



Automatic Failure Detector and Substitutor AFDS2 Model

Installation and Use Manual

DESCRIPTION

The Bogen Model AFDS2, Automatic Failure Detector and Substitutor, is an electronic unit which continuously supervises the operation of the main and standby power amplifiers in a sound system. Should the main amplifier's output level drop by as little as 2 dB, the AFDS2 substitutes the standby power amplifier. The changeover is nearly instantaneous with virtually no loss of signal.

The AFDS2 injects a set level of a supersonic frequency (40 kHz) into the inputs of the main and standby power amplifiers and continuously samples their outputs. If the 40 kHz level from either amplifier should fall below 2 dB*, a fault alert tone will sound, indicating a failure. Front panel-mounted LEDs indicate whether the main amplifier or the standby amplifier failed. The fault alert tone may be silenced by momentarily pressing the Silence button; however, the LED will stay on for the duration of the malfunction.

The AFDS2 may be used in either 25V or 70V systems. Booster output may be balanced or unbalanced; but, in a balanced system, two accessory input isolation transformers (Model TL100) are required.

The AFDS2 input impedance from the audio source is 10,000 ohms. In applications where the pre-amplifier is located away from the amplifier, the AFDS2 input can be converted to 600 ohms with the accessory WMT1A Line-Matching Transformer. Screwdriver-adjustable controls for setting the oscillator level and the detector sensitivities are provided on the rear panel.

The AFDS2 operates from a 120V AC/60 Hz or 12V DC source. Line power consumption is 15W. All connections are made at screw terminals and RCA connectors on the rear chassis. The unit has a standard 19-inch wide panel, is 3 1/2-inches high and is suitable for either rack or cabinet installation.

*Threshold is adjustable

PACKAGE CONTENTS

- Automatic Failure Detector & Substitutor unit
- Installation and Use Manual

TECHNICAL SPECIFICATIONS

Supervision Frequency: 40 kHz

Supervision Frequency Level: 5mV to 50mV into 47k ohms

Input Impedance: 10k ohms

Detector Input Signal: 2V @ 40 kHz

Detector Supervision Range: 2 dB (min.) to 12 dB (max.)

Failure Indicators: LEDs (visual) and tone module (aural)

Controls: Screwdriver-adjustable controls for oscillator level and detector sensitivity

Remote Annunciation: Status terminal provides 12V DC/500mA in the failure mode

Operating Temperatures: 14°F to 149°F (-10°C to 65°C)

Power Consumption: 120V AC, 15W, or 12V DC @ 0.5A

Dimensions: 19" W x 3 1/2" H x 7-1/2" D

Weight: 8 lb.

Accessories: Two TL100 transformers for 25V or 70V balanced systems; WMT1A Line-Matching Transformer to match the input from a 600-ohm balanced line

EQUIPMENT CONNECTIONS

AC Power Connections: The AC line cord has a three-prong plug which should be plugged into a three-wire **grounded** 120V, 60 Hz outlet. This will automatically ground the chassis.

Auxiliary DC Power Connections: The unit may be powered from the 12V DC supply. The positive lead must be connected to the EXT PWR terminal on the chassis and the negative lead to the GND terminal.

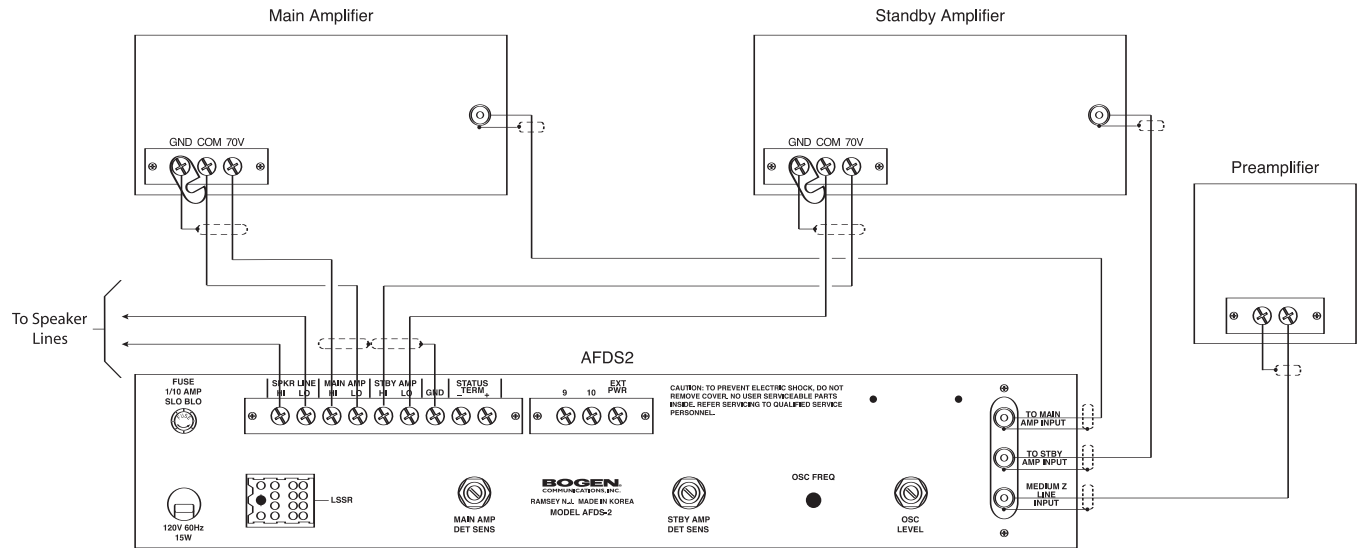
Input Connections: The input impedance of the AFDS2 is 10,000 ohms, accepting any unbalanced input capable of supplying a signal at least 10% greater than that needed to drive the power amplifiers (which must have an input impedance of 10,000 ohms or greater). Provisions are incorporated for mounting an accessory Model WMT1A transformer to match the input from a 600-ohm balanced line.

System Connections: Single-conductor, low capacity shielded wire should be used for all input connections. These leads should be as short as possible. The remaining connections can be made with either double-conductor shielded wire or #20AWG hookup wire.

Note: *Input cables should be routed separately from output cables.*

Balanced System Applications: In a balanced 25V or 70V constant voltage system, two accessory input isolation transformers (Model TL100) are required. To install the transformers, remove the cover, plug the transformers into the nine-pin sockets T1 and T2 on the PC board and cut the jumpers between terminals 9 and 10 and between terminals 22 and 23.

Status Terminal Connection: Remote identification of failure of the main amplifier and/or standby amplifier can be obtained by connecting a pair of wires and an annunciator to the Status Terminal. 12V DC @ 500mA (maximum) are provided in the failure mode.



NOTE: Close link between GND and COM for unbalanced system applications

SETUP PROCEDURES

MAIN AMPLIFIER

1. Connect an AC DVM across the output terminals of the main amplifier on the constant voltage setting being used (25V or 70V).
Note: Make certain that the AFDS2 is installed with all speaker loads by connecting the amplifier rated load across the Speaker Line (Hi and Lo) terminals. Turn the Main Amp Detector Sensitivity control, R33, and the Standby Amp Detector Sensitivity control, R2, fully clockwise. If the DVM reads zero, rotate the 40 kHz Oscillator Level control, R21, clockwise until the Speaker Line switches to the main power amplifier.
2. Set the audio source and main amplifier volume controls to their normal settings for maximum level of required program material. Record the settings. Use a tone generator, tuner, tape or phono input as the program input source.
3. Disconnect the audio source input to the AFDS2 and set the Oscillator Level control, R21, so that the DVM reads approximately 2 volts. This control requires no further adjustments.
4. Main Amplifier Detector Sensitivity Adjustment
 - a. The AFDS2 will annunciate failure and switch in the standby power amplifier for any gain change in the main power amplifier from 2 dB to total failure. To determine this switchover point, observe the DVM reading. The following table shows this relationship between the DVM reading and this gain change for the switchover.

DVM READING	SUPERVISION GAIN CHANGE
1.60V	-2 dB
1.42V	-3 dB
1.26V	-4 dB
1.12V	-5 dB
1.00V	-6 dB
0.80V	-8 dB
0.62V	-10 dB

- b. Turn down the main power amplifier gain control while observing the DVM reading. Refer to the table for the desired setting.
- c. Turn the Main Amplifier Detector Sensitivity control, R33, very slowly counterclockwise until the critical point (the switchover point to the standby amplifier) is reached. This point is indicated by an aural signal from the internal Sound Alert and a visual signal from the LED monitoring the main amplifier. Advance the control clockwise just enough to return the main amplifier back on. The Main Amplifier Detector Sensitivity control threshold is now set. RETURN THE MAIN AMPLIFIER GAIN CONTROL TO ITS ORIGINAL SETTING.

Note: If the internal relay of the AFDS2 switches operation back and forth between the main and standby amplifiers, this indicates poor regulation of the amplifier output with greater than the supervision gain change level between full load and no-load conditions. In this case, advance the Main Amplifier Detector Sensitivity control, R33, for a greater output level drop for switchover.

STANDBY AMPLIFIER

1. Disable the main amplifier and push the silence button on the AFDS2.
2. Set the amplifier volume control to its normal setting for maximum level of required program material. Record this setting.
3. Standby Amplifier Detector Sensitivity adjustment.
 - a. Connect a DVM across the output terminals of the standby amplifier.
 - b. Turn down the standby amplifier gain control while observing the DVM reading. Refer to the table for the desired setting.
 - c. Turn the Standby Amplifier Detector Sensitivity control, R2, counterclockwise very slowly until the standby power amplifier LED lights. Advance the control clockwise just enough to turn off the LED. The Standby Amplifier Detector Sensitivity control threshold is now set. RETURN THE STANDBY AMPLIFIER GAIN CONTROL TO ITS ORIGINAL SETTING. RECONNECT THE PRE-AMPLIFIER INPUT TO THE AFDS2. RESTORE THE MAIN AMPLIFIER TO FULL OPERATION.

WARRANTY

The AFDS2 is warranted to be free from defects in material or workmanship for two (2) years from the date of sale to the original purchaser. Any part of the product covered by this warranty that, with normal installation and use, becomes defective will be repaired or replaced by Bogen, at our option, provided the product is shipped insured and prepaid to: Bogen Factory Service Department, 50 Spring Street, Ramsey, NJ 07446, USA. The product will be returned to you freight prepaid. This warranty does not extend to any of our products that have been subjected to abuse, misuse, improper storage, neglect, accident, improper installation or have been modified or repaired or altered in any manner whatsoever, or where the serial number or date code has been removed or defaced.

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Products that are out of warranty will also be repaired by the Bogen Factory Service Department -- same address as above or call 201-934-8500. The parts and labor involved in these repairs are warranted for 90 days when repaired by the Bogen Factory Service Department. All shipping charges in addition to parts and labor charges will be at the owner's expense. All returns require a Return Authorization number.

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