SUNS*tir*-3 System

Lamp, Stirplate and Dual Function Controller

An integrated system for stirring and illumination

*The **SUNStir-3 System** is comprised of the **SUNStir controller**, a **SUN-1 lamp** and a **SPIN-2 stirplate**. This convenient, rack-mountable system is designed to provide simultaneous control for both the SUN-1 lamp and the SPIN-2 stirplate.*

Lamp

- Dichroic reflector
- Noise-free electronics
- Halogen bulb
- Adjustable spotlight intensity with external control device
- Magnetic base with gooseneck and swivel-head lamp

SPIN-2 Stirrer

- Very low noise!
- Stir while recording
- Independent cis/trans dipoles
- Minimized magnetic flux through bilayer membrane
- Magnetic steel side panels

Controller

The SUNStir controller is a rack-mountable instrument designed to provide quiet and efficient control of the SUN-1 Lamp and SPIN-2 Stirrer.

Lamp

The SUN-1 is an externally controlled, noise-free halogen light source suitable for inclusion in a shielded enclosure. The magnetic base attaches securely to any steel tabletop and the lamp swivel-head allows projection of the beam in virtually any direction. Modifications to the design of the reflector result in significant improvements in the lamp's performance.

The lamp is comprised of a magnetic base with 12" gooseneck for accurate positioning of the illumination spot. A jointed swivel-head at the end of the gooseneck allows the beam to easily subtend a solid angle of 2π steradians (half of a sphere).

Beam intensity is adjustable to one of eight levels via the rack-mount controller. The lamp electronics are well isolated to prevent the introduction of external EMF into the Faraday cage enclosure and allows recording of data even while the lamp is on.

A dichroic reflector reduces much of the projected heat from the lamp and allows longer illumination times without significantly warming the object under study.

Warner Instruments • Phone (203) 776-0664 • Toll Free U.S. (800) 599-4203 • Fax (203) 776-1278 • **www.warneronline.com**

SUNS*tir*-3 System

Lamp, Stirplate and Dual Function Controller (continued)

Stirrer

Bilayer work often requires stirring of contents on both sides of a bilayer membrane. The SPIN-2 Bilayer Stirplate achieves this task by providing two spinning dipoles in a mechanically quiet apparatus.

Stirring of solutions in a bilayer cup and chamber has traditionally been achieved using a commercial stirplate. Unfortunately, these devices are not designed for use in a bilayer rig and present a single rotating magnetic dipole to the bilayer chamber.

A result of these characteristics is that it is impossible to simultaneously stir both wells since the stirbars will be drawn to a common rotational axis defined by the stirplate magnet. The resulting collisions between the stirbars and the bilayer cup introduces a noise artifact into the acquired data. Many researchers avoid this problem by not stirring while recording, which is an undesirable state of affairs.

The SPIN-2 stirplate from Warner Instruments is designed to specifically address these problems experienced by researchers in the field.

First, it has two separate spinning dipoles, one each for the cis and trans wells. This design allows the stirbars within each well to be independently controlled which virtually abolishes cup/stirbar collisions. The relative separation between the two dipoles is adjustable allowing the apparatus to be used with bilayer cups and chambers of different sizes.

Second, the rotation characteristics (speed and phase) of the two spinning dipoles is digitally controlled. This allows the device to present the minimum magnetic flux to the bilayer membrane. A liquid crystal display allows the researcher to view the rotating dipoles in real-time.

Third, the apparatus is both electrically isolated and mechanically quiet. In addition, steel strips are provided on each side of the liquid crystal window for attachment of magnetic holders and the like. This provides a convenient method of positioning a perfusion head.

Taken together, these features allow the SPIN-2 to be used while acquiring data.

SUNS*tir* Controller Specifications

SUNS*tir*	Master power switch, Power on LED
Lamp control Power on LED	Eight position intensity selection with on/off switch,
Stirrer control switch, Power on LED	Continuously variable speed control with on/off
Power requirements	20 W-12 V internal, 100-125 VAC, 60 Hz external
Dimensions	1.75 x 16.5 x 8 in (H x W x D)

SUN-1 Lamp Specifications

Lamp	High impact polyamide housing; swivel head; spot reflector; clear lens Halogen bulb, dichroic reflector; 20 W-12 V
Gooseneck	1.4 cm diameter x 30.5 cm length; with PVC sleeve

Spin-2 Stirplate Specifications

Controls:	
Controller	Power on/off switch, Speed rotary control
Stirplate	Position adjust (rotary)
Display:	
Controller	LED; flashes once per complete rotation
Stirplate	Magnetic field display; passive LCD
Speed Range	300 to 600 RPM
Rotor:	
Synchronization	Counter-rotating with magnets repelling
Position Adjustment Range (center-to-center)	0.4 to 2.5 inches
Dimensions (W x D x H)	
Stirplate	5.5 x 8.0 x 2.3 in
Weight	
Stirplate	3.0 lb

Order #	Model	Product
W4 64-0076	SUNSTIR-3	Complete SunStir-3 System, Includes Sun-1 Lamp, Spin-2 Stirrer and SunStir Controller
System Components		
W4 64-0061	SUN-1	Halogen Lamp with Tabletop Controller
W4 64-0074	SPIN-2	Dual Channel Spin Plate with Tabletop Controller
W4 64-0075	SUNSTIR	Dual Function Controller (Lamp plus Stirplate)
W4 64-0065	SUN-DCH	Replacement 12W-12V Dichroic Bulb for Sun-1 Lamp