terms of percentage of available power from the amplifier. A 30-watt tap being fed from a 60-watt amplifier would receive half of the available power, while a 5-watt tap would get only 8.5% of the power.



**Figure 1: Schematic**

Primary Tap (See Fig. 1)	Line Voltage	TM15		TM30		TM60	
		Watts	Ohms	Watts	Ohms	Watts	Ohms
A	100	3.75	2673	7.5	1333	15	667
B	100	7.5	1333	15	667	30	333
C	100	15	667	30	333	60	166
A	70.7	1.87	2673	3.75	1333	7.5	667
B	70.7	3.75	1333	7.5	667	15	333
C	70.7	7.5	667	15	333	30	166
D	70.7	15	333	30	166	60	83
E	25	1.87	333	3.75	166	N/A	N/A
F	25	3.75	166	7.5	83	N/A	N/A
G	25	7.5	83	15	41	N/A	N/A
H	25	15	41	30	20	N/A	N/A

**Figure 2: Rating of Primary Taps**



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Specifications subject to change without notice.