



# FAPSUB

## Strategy Series® II In-Ceiling 70.7V / 100V / 8Ω Subwoofer System

### Features

- Tuned and Ported, Long Excursion 8" Subwoofer System Produces Amazing Extended Low Frequency Response in Any Ceiling Speaker System
- High Efficiency, Passive Crossover Network Eliminates the Need for Dedicated Amplifier and/or Active Crossover
- Low Crossover Point Greatly Reduces Localization (Ability of Listener to Identify the Subwoofer Location)
- Front Mounted Tap Selector Switch for Easy System Tuning Adjustment Includes Transformer Bypass Setting for 8Ω / Direct Coupled Operation
- Easy Installation in Drop Tile or Sheetrock Ceilings Via C-Ring / V-Rail Tile Bridge and "Dog Leg" Mounting System (Included)
- Uniquely Designed, Easy Access Input Panel Design Allows for Thru Conduit Runs Using Flexible or Rigid Conduit
- Detachable, Phoenix Style, Locking, Four-pole Euro Connectors for Easy Daisy Chain Wiring
- Attractive Stud Mount Grille Matches Aesthetics of Other Atlas Sound FAP Series
- UL Listed – 1480

### Applications

In recent years, there has been a shift in market demand for commercial sound systems to deliver higher fidelity sound. Retail, restaurant, and hospitality owners and managers are finding that their customers are expecting the quality of their shopping or dining experience to be enhanced by music reproduced at nearly the same sound quality they expect in their home theaters and car stereos. Business owners now realize that the excitement caused by a quality audio system can turn into increased customer satisfaction. The FAPSUB, when used in conjunction with other Atlas Sound full-range speakers, provides great sounding background / foreground music reproduction suitable to these applications.



FAPSUB

### Specifications

Woofer Size:	8" (203mm)
Woofer Impedance:	8Ω Direct Coupled (Nominal)
Transformer Taps at 70.7V:	1.9, 3.8, 7.5, 15, 30, & 60 Watts
Power Handling:	100 Watts RMS
Sensitivity (1 W / 1 M):	89dB Average
Frequency Response:	45Hz – 120Hz (±10dB), 55Hz – 100Hz (±6dB)
Dispersion:	Omni
Low Pass Filter:	Three Pole Design 18dB / octave @ 120Hz
Magnet Weight:	Nominal, 20oz (580g)
VC Diameter:	35.5mm
VC Material:	Copper
VC Former Material:	Kapton®
Cut-out Diameter:	14" (355mm)
Height:	12¾" (324mm)
Diameter:	15¾" (400mm)



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## General Description

The FAPSUB consists of a highly efficient 8" subwoofer designed for optimal performance in its included enclosure system. The woofer features an extended, vented pole piece for higher excursion and better heat dissipation and a Kapton® voice coil former for increased power handling.

A highly efficient, 3-pole filtering network eliminates unwanted high frequencies from the woofer, while the 937 in<sup>3</sup>, tuned and ported, deep drawn steel enclosure provides frequency response down to 45Hz (±10dB). A specially designed rippled speaker dust cap helps eliminate nearly all frequency artifacts emanating from the center of the woofer cone.

A special low saturation 70.7V / 100V transformer is included with primary taps at 1.9, 3.8, 7.5, 15, 30, and 60 watts (@70.7V) to match and balance the subwoofer with full range speakers without the need for separate amplification. A convenient front mounted selector switch allows tap selection without the need to remove the speaker from the ceiling. This tap selector switch also includes a transformer bypass setting for 8Ω / direct coupled applications.

Mounting is simplified with Strategy Series® style "Dog Leg" tabs that allow easy installation into drop tile or drywall ceilings with the provided tile bridge assembly. The tile bridge consists of two "V" shaped formed mounting rails and a C-Ring assembly. The C-Ring can be attached to the rails with the screws provided to extend support to the T-Bar grid in suspended ceiling applications. Multiple hole locations are provided to allow the C-Ring to be positioned to the outer edge the tile if necessary.

For existing dry-wall applications, the tile bridge C-Ring and support rails can be inserted into the hole cut for the FAPSUB. For easy positioning, the "V" shaped support rails match the shape of the C-Ring tabs for easy maneuvering and location when working "blindly" above the deck.

For new construction drywall ceiling applications, the optional FAP82-TR trim ring is available. This unit provides a marked location for drywall installers to cut around, essentially reserving the desired location in the ceiling until final installation of FAPSUB. Mounting holes are provided to accommodate 16" or 24" OC stud / joist mounting.

A support ring is also provided on the top of the FAPSUB enclosure to facilitate an auxiliary support cable.

**NOTE: IT IS MANDATORY THAT THIS SECONDARY SUPPORT BE UTILIZED IN DROP CEILINGS FOR SAFETY AND SEISMIC CONSIDERATIONS.**



**C-Ring / V-Rails**



**FAP82-TR**

## System Design Considerations

How many subwoofers to use, where to place them, and at what wattage to tap them will be different in almost every situation.

Variables include:

- Size of the Room
- Speaker Mounting (Ceiling) Height
- Ambient Noise Level
- Type of Music
- Available Speaker Locations

Generally speaking, separate electronic crossovers and amplification are not necessary for the FAPSUB. However, in certain high SPL situations the increased efficiency gained by using an active crossover and dedicated amplifier is beneficial. Many amplifier manufacturers offer plug-in cards to provide this function on their products. A very cost effective in-line electronic crossover is also available from RDL Labs (Model ST-CX1W) for use with dedicated amplifiers.

For contemporary music reproduction, the minimum subwoofer level should be set to match the volume of the full range speakers; however, for some high energy music applications the maximum level could be as much as 10dB louder than the full range speakers.

Like any speaker, use of the boundary effect will increase the output of the FAPSUB. Placing the loudspeaker within 3' of a wall will increase the output by 3dB. Placement within 3' of a corner will increase the level another 3dB (6dB total).



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## Subwoofers and the Inverse Square Law

Even though frequencies below 200Hz are relatively omni-directional, listeners can still "localize" the subwoofer from the volume produced. To avoid "hot spots" it may be necessary to use two or more subwoofers tapped at a lower setting spread throughout the room instead of a single subwoofer tapped at maximum wattage.

## Ratio of Subwoofers to Full Range Speakers

Due to the many potential variables, it is difficult to give accurate suggestions on system design. It is important for the system designer to look at the required SPL at ear level, ambient noise in the room, speaker / transformer efficiency, and transformer insertion loss to determine the number of speakers and amplifier power required. In 70.7V / 100V systems, care should be taken so the total speaker power taps do not exceed the amplifier's 70.7V output capability.

The following "rule of thumb" information and examples are offered to provide a starting point for system design.

For "good" low frequency augmentation in a full range system (all full range speakers and FAPSUBs on the same amplifier), a single FAPSUB should be used for every four full range speakers.

For "excellent" low frequency augmentation in a full range system (all full range speakers and FAPSUBs on the same amplifier), a single FAPSUB should be used for every two full range speakers.

## Amplifier Limitations

Even with the extreme efficiency of the FAPSUB it will not overcome the limitations of an underpowered system. Be sure to allow sufficient headroom by using basic system design parameters in choosing an amplifier.

Example	Small Sports Bar
Square Feet	1,500
Ceiling Height	9'
Peak Ambient Noise Level	75 dB
Program	Digital Music

## Full Range Speakers

Eight Atlas Sound FAP42T speakers tapped at 4 watts each (32 watts total) will provide 90dB on axis at 3.5' ear height (15dB above ambient). 13.5' spacing between speakers provides minimum overlap coverage at 4kHz.

## Subwoofers

Two Atlas Sound FAPSUB subwoofers tapped at 30 watts each (60 watts total) will fill out the low frequencies at 8dB above the level of the full range speakers. If boundary loaded into one corner of the room the level will be increased another 6dB (14dB above the full range speakers).

Total Wattage: 92 watts x 1.3 Multiplier (for headroom) = 119.6 watts  
Amplifier Power Suggested: 120 Watts Atlas Sound AA120

## Amplifier Low Frequency Capability

Many 70.7V / 100V power amplifiers on the market today are from the era when business music systems extending down to only 100Hz were widely accepted. These less expensive amplifiers are not capable of driving today's high fidelity systems that require sound below 100Hz. When specifying the Atlas Sound FAPSUB, which operates well below 100Hz, it is VERY IMPORTANT to use a power amplifier capable of full output down to and below the lowest frequency going INTO the amp, which is often around 50Hz. An amplifier with low-frequency capability is absolutely crucial whenever the system includes a subwoofer and is very important for today's high fidelity business music systems.

## Architect & Engineer Specifications

The loudspeaker system shall be Atlas Sound FAPSUB or approved equal. System shall include a high performance 8" subwoofer loudspeaker, ported bass reflex enclosure, and stud mount grille for conventional ceiling installation.

Frequency response for the system shall be 45Hz – 120Hz (±10dB) and the sensitivity shall be 89dB (SPL at 1W / 1M).

Loudspeaker shall be comprised of an 8" low frequency cone type driver. Magnet shall be a minimum of 20oz (580g) and the voice coil diameter shall be 1". Transformer shall be 70.7V with primary taps at 1.9, 3.8, 7.5, 15, 30, and 60 watts. A front mount tap selector switch shall be included. This switch shall have a transformer bypass setting for 8Ω / direct coupled operation.

Enclosure shall be a deep drawn, 937 in<sup>3</sup>, steel enclosure design. To facilitate connection in conduit systems, enclosure shall be equipped with an access panel covering a recessed terminal cup. This cover shall provide a combination ¾" (19mm inside diameter) / 1" (25mm inside diameter) knock-out on the side access and a top access compression fitting / strain relief to facilitate flexible conduit up to 22mm outside diameter or 1" (25mm inside diameter) conduit when the compression fitting is removed.

External wiring shall be accomplished via a removable, lockable wiring connector with screw-down terminals to provide both secure wire termination and prewiring capability before loudspeaker installation.

The 4 pole locking Phoenix Style / Euro connector shall facilitate in/out connections and shall be located in the recessed area behind the conduit access panel.

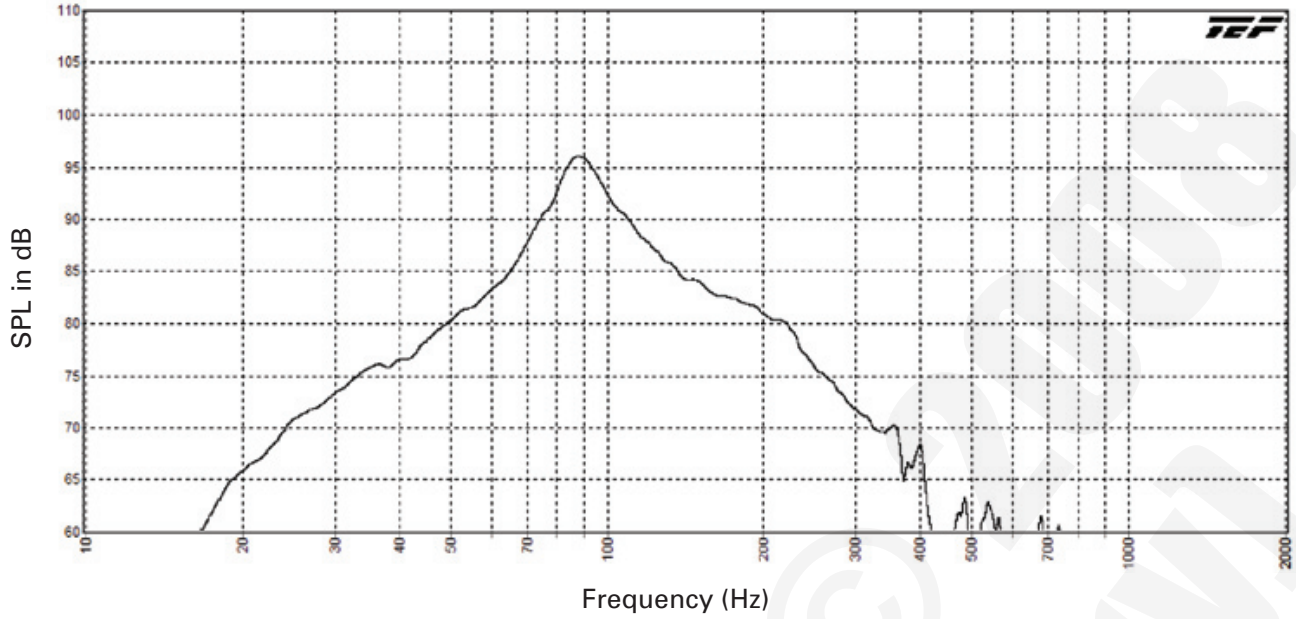
Seismic support eye shall be provided on top of enclosure for additional suspension point when used in drop tile ceilings. Construction of enclosure shall be a minimum of 18-gauge deep drawn galvanized metal.

The system shall include a support backing plate to reinforce the ceiling material and tile support rails for use on either 2' x 4' (609mm x 1219mm) or 2' x 2' (609mm x 609mm) suspended ceiling tiles. This assembly can all be installed from beneath the ceiling tile.

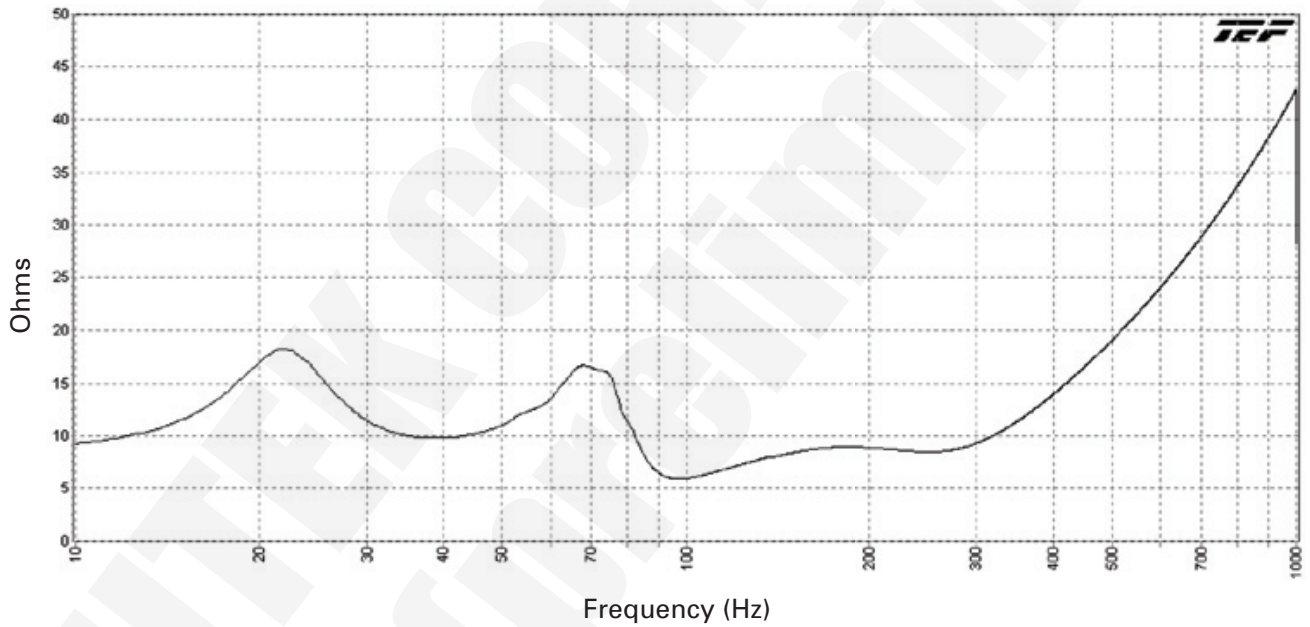
Overall front face diameter shall not exceed 15¾" (400mm); overall depth from the bottom of the ceiling shall not exceed 12¾" (323mm). Grilles shall be a press fit installation, manufactured 24-gauge (perforated mesh) and finished in white epoxy.



## FAPSUB Frequency Response



## FAPSUB Impedance (Ohms) vs Frequency



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