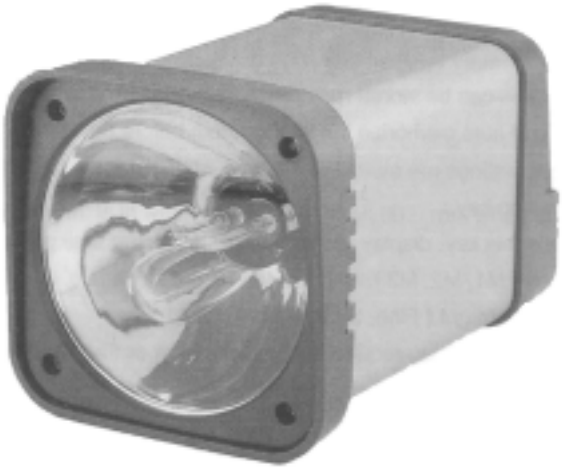
OPERATION MANUAL
DIGITAL STROBOSCOPE
DS-3200 / DS-2200



☐ **AC100V**
☐ **AC110V**
☐ **AC220V**
☐ **AC240V**

Before putting the Stroboscope to use, please check the local power line voltage, and please read the following instructions carefully.

FEATURE

This stroboscope / tachometer employs an exclusive one-chip microprocessor circuit and crystal time base and signal generator which result in extraordinary accuracy over a wide, dynamic range.

Crystal time base and microprocessor circuit, do not necessary take any external calibration process.

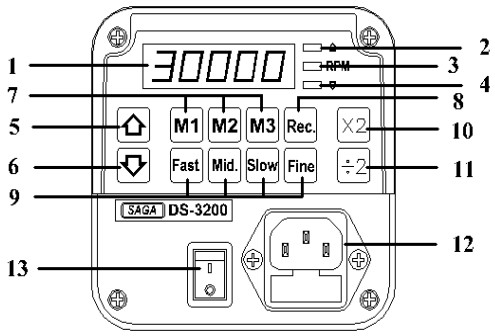
The model DS-3200 and DS-2200 are microprocessor circuit design, high accuracy, digital readout, keyboard operating, light duty STROBOSCOPE / TACHOMETER that is ideal for inspecting and measuring the speed of moving gears, fans, centrifuges, pumps, motors, grinders and virtually all processing equipments used in general industrial maintenance, production, quality control, laboratories etc. And it is also ideal for demonstrating strobe action in schools and colleges.

Risk of electric shock !

This instrument contain no operator serviceable parts. Service by qualifier persons only.

Please use this instrument away from electronic ballast.

DESCRIPTION



1) Display RPM / FPM
2) Up counter mode indicator
3) RPM / FPM mode indicator
4) Down counter mode indicator
5) Up counter mode function
6) Down counter mode function
7) 3 complete memory (M1, M2, M3)
8) Record function
9) 4 speeds adjustment (Fast / Mid. / Slow / Fine)
10) Special function " X2 "
11) Special function " ÷2"
12) Standard power cable socket (2A fuse)
13) Power ON / OFF switch
14) Handle (removable)
15) Flash tube

KEYBOARD OPERATION DESCRIPTION

1) Display: 5 digits LED display window.

a) The over mark is lit when rpm is above high limited 30,000 rpm (18,000 rpm for DS-2200) when press the special function key " X2 "

b) The under mark is lit when rpm is lower than 60.0 rpm when press the special function key " ÷2 ".

2) UP Counter mode indicator

The up counter indicator is lit when press the up function key, and it is on the up counter function.

3) RPM / FPM mode indicator

When power ON, the function is on RPM FPM mode, indicator is lit.

4) Down Counter mode indicator

The down counter indicator is lit when press the down counter function key, and it is on the down counter function mode.

5) Up Counter function key

When press this key that is on up counter mode, the up counter indicator is lit. And the rpm is increasingly when press the 4 speeds adjustment key.

6) Down Counter function key

When press this key that is on down counter mode, the down counter indicator is lit. And the rpm is reductive when press the 4 speeds adjustment key.

7) 3 complete memory function key (M1, M2, M3)

M1，M2，M3 --- can be stored rpm/fpm in memories. And can be recalled at any time, and auto memorize the last rpm/fpm before power turn off. All previous settings are stored in memory when turn off.

8) Record function key

When press this key, display will be flashed for record until press the memory key (M1, M2, M3), ore press the record key again.

9) 4 speeds adjustment (Fat, Middle, Slow, Fine)

Press the key when you require fast, middle, slow or fine adjustment of up or down counter rate.

10) Special function " X2 "

Press this key will double the flash rate. (When the double rate goes above the maximum rpm, then display will show the over marks.)

11) Special function " ÷2 "

Press this key will decrease the flash rate by two. (When the half flash rate below the minimum rpm, then display will show the under mark.)

12) Power cable socket with fuse

This power cable socket with fuse can be suitable for any kind standard power cable in different countries.

13) Power ON/OFF switch

14) Handle

Removable, comfortable pistol grip handle.

OPERATIONS

Make sure the power requirement. (AC110V, AC220V, AC240V)
Plug into a properly power source. Then turn the power switch "ON".

Aim the light beam at the marks object under observation.

Press the pertinent speed adjustment key until the images stop motion.

For prolonged life and safe operation, please adhere to the following duty cycle.

Below 10,000 RPM – 50 minutes.
Above 18,000 RPM – 20 minutes.

Always allow a 15 minutes cooling off period between cycles.

FLASH TUBE REPLACEMENT

It is necessary to change the flash tube when the instrument start to flash irregularly. Use the specified flash tube DS-FT-01.

Remove the power plug from outlet. Wait for 3-5 minutes Be sure the flash tube lamp is cool down before proceeding with replacement procedures.

Remove the flash lamp protective window by simply removing the 4 screws and the reflector.

Pull out the flash lamp socket carefully.
(Do not pull the tube directly when pull out the flash tube.)

Install a new flash lamp.

Reinstall the reflector and protective window.

CHECKING SPEED

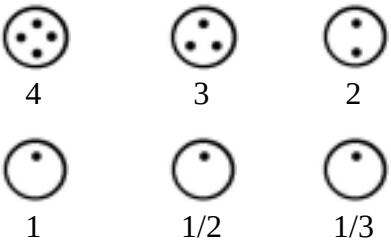
When checking speed, care must be taken to insure that the strobe is flashing in unison (one to one) with the object being monitored.

A stroboscope will also stop motion at 1/2, 1/3, 1/4, etc., this is normally referred to as harmonics. To be sure of actual speed, press 4 speed range key until image stop motion --- use the special function ×2 and ÷2 to checking.

Actual RPM	Stroboscope RPM/FPM	Multiple	Stop Motion Images
3,000	12,000	4	4
	9,000	3	3
	6,000	2	2
	3,000	1	1
	1,500	1/2	1
	1,000	1/3	1

Mark of Actual Speed

Marks of Stop Motion



NOTE

To obtain correct rpm, from high rpm down to low rpm. When the first single image appears, it is the true rpm.. To verify it, press the ÷2 function key, a single image would appear again. And press the ×2 function key, double images would appear.

GENERAL SPECIFICATIONS		
	DS-3200	**DS-2200**
Setup Range	60.0 – 30,000 RPM	60.0 – 18,000 RPM
Resolution	0.1 RPM / FPM (below 2,000 RPM) 1 RPM / FPM (above 2,000 RPM)	
Display	10 mm LED, 5 digits	
Setup Accuracy	±0.01% + 3 digits	±0.01% + 3 digits
Temp. Drift	±0.01% + 3 digits	±0.01% + 3 digits
Special Function	multiplier "X2", diver "÷2"	
Setup Memory	3 complete memory (M1, M2, M3)	
Power Supply	AC110V ±10% 50/60 Hz or AC220V, AC240V	
Power Consumption	Approx. 25 watts (full range)	Approx. 25 watts (full range)
Operating Temp.	0 - 40°C (32 - 104°F)	
Operating Humidity	Less than 80% R.H.	
Dimension	115 x 115 x 200 mm (without handle)	
Weight	Approx. 1.5 Kg / 3.3 Lb.	
Calibration	Crystal time base and microprocessor circuit, do not necessary take any external calibration process.	

FLASH TUBE SPECIFICATION		
Flash Tube	DS - FT - 01	DS - FT - 01
Flash Energy	8 watts max.	8 watts max.
Flash Tube life	Approx. 100 hours	
Flash Duration	Approx. 16 to 30 microseconds	
Beam Angle	80 °	
Flash Tube Replacement	It is required to change the flash tube when the instrument start to flash irregularly at speeds of 10,000 rpm or more.	

AFTER SERVICE