

Audiostrobe AS-1 Handheld Digital Stroboscope



– Safety 1st

Read the following safety information carefully before attempting to operate or service the Dayton Audio AS-1 Audiostrobe. For best performance and continued safe operation, use the AS-1 Audiostrobe only as instructed in this manual

- Do not direct the flash toward any human or animal eyes.
- Do not expose the device to water or any other corrosive liquid.
- When placing the unit in extended storage, please remove the batteries to avoid damage from battery leakage.
- You may clean the case with a dry cloth, do not use abrasives or solvents.

I – General description

Dayton Audio's AS-1 provides intermittent illumination of an object for visual analysis. By adjusting the frequency of illumination, objects in vibrational or rotational movement can appear stationary or in slow motion. This optical illusion called visual persistence allows for a non-contact inspection and status of moving object surfaces well beyond the ability of the naked eye.

The Dayton Audio AS-1 Audiostrobe was specifically designed with the loudspeaker enthusiast and professionals in mind. The typical frequency response of a loudspeakers contains peaks, nulls and/or resonances which are undesirable. The causes of such irregularities are difficult to see however by synchronizing the flashes per second at or near the frequency of the inputted sine wave to the loudspeaker, the loudspeaker seems motionless or in slow motion. This allows the loudspeaker behavior to be observed even in well-lit rooms thanks to 36 super bright LEDs with total output of 1000 lumens.

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The Dayton Audio AS-1 can often help identify the cause of response defects and other useful information of individual drivers as well as complete loudspeaker systems. These include but are certainly not limited to the following:

- non-linearity e.g., rocking motions of the cone
- cone, surround and dust cap deformations
- resonance modes in spider and tinsel leads
- lead slap e.g., lead deformation
- inverting spiders e.g., spider deformation
- phase relationship in multi speaker systems
- tuning frequency and behavior of passive radiators
- excursion limits of active and passive drivers

II. Performance features

- * Using visual persistence to conduct non-contact measurement of objects in periodic motion and detect defects on the surface.
- * Strobe brightness of 1400 lumens Large LCD with backlight ensures a clear display of data
- * Dual-scale tuning: single-step adjustment in coarse or fine tuning (Flashes Per Minute mode only) and continuous adjustment (course/fine tuning).
- * Automatic power management conserves batteries by turning off the AS-1 after sitting idle for approximately 7 minutes
- * Low voltage indicator: the device will automatically indicate when the power supply voltage is lower than required.
- * The ergonomic ABS plastic shell is solid and comfortable to operate.
- * Store up to 10 sets of flash frequency data to be retrieved at any time.

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III. Technical parameters

Measurement range and tuning:

Flashes Per Minute (FPM): 60 FPM-40000 FPM

- Tuning steps below 1000 FPM,

Coarse tuning: ± 10 FPM

Fine tuning: ± 0.1 FPM

- Tuning steps above 1000 FPM,

Coarse tuning: ± 100 FPM

Fine tuning: ± 1 FPM

Flashes Per Second (FPS): 1-665

- Tuning steps: ± 1 FPS

Accuracy: 0.05%

Clock: 10MHz quartz crystal oscillator

Display: 5-digit LCD display with backlight

Stroboscope brightness: 1000 lumens (36 super bright LEDs)

Max.: 40000FPM / 665FPS

Power supply: battery: 4 × AA

Dimensions: 195 × 72 × 37mm

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Weight: approx. 7 oz.

IV. Displays

1. Fine-tuning option indicator.
2. Measuring data stored symbol. Press the data store button, you will see this symbol show on the LCD, when the data is stored, the symbol will disappear.
3. Measuring symbol, appears when measurement is in use.
4. Frequency value in FPS or FPM.
5. When indicated the AS-1 is in Flashes Per Minute mode.
6. When indicated the AS-1 is in Flashes Per Second mode.
7. Stored measurement data.
8. Battery level indicator.

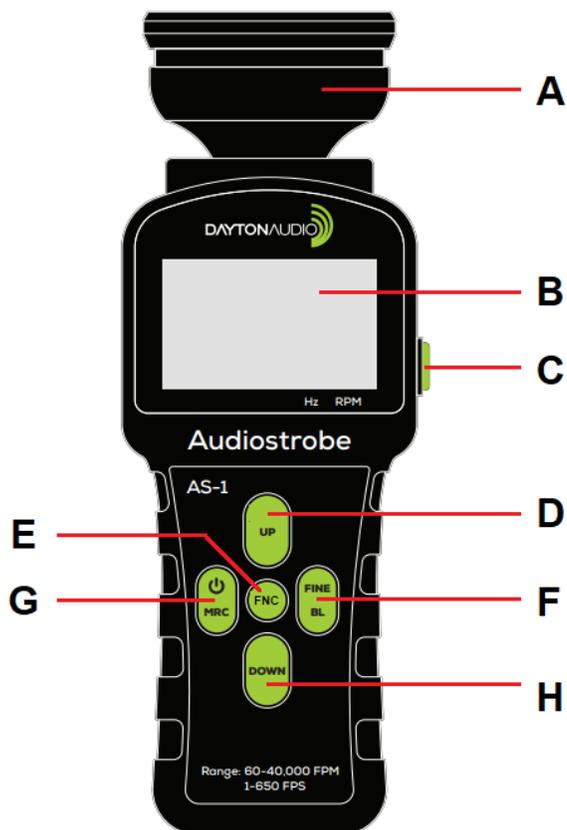
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V. Device Description

- A. Flash Light source
- B. LCD
- C. Strobe light button
- D. Value increase button
- E. MEM button; FPM/FPS convert
- F. LCD backlight button
- G. Power switch, data retrieval button Coarse / fine-tuning switch button
- H. Value decrease button

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VI. Operation

1. Power on/off:

Open the battery compartment cover on the back of the shell, install batteries. Long press the power button to turn the unit on or off. After 3 seconds, the device will start and the initial value of 4000 FPM will be displayed. If measurement data has been stored after previous use, the latest measurement data stored will be displayed.

2. Switch on the backlight:

Long press the “FINE/BL” button to activate the backlight, long press this key again to deactivate the backlight.

3. Switch on the light source: (Hold the STROBE button)

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Flashing will begin when the device is powered on and the "TEST" button is held.

4. Tuning switch: (FPM mode only)

After you start the device, the "FINE/BL" button under FPM mode allows you to switch between coarse and fine tuning. In the case of fine-tuning, the "FINE" icon will appear on the left top of the display. In the case of coarse tuning, no prompt will appear.

5. Single-step regulation of rotation speed:

The "UP" button or the "DOWN" button controls the value of rotation speed will increase or decrease according to the step values described earlier in this manual.

6. Regulating the flashing frequency:

The device can also scan through speed settings continuously. Hold the "UP" or "DOWN" button, and the device will begin scanning.

In coarse mode, the device will automatically increase or decrease by 100FPM (when the tuning range ≥ 1000 FPM) or 10FPM (when the tuning range < 1000 FPM) every 0.2s.

In fine mode, the device will automatically increase or decrease by 1FPM (when the tuning range ≥ 1000 FPM) or 0.1FPM (when the tuning range < 1000 FPM) every 0.2s.

Once you release the button, the device will stop scanning

* (Regulation limits: In any mode, when the upper limit of 40000FPM / 665FPS is exceeded, the device will automatically remain at the

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40000FPM / 665FPS. When the speed is lower than the lower limit of 60FPM / 1FPS, the device will automatically remain at 60FPM / 1FPS.)

7. Data storage function:

After adjusting the speed, press the "MEM" button in the center of the device panel to store the current value. The next time the device is started, the latest measurement data stored will be displayed. After saving, the pre-set data stored in the device can be retrieved at any time.

8. Data retrieval:

To retrieve the data stored in the device, press the "READ" button, until your desired preset is recalled. Up to 10 pieces of frequently used data can be stored in the device. Every time you start the device, the latest value stored in the device will be displayed.

9. Measurement and observation of periodic movement:

After you start the device, press the light source button, direct the light source onto your desired object and observe the effects of the strobing and adjust the flashing frequency. If the flashing frequency is matched to the same periodic movement of the object, the object will appear stationary.

NOTE: The object will also will appear stationary if the flashing frequency is a factor (i.e., multiple) of the periodic movement of the object.

For example: If the input frequency (i.e., periodic movement) of a loudspeaker is 25 Hz the loudspeaker will appear stationary at 50, 75, 100 FPS.

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If the surface is obviously uneven or there are asymmetric texts, images, or marks on the surface of the object at this point, the effect will be very obvious.

When texts, images or marks on the object appear static and are not duplicated; the value displayed on the device is the periodic speed of the object.

When texts, images or marks begin duplicating; the value displayed on the device is N times the speed value of the object where N is the number of visible duplications. Divide the value displayed on the device by the number of duplicate texts, images, or marks to calculate the actual speed value of the object.

If the surface of the object is relatively smooth, it's suggested that the user affix a small label, or mark a point on the rotating surface in order to easily observe the effect of the strobing.