

## TFVB-80

### Booster amplifier for Voice Evacuation systems

### Technical Instructions



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**Please Note!**

Do not install, operate or conduct maintenance operations in the device before reading this manual thoroughly.

## 1 Introduction

The TFVB-80 unit is a booster amplifier that allows to increase the power supplied to a Voice Evacuation system of the TFVX and TFVE-300 models. All system devices are controlled by the requirements of UL 864 and NFPA 72.

The TFVB-80 unit includes a 50W booster; power supply; battery charger and integral VOX system (voice operated system), fault indication circuits and unit operation.

TFVB-80 supports 70/100V speaker lines.

This unit can be used for zone / addressable systems. The separation of the audio line into sections improves the reliability of the line against short circuits and disconnections, and allows switching Voice Evacuation system zones in addressable systems.

The connection between the booster and booster amplifier and between the booster amplifiers is done using a pair of wires used to transmit the audio signal for the line control and command. In addition to the central control, individual fault signals can be received from each booster amplifier through a built-in fault relay, that can feed an input assembly like ADR-805A or ADR-705.

## 2 Compatibility

### 2.1 Boosters

TFVB-80 is compatible with TFVE-300 boosters and the entire TFVX series.

### 2.2 Speakers

Speakers from the list of speakers approved by the Standards institution of Israel.

## 3 Operation modes

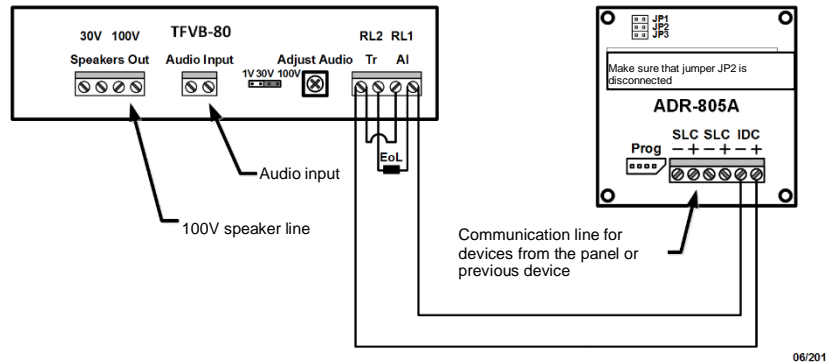
### 3.1 Fault indication or operation of addressable fire detection panel (optional)

When connecting to a addressable panel, input assembly of the ADR-705 or ADR-805A type can be connected to the booster amplifier relays to detect faults in the booster amplifier. Connect the input assembly as shown in Figure 1. State the booster location in the description of the input assembly on the panel.

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#### **Note!**

Set the ADR-805A or ADR-705 assembly as a monitoring device. Set the device description as the location of the booster amplifier.

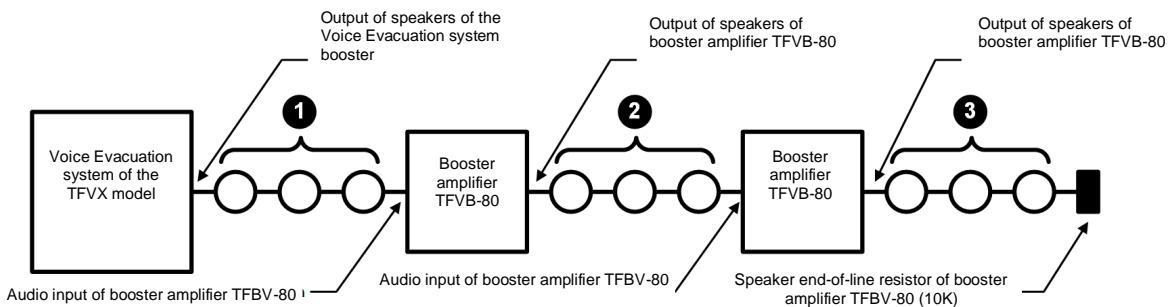


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Figure 1: Connection of fault report to an addressable panel

### 3.2 Booster amplifiers daisy chaining to the output of a Voice Evacuation system's booster

#### 3.2.1 Connection of TFBV booster amplifier to voice evacuation system booster

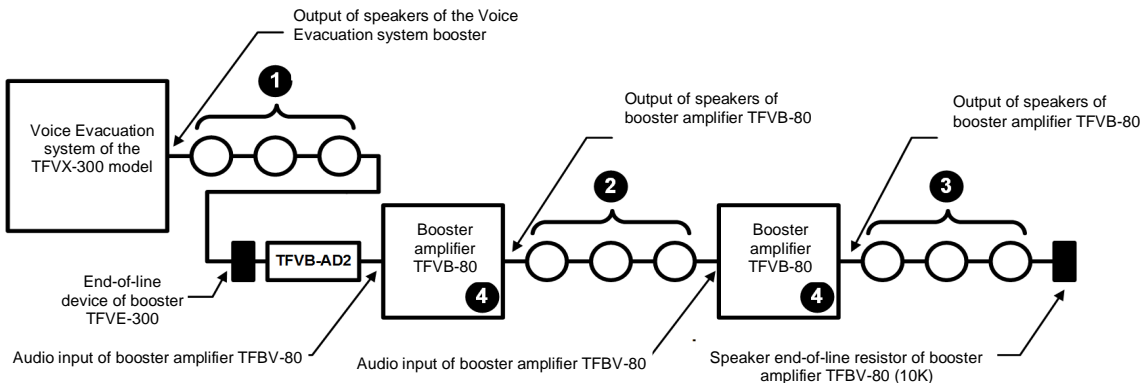


- ❶ Speaker line from the output of 70V Voice Evacuation system booster to TFBV boosters, at an output that equals or is lower than the maximum output of the feeding booster
- ❷ Speakers line from the output of speakers of booster amplifier TFBV-80, 100V speakers with total output of up to 50W
- ❸ Speakers line from the output of speakers of booster amplifier TFBV-80, 100V speakers with total output of up to 50W

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Figure 2: Daisy chaining of booster amplifiers to the output of the a Voice Evacuation system booster (schematic)

### 3.2.2 Connection of TFVE-300 booster to voice evacuation system

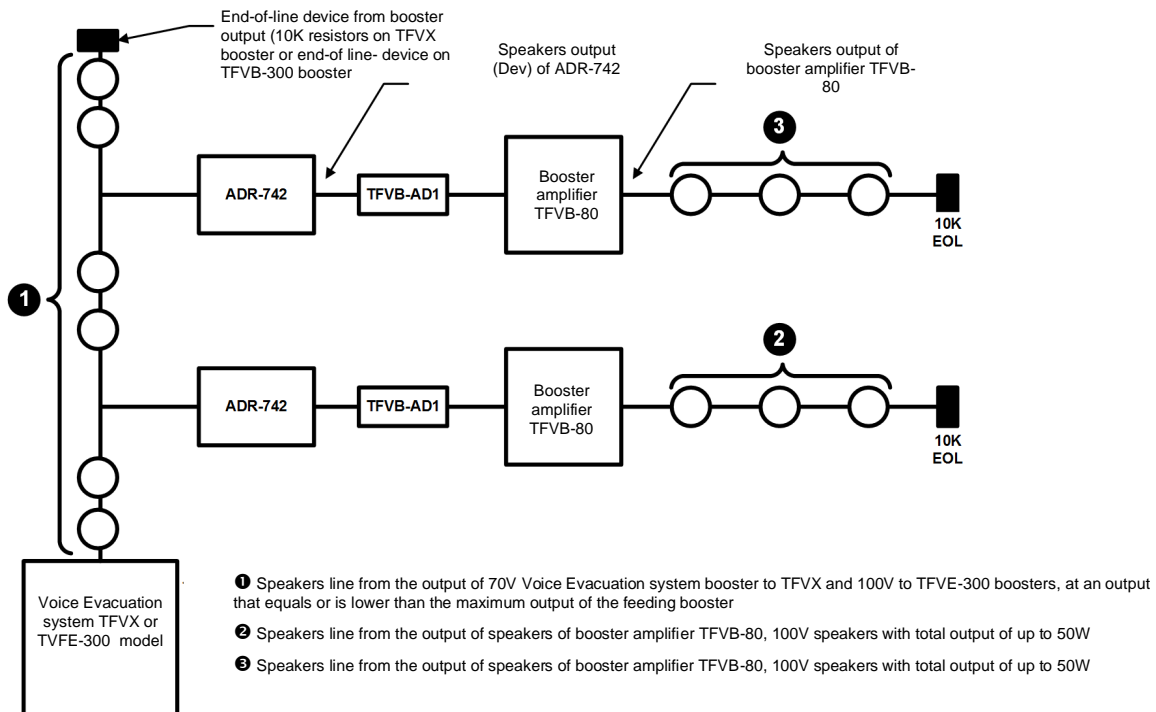


- ❶ Speakers line from the output of 100V Voice Evacuation system booster to TFVX boosters, at an output that equals or is lower than the maximum output of the feeding booster
- ❷ Speakers line from the output of speakers of booster amplifier TFVB-80, 100V speakers with total output of up to 50W
- ❸ Speaker line from the output of speakers of booster amplifier TFVB-80, 100V speakers with total output of up to 50W
- ❹ Input assembly ADR-805A or ADR-705 to report a fault in the booster amplifier must be connected.

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**Figure 3: Daisy chaining of booster amplifiers to the output of Voice Evacuation system booster (schematic)**

### 3.3 Booster amplifiers for zone Voice Evacuation systems through ADR-742 speaker switching assembly

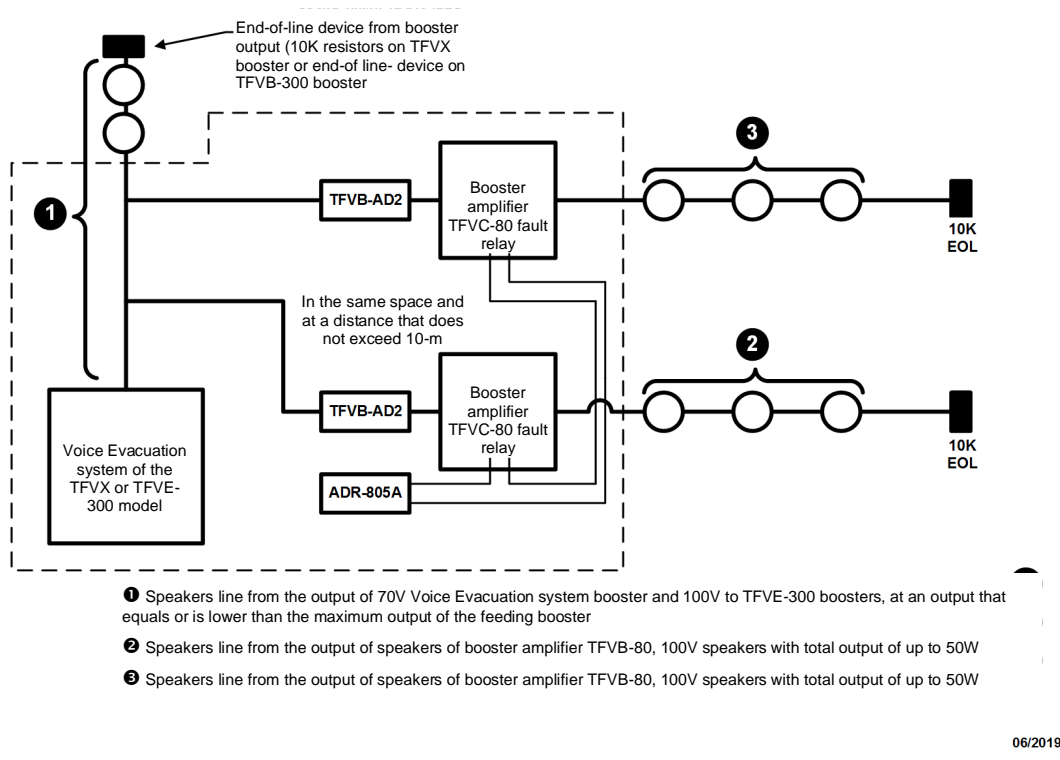


- ❶ Speakers line from the output of 70V Voice Evacuation system booster to TFVX and 100V to TFVE-300 boosters, at an output that equals or is lower than the maximum output of the feeding booster
- ❷ Speakers line from the output of speakers of booster amplifier TFVB-80, 100V speakers with total output of up to 50W
- ❸ Speakers line from the output of speakers of booster amplifier TFVB-80, 100V speakers with total output of up to 50W

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**Figure 4: Connection of booster amplifiers in zone Voice Evacuation system through ADR-742 speakers switching assembly**

### 3.4 *Booster amplifiers parallel to the output of the Voice Evacuation system's booster (star connection)*



**Figure 5: Connection of booster amplifiers parallel to the output of the Voice Evacuation system booster**

## 4 Installation

### **Caution:**

**Disconnect all power sources (mains and batteries) before connecting or disconnecting cables to the panel.**

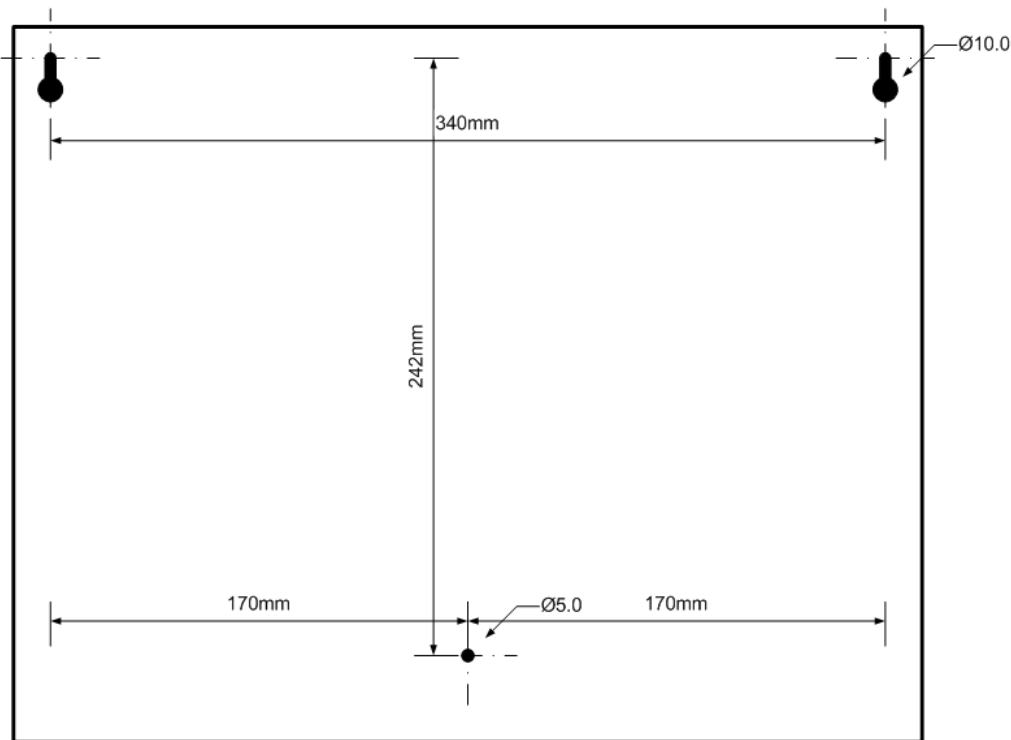
### **4.1 Installation of a booster amplifier**

Install the booster amplifier unit in an indoor location. Prevent exposure to external conditions to prevent high humidity, dust and air pollution from external sources.

Install the TFVB-80 unit on a stable wall, to allow easy access for the installation of cables from the booster to the booster amplifier, and from the booster amplifier to the speakers, to allow the maintenance staffs ongoing service, in a way that allows easy control and view of the indicator lamps.

At the back of the unit on the top there are two sliding grooves for installation of the unit on a wall. At the bottom, there's a hole for a screw to fix the unit.

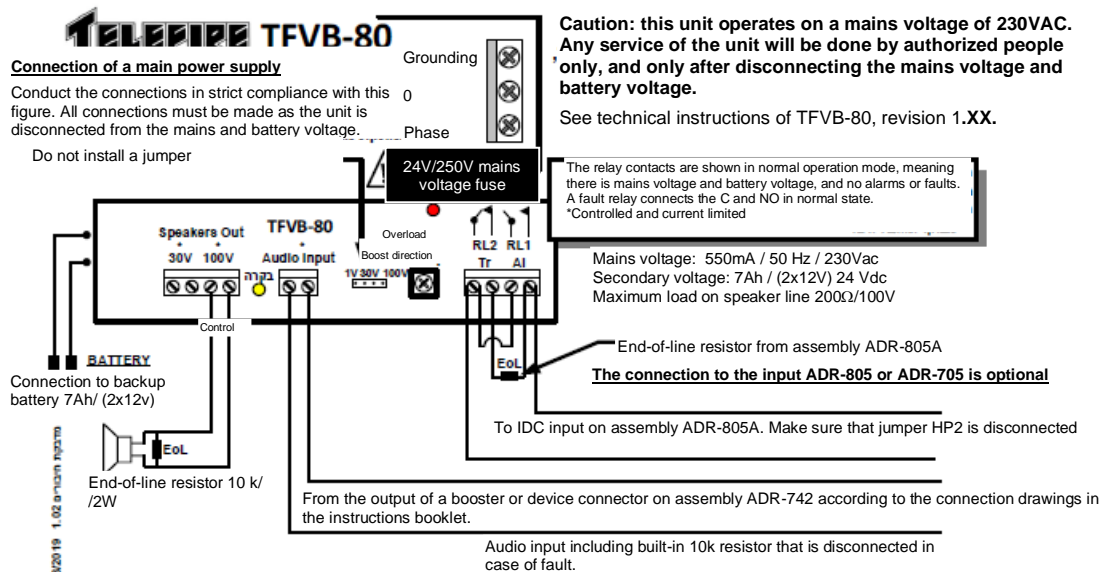
Install the speakers according to the instructions of the speakers' manufacturers.



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**Figure 6: Assembly holes at the back of the system**

## 4.2 Connection of the booster amplifiers



**Figure 7: TFVB-80 booster amplifier connectors**

## 4.3 Operation and testing instructions

1. Connect the **Audio Input** of the TFBV-80 booster amplifier according to figure 1.
2. Connect the speakers line to 30V or 100V **Speakers out**.
3. Connect the 10k end-of-line device to the last speaker.
4. If necessary, connect the **ADR-805A** card for fault detection/operation, by Figure 1.
5. Connect the 230VAC mains voltage and batteries to the booster.
6. Switch on the Voice Evacuation system the booster is connected to.
7. Make sure that the speakers connected to the booster are turned on and that no overload indicator lamp is lit on the booster.
8. Check that only the **AC** and **Battery** lamps are lit.

## 4.4 Mains power supply

The electric wiring and connection to the mains grid, including a disconnection switch, will be done according to the instructions of the latest Israeli Standard IS 1220, part 3, and as specified in the Israeli Electricity Law, and will be conducted by authorized people only.

The mains power will be connected to the booster amplifier by direct connection from a semi-automatic switch on a private circuit on the electrical board, using standard electric piping and cable. If there is an emergency power generator, the system will be connected in a way that ensures power supply, also in case of power failure in the mains supply.

The input of the electric cable will be connected by a separate input to the booster amplifier or in a separate duct. The routing of piping through an opening in the body of the booster amplifier has to be strictly made, or alternatively, it has to be protected by a grommet or a cable gland with a mechanical lock like that of Legrand number



98012 or equivalent. The grounding connection will be done directly to a grounding screw, labeled on the booster amplifier.

According to Israeli Standard IS 1220 part 3 (2014), next to the booster amplifier, labeling of the physical location of the semi-automatic switch that feeds the booster amplifier has to be provided, as well as the number of circuit the switch is fed by. The main switch used to feed the system from the power mains will be also clearly labeled, to indicate that this circuit is connected to the fire detection system.

## 5 Fault indication and troubleshooting

### 5.1 Indicator lamps

Indicator lamp	Meaning of the indication
<b>MAINS POWER</b> green light	Used to indicate the presence of power supply (AC) <ul style="list-style-type: none"> <li>Constantly on in normal state</li> <li>Off when there is no mains power</li> </ul>
<b>BATTERIES</b> Green light	Used to indicate the presence of power supply (AC) <ul style="list-style-type: none"> <li>Constantly on in normal state</li> <li>Flashing when the battery charge is low</li> <li>Off when there's a battery fault or the batteries are disconnected</li> </ul>
<b>FAULT</b> Yellow light	Indicates fault in the booster amplifier or in the devices connected to it <ul style="list-style-type: none"> <li>Off in normal state.</li> <li>On in case of a fault.</li> </ul>
<b>ACTIVE</b> Red light	<ul style="list-style-type: none"> <li>Off in normal state</li> <li>On when the Voice Evacuation system is on.</li> </ul>
<b>AMPLIFIER OVERLOAD</b> Red light	<ul style="list-style-type: none"> <li>Off in normal state.</li> <li>On in case of overload on the speakers line.</li> </ul>
<b>CONTROL SPEAKERS</b> Yellow light	<ul style="list-style-type: none"> <li>Constantly on when the speakers line is ok.</li> <li>Off in case of fault in the speakers line.</li> </ul>

## 6 Maintenance

Conduct the maintenance instructions according to the requirements of Israeli Standard IS 1220, part 11.

## 7 Technical data

Dimensions (W x H x D) .....	370 / 290 / 90-mm
Range of operating temperatures: .....	-10°C – +60°C
Relative humidity .....	10% – 93% with no condensation
Mains voltage (AC) .....	230Vac +10% / -15%; 50 / 60 Hz
Maximum current consumption from AC mains power supply	
In quiescent mode .....	40mA
in operation .....	550mA
Mains voltage fuse (on the supply) .....	2.0A / 250Vac; Slow Blow; 5*20mm
<b>The fuse must be immediately replaced with a fuse having similar data, including the lag time.</b>	
<b>A fuse can be replaced only when the panel is disconnected from all power sources (batteries and AC mains voltage).</b>	
Batteries and their capacity	
The power supply will be capable of charging a pair of sealed storage, lead acid rechargeable batteries with a nominal voltage of 24V (two 12v batteries in serial connection) with a capacity of up to 7 Ah.	
TFVB-80 panels can accommodate batteries in the size of up to 18 (width) x 7 (depth) x 19 (height)-cm, each.	
Maximum current consumption of batteries:	
In quiescent mode .....	80mA
In operation .....	2.5A
Audio input (set by a jumper) .....	70V / 100V
Speakers output	
Power .....	100V / 50W ix 30V / 50W
End of line resistor .....	10 KΩ/ 1/2W
Operation frequency .....	800 – 2,800Hz
Dry contacts .....	2
Fault relay, dry contact (RL1)	
Relay operating conditions .....	normally closed and opens if a fault is detected
Maximum values .....	24Vdc / 100mA
Activation relay, dry contact (RL2)	
Relay operating conditions .....	normally open and closed in case that the Voice Evacuation system is on
Maximum values .....	24Vdc / 100mA

**All values are nominal and can be changed with no prior notice.**

## 8 Standards

The equipment meets the following standards:

- Complies with Israeli Standard IS 1220
- Certified according to the GOST standard