

Stat Fax[®] 2200

Microplate Incubator/Shaker

Operator's Manual



Contents

| | |
|---|----------|
| 1. Introduction | 1 |
| 1.2 Safety Symbols <i>Le Symboles de Sûreté</i> | 1 |
| 1.3 Safety Terms Terminologie de Sûreté | 1 |
| 1.4 Safety Precautions | 2 |
| 2. Installation | 3 |
| 3. Power Requirements | 3 |
| 4. Principle of Operation | 4 |
| 5. Specifications | 5 |
| 6. Operating Procedures | 6 |
| 6.1 Incubating | 6 |
| 6.2 Mixing | 7 |
| 6.3 Timing | 7 |
| 6.4 Other Functions | 8 |
| 6.4.1 The Clear Key | 8 |
| 6.4.2 The Pulse Mode | 8 |
| 6.4.3 Condensation | 8 |
| 7. Additional Tips and Information | 8 |
| 7.1 Maintenance | 8 |
| 7.1.1 Exterior | 8 |
| 7.1.2 Avoid Humidity | 8 |
| 7.2 Accessories | 8 |
| 7.2.1 Temperature Probe Plate | 8 |
| 8. Information | 9 |

1. Introduction

Stat Fax® 2200 is an economical combination incubator, timer, and shaker that accommodates two standard microplates or strip trays. This microprocessor controlled instrument offers variable temperatures, times, and mixing speeds via the keypad. Incubation, timing, and mixing may also be used independently. A pulse mode is available. Temperatures may be set from room temperature to 40°C with a resolution of 0.1 degree. The instrument is designed to provide long life and trouble-free performance. A smoke tint acrylic cover protects the plates, shields them from light, and insulates them during incubation. The enclosed system also reduces the risk of biohazard from the dispersal of aerosols. Like all of the **Stat Fax®** instruments, this instrument offers quality and versatility and is backed with a one year warranty.

1.2 Safety Symbols *Le Symboles de Sûreté*

Symbols that may appear on the product:

Les symboles de sûreté peuvent apparaître sur le produit:

| | | | |
|---|---|--|---|
|  |  |  |  |
| WARNING AVERTISSEMENT | Protective Ground La Terre Electrique | CAUTION L'ATTENTION | BIOHAZARD BIOHAZARD |
| Risk of Shock Risque de Choc | (Earth) Terminal Prise de Terre | Refer to Manual Se Rapportent a Manuel | Risk of Infection Risque d'infection |

1.3 Safety Terms Terminologie de Sûreté

*These terms may appear on the product: Les marques sur le produit:
These terms may appear in this manual: Les marques dans l'opérateur manuel:*

| | |
|--|--|
| DANGER <i>DANGER Le "de marque: DANGER"</i> | <i>Indicates an injury immediately accessible as you read this marking Indique le risque immédiat de dommages (assessible tandis que vous lisez la marque)</i> |
| WARNING <i>AVERTISSEMENT! Le "de marque: WARNING"</i> | <i>WARNING statements identify conditions or practices that could result in injury or loss of life. WARNING indicates an injury hazard not immediately accessible as you read this marking. Ces rapports identifient les conditions ou les pratiques qui pourraient avoir comme conséquence les dommages ou les pertes humaines.</i> |
| CAUTION <i>L'ATTENTION "Le de marque: CAUTION"</i> | <i>CAUTION statements identify conditions or practices that could result in damage to this product or other property. Ces rapports identifient les conditions ou les pratiques qui pourraient avoir comme conséquence les dommages a ce produit ou a toute autre propriété.</i> |
| BIOHAZARD | <i>BIOHAZARDS are biological agents that can cause disease in humans. Lab workers handling potentially infectious materials must use universal precautions to reduce the risk of exposure to these agents.</i> |

1.4 Safety Precautions

| <i>To assure operator safety and prolong the life of your instrument, carefully follow all instructions outlined below.</i> | |
|---|---|
| Read Instructions | Take time to read this manual carefully before using this instrument. Review the following safety precautions to avoid injury and prevent damage to this instrument or any products connected to it. To avoid potential hazards, use this instrument only as specified. For best results, familiarize yourself with the instrument and its capabilities before attempting any clinical diagnostic tests. Refer any questions to your instrument service provider. |
| Servicing | There are no user-serviceable parts inside the instrument. Refer servicing to qualified service personnel. Use only factory-authorized parts. Failure to do so may void the warranty. |
| Wear Protective Apparel | Many diagnostic assays utilize materials that are potential biohazards. WARNING: Always wear protective apparel and eye protection while using this instrument. |
| Follow Operating Instructions | WARNING: Do not use this instrument in a manner not specified by the manual, or the protection provided by the instrument may be impaired. |
| Use Proper Power Cord | WARNING: Use only the power cord specified for this product and certified for the country of use. |
| Observe All Terminal Ratings | WARNING: To avoid fire or shock hazard, observe all ratings and markings on the instrument. Consult this manual for further ratings information before making connections to the instrument. |
| Install as Directed | The instrument should be installed on a sturdy, level surface capable of safely supporting the instrument's weight 7 lbs (3.1kg). The mounting surface should be free of vibrations. |
| Provide Proper Ventilation | Refer to the installation instructions for details on installing the product so it has proper ventilation. The instrument should be surrounded by the following clearances: 8cm (3") around perimeter of unit, 8cm on top, and 1.27cm bottom (1/2"). |
| Do Not Operate Without Protective Covers | WARNING: Do not operate this instrument with covers and panels removed. |
| Avoid Exposed Circuitry | WARNING: Do not touch exposed connections and components when power is present. |
| Avoid Excessive Dust | Do not operate in an area with excessive dust. |
| Do Not Operate With Suspected Failures | WARNING: If you suspect there is damage to this instrument, have it inspected by a qualified service person. |
| Do Not Operate in Wet/Damp Conditions | WARNING: Do not operate instrument in wet/damp conditions. |
| Do Not Operate In An Explosive Atmosphere | WARNING: Do not operate instrument in an explosive atmosphere. |

Safety Precautions (Continued)

| | |
|--|--|
| Operating Precautions | Be sure to run a sufficient number of controls in each assay. If controls are not within their acceptable limits, disregard test results. |
| Keep Instrument Surfaces Clean and Dry | <p>CAUTION: Solvents such as acetone or paint thinner will damage the instrument.</p> <ul style="list-style-type: none"> Do not use solvents to clean the unit. Avoid abrasive cleaners; the display overlay is liquid-resistant, but easily scratched. Clean the exterior of the instrument with a soft cloth using plain water. If needed, a mild all-purpose or nonabrasive cleaner may be used. Use as a disinfectant a 10% solution of chlorine bleach (5.25% Sodium Hypochlorite) or 70% isopropyl alcohol Take special care not to spill liquid inside the instrument |
|  CAUTION! L'ATTENTION!  | |
|  | <p>BIOHAZARD: If any materials are overturned during operation, immediately set the power switch to OFF. This material should be treated as potentially biohazardous. Appropriate cleanup and disposal of biohazardous waste should be used.</p> <p><i>Avertissement! Lors du fonctionnement, si on renverse des matériaux, coupez immédiatement le courant. Placez le commutateur électrique à AU LOIN(0). Traitez le matériel comme biohazardous, utilisant approprié nettoient et des méthodes de disposition.</i></p> |

2. Installation

Carefully unpack the instrument and remove it from its plastic bag. Report any obvious damage to your freight carrier at once.

Note: Retain the original packing materials for future use in the event that the instrument is shipped to another location or returned for service.

Place the instrument on a flat working surface capable of safely supporting the weight of the instrument (approximately 7 lbs). A clearance of at least 8 cm around the instrument is required to assure optimal ventilation.

3. Power Requirements

Either of the following power units may be used:

120VAC input, 12VAC, 2 Amp output

230VAC input, 12VAC, 2 Amp output

Use a power unit approved for the country of use. For use inside the US: Use only a NRTL listed plug-in Class 2 transformer with rated output 12VAC, 2A.

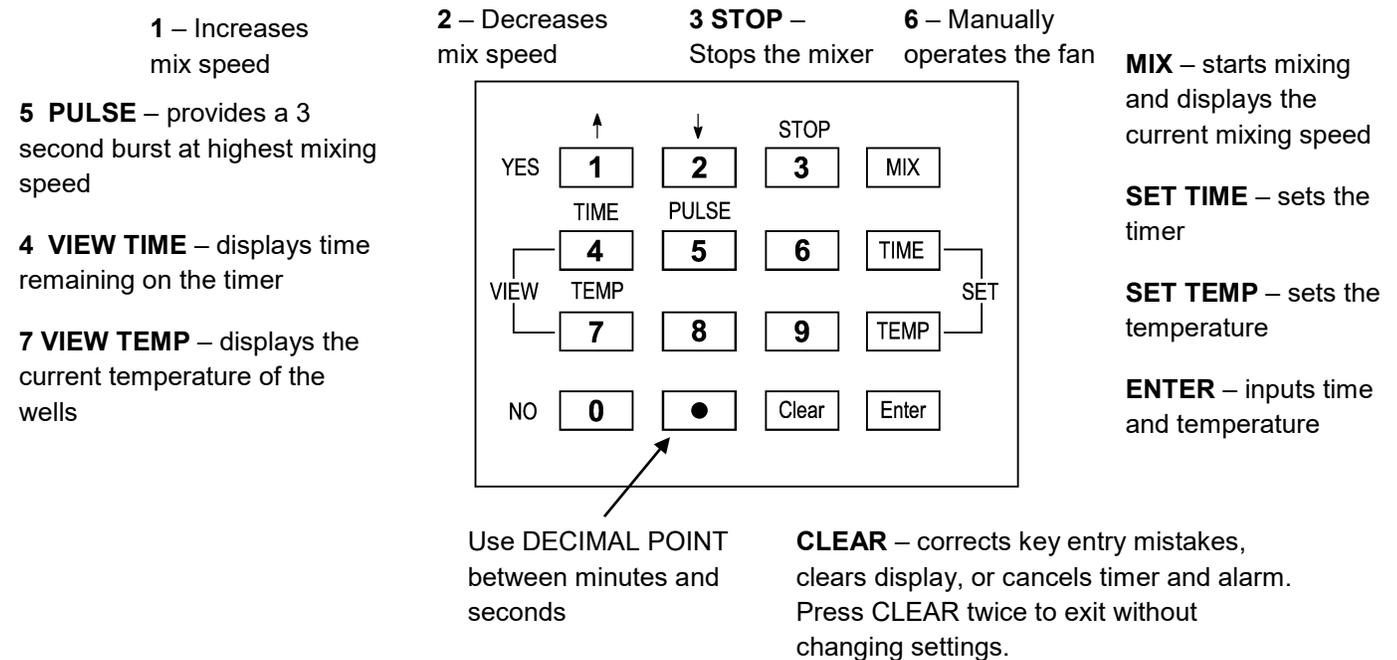
A power unit is supplied with the instrument. This type of power unit is commonly referred to as a wall transformer, direct plug-in transformer, power adaptor, or simply an adaptor and utilizes an isolation transformer. Plug the power unit into the instrument jack on the rear panel, and into the wall outlet. The ON/OFF switch is located on the back of the instrument. When you turn the instrument on, you will see "rdY" (indicating READY) on the instrument display.

4. Principle of Operation

Six heating resistors connected to the base plate warm the inner compartment. The temperature of the air in the compartment is constantly monitored at the height of the wells by a thermistor located between the two trays. A circulating fan serves to remove any condensation from the inner lid. The double lid system insulates the plates from changes in ambient temperature.

Four flexible legs support the tray. A microprocessor controls the speed of an orbiting counterweight mechanism that shakes the tray. The user may select any one of 8 speeds ranging from 575 rpm to 1500 rpm.

The following diagram describes the key functions for the instrument. More details on the operation of each feature are provided in Section 8, *Operating Procedures*.



YES and **NO** keys are for possible future options, but are not currently used.

NOTE: Many keys have more than one function. The numbers apply only to setting timer, temperature, and speed. Otherwise, the function which appears above the key defines the function of the key.

5. Specifications

Incubator

| | |
|------------------------|---|
| Temperature range: | Ambient to 40°C |
| Resolution: | 0.1°C |
| Uniformity with cover: | better than +/- .4°C |
| Mechanism: | enclosed warmed aluminum bed with air circulation |
| Warm up time: | 15 minutes typical, display temperature to check |
| Temperature detector: | thermistor, feedback, heuristic software |

Mixer

| | |
|------------|--|
| Speeds: | 8 mix speeds, from 575 to 1500 rpm, timed duration on continuous and mix pulse, 1500 rpm, for 3 second duration. |
| Mechanism: | orbital mixing by rotating counterweight |

Timer

| | |
|-------------|---|
| Modes: | set time, view time remaining, audible signal, stop mixing (maintains temperature control after time out) |
| Resolution: | one second |
| Range: | one second to 99 minutes 59 seconds |

Electronic

| | |
|---------------------------------|--|
| Display: | four, 7-segment, red LEDs |
| Keypad: | 16-key, domed membrane switch, enunciating, 4x4 |
| Power requirements: | 12V AC, 50-60Hz, 2 amp, power unit available for 120V or 230V power sources. Use power unit approved for country of use. |
| Microprocessor: | Z80A |
| Certifications and Compliances: | NRTL Listed CE Certification |

Recommended Environmental Condition:

| | |
|------------------------|--|
| Indoor Use | |
| Mains supply voltage: | Fluctuations not to exceed $\pm 10\%$ of the nominal voltage |
| Operating Temperature: | 18-35°C recommended |
| Operating Humidity: | Less than 85% recommended |

NOTE: Although it may be safe to operate in these conditions, it may not be suitable for the performance of your tests. Check with your reagent supplier.

Other

| | |
|----------------|---|
| Vessel: | holds 2 standard microtiter plates or strip trays |
| Enclosure: | fire retardant ABS plastic enclosure with metal base |
| Aerosol guard: | smoke-tint acrylic cover |
| Dimensions: | approx. 10 x 12½ x 6 inches (26 x 32 x 16 cm) with cover, 7 lbs. (3 kg) |

6. Operating Procedures

1. The ON/OFF switch is located on the back of the instrument.
2. Lift off the smoked acrylic cover. Open the internal cover by pulling back on the metal clip while lifting the front of the clear plastic lid. The covers serve as aerosol guards as well as insulators and should be used at all times.
3. The instrument is designed to hold two standard 96-well microplates or strip trays, round or flat bottom wells. To properly seat a microplate in the Incubator/Shaker, slide the top edge of the microplate into the silicon bumpers located in the back two corners of the plate holder. By applying pressure to these bumpers with the plate, the bottom edge of the plate should click into place. Press BOTH plates into the bumpers located at the rear corners of the metal frames in the incubation platform. Close the internal cover and replace the outer cover.

6.1 Incubating

To set the incubator temperature, press the SET TEMP key. It will display the previously set temperature. If this is the desired temperature, press ENTER; otherwise, type the desired temperature in Celsius, using the numeric keys, with no more than one place after the decimal point. Press the ENTER key. The instrument will pause to measure and then display the current temperature. (The displayed temperature is corrected to reflect the equilibrated temperature inside a micro-well containing 200 μ L of water.) Then, either heating will begin or heating will stop depending on the set temperature, until the desired temperature is reached. For faster cooling, open both lids and press the "6" key to turn on the fan. The display will continue to show the incubator temperature, unless another function is selected. A decimal point indicator under the degree symbol reflects the state of the heater. When it is lit the heater is on. When first set, the instrument may over and undershoot the desired temperature but will quickly adjust and hold the temperature constant. When desired temperature is achieved, the heat will pulse on and off to maintain the temperature within +/- 0.5 degrees. The fan may run periodically during heating to prevent water condensation on the internal lid.

To check the temperature when it is not being displayed, press the VIEW TEMP key. The temperature will then be continuously displayed until another function is selected.

If no temperature is entered the unit automatically controls the temperature to 25°C or ambient, whichever is greater.

6.2 Mixing

To assure optimal mixing performance two plates should be used. One plate may be empty but should be installed as the system operates using counterbalance.

To set the mixer, press the MIX key. The first time the mixer is run after being plugged in, it will display "0-7." Type the number of the desired mixing speed. Use the up and down arrows to increase or decrease the speed respectively. Pressing the STOP key will stop the mixer. To view the current speed while mixing, press the MIX key. The actual rpm's of the speed settings 0-7 are as follows:

| Setting | approx. rpm |
|---------|-------------|
| 0 | 575 |
| 1 | 625 |
| 2 | 675 |
| 3 | 750 |
| 4 | 875 |
| 5 | 1000 |
| 6 | 1200 |
| 7 | 1500 |

The orbital diameter varies with speed, being about 2 mm at setting 0, 1.5 mm at setting 2, and 1 mm at settings 4-7.

6.3 Timing

To set the timer, press the SET TIME key. The display will show "0.00". Enter one or two digits for the minutes and then a decimal point followed by two digits for the seconds, then press ENTER. If the time has been set since the last power-up, the previously set time will be displayed. If this is the desired time, press ENTER. The maximum time the timer can be set for is 99 minutes and 59 seconds. Press the ENTER key to begin timing. The display will show a countdown of the time remaining.

When the time has elapsed, the mixing will stop and a beeper will sound. Press the CLEAR key to silence the beeper. Temperature will continue to be maintained after the timing cycle ends.

To turn off the timer while it is running, press the SET TIME key and push CLEAR twice. The display will prompt "OFF" and the timer will be disabled.

To check the time remaining when it is not being displayed, press the VIEW TIME key. The countdown will be displayed.

6.4 Other Functions

6.4.1 The Clear Key

To correct mistakes or clear the display, use the CLEAR key. Pressing CLEAR twice will exit a function without changing the settings.

6.4.2 The Pulse Mode

Using the PULSE key, the contents can be mixed in short three second bursts at the highest speed each time the key is pressed.

6.4.3 Condensation

As the plates are heated, condensation may form on the inner lid. The instrument periodically cycles the fan to clear this. In addition, you may press the “6” key to manually turn on the fan for 15 seconds.

7. Additional Tips and Information

7.1 Maintenance

7.1.1 Exterior



CAUTION: Solvents such as acetone or paint thinner will damage the instrument! Use only water and recommended cleaners! Avoid abrasive cleaners. The display area is liquid-resistant, but is easily scratched.

The exterior of the instrument may be cleaned with a soft cloth using plain water. Alternately, you may use any of the standard disinfectants used for laboratory decontamination. A 10% solution of chlorine bleach (5.25% Sodium Hypochlorite) or 70% isopropyl alcohol may be used as a disinfectant. Take special care not to spill any liquid into the read well.

7.1.2 Avoid Humidity

Using the instrument in an air conditioned room is recommended for humid climates (greater than 80% humidity). This instrument is designed for use at 20°C and performs according to specifications in the range of 18° to 35°C.

7.2 Accessories

7.2.1 Temperature Probe Plate

The Temperature Probe Plate is a modified 96-well micro plate which, when used in conjunction with a digital ohmmeter, allows the user to verify the incubation temperature at 37°C. Other methods of verifying temperature calibration may not be effective and are therefore not recommended by the manufacturer. Further information about the Temperature Probe Plate is available from your instrument supplier.

8. Information

In the unlikely event that a problem occurs with the instrument, please consult your Instrument supplier first. If you continue to have problems after consulting your instrument supplier, contact the factory.

Factory:

Telephone: USA 772-283-6540

Fax: USA 772-283-8020

E-mail: support@awaretech.com

Mailing Address:



Awareness Technology, Inc.
1935 SW Martin Highway
Palm City FL 34990 USA



EMERGO EUROPE
Prinsessegracht 20
2514 AP The Hague
The Netherlands



Important: When contacting us, please have the Model and Serial Number of the instrument in question. Have a description of the problem with as much detail as possible. Save any relevant printouts and send or e-mail us the information.

Model: _____

Serial #: _____



NOTE: Instruments to be returned must be accompanied by a decontamination certificate completed by the responsible laboratory manager. If a decontamination certificate is not supplied, the returning laboratory will be responsible for charges resulting from non-acceptance of the instrument by the servicing center or from any authority's intervention.