Dependable Products From People You Trust

Roller Oven with Touchscreen Display, Circulating Fan, and Redundant Heat Control, 5 Roller

173-00-RC (115 Volt)
173-00-1-RC (230 Volt)

Instruction Manual

Updated 9/11/2025
Ver. 1

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Introduction

The OFITE Roller Oven (U.S. Patent No. 4,677,843) is used to determine the effects of temperature and pressure on drilling fluid as it circulates through the well bore. Aging is done under conditions that vary from static to dynamic and from ambient to highly elevated temperatures.

Many mud constituents degrade slowly at high temperatures. Such degradation occurs while circulating, but it is more severe when the mud is left in the lower part of the hole when making a trip. When running laboratory tests, aging temperatures are often selected to be near the anticipated circulating or bottom-hole temperatures and pressures, and aging cells are typically rolled in an oven for at least 16 hours.

The 5 Roller Oven can hold twelve 260 mL Aging Cells or eight 500 mL Aging Cells. OFITE rollers are variable-speed controlled and constructed of stainless steel for longer life and a cleaner environment inside the oven. Glass-impregnated Teflon® roller bearings extend the life of the rollers and allow for longer maintenance-free service.

This oven features a touchscreen display that can be read directly from outside the oven. The touchscreen controls the temperature and motor. Custom tests can be programmed to start and stop the heaters, allowing unattended operation. A circulating fan is included on all models which greatly improves air circulation within the oven providing more stable, consistent, reliable, and uniform heating.

The OFITE Roller Ovens are designed to provide heating and rolling functionality simultaneously or independently. Therefore, they can be used for many different types of aging.

Specifications

All OFITE Roller Ovens conform to the American Petroleum Institute's (API) Recommended Practice (RP) 13I. The oven is capable of maintaining a temperature of 150°F ± 5°F (65°C ± 3°C) as specified in RP 13I.

- Temperature Range: 100° - 500°F (38° - 260°C)
- Touchscreen Display
- Redundant Temperature Controller
- Motor Speed: 25 rpm
- Material:
  - Cabinet: 303 Stainless Steel
  - Rollers: 304 Stainless Steel
- Heater: 350 Watt, Qty: 2
- Capacity:
  - 260 mL Aging Cells: 12
  - 500 mL Aging Cells: 8
  - 1000 mL Aging Cells: 4
- Size: 33.75" × 26.25" × 26" (85.7 × 66.7 × 66 cm)
- Weight: 172 lb (78 kg)
- Crated Size: 38" × 33" × 34" (97 × 84 × 86 cm)
- Crated Weight: 290 lb (131.5 kg)

Components

All Ovens:

#165-14-8 Type “J” Thermocouple, ⅛" × 6"
#165-80-4 Temperature Controller
#172-02-2 Chain, 12.5", Qty: 3
#172-02-4 Chain, 40.5"
#172-03 Sprocket, ½" Bore, Qty: 9
#172-08 Bearing for Roller Shafts, Qty: 10
#172-23 Heater, 500 Watt, Qty: 2
#172-24-1 Solid State Relay
#172-25 Fan Motor
#174-07-1 6" Fan Blade
#174-13 Motor
#174-14 Motor Controller

115 Volt Ovens (172-00-C):

#152-37 AC Power Cord
#165-14-10 Fuse for Fan, 1 Amp
#122-074-1 Fuse for Instruments, 5 Amp
#122-077 Fuse for Heaters, 10 Amp

230 Volt Ovens (172-00-1-C):

#122-073-1 Fuse for Instruments, 3 Amp
#122-074-1 Fuse for Heaters, 5 Amp
#152-38 AC Power Cord
#165-14-10 Fuse for Fan, 1 Amp **#173-00-SP**

Optional
#173-00-SP Spare parts kit

Part Number	Description	Quantity
#172-03	Sprocket	7
#172-04	Connecting Link for Chain	8
#172-05	Fuse, 2 Amp	5
#172-06	Half Link for Chain	8
#172-07	Fuse, 5-Amp	5
#172-08	Bearing, for Roller Shafts, Glass-Impregnated Teflon®	10
#172-09	Fuse, 10-Amp	5
#172-13	Fuse Light Holder	1
#172-23	Heater, 500-Watt	2

Note

Spare parts listings are intended to be used as a reference for future purchases. Everyone’s consumable requirements will be different, and replacement quantities needed will depend upon the number of test performed on a daily and/or weekly basis.

Safety

Always wear heat resistant gloves and other suitable protection whenever working with hot roller ovens and Aging Cells.

Always wear eye protection when working with Roller Ovens. Be careful to not open a hot oven with your face directly in front of the newly opened door.

During operation the outside of the Roller Oven can get very hot, especially the door area, and may cause burns if touched.

The circulating fan inside the oven can be very dangerous if adding or removing Aging Cells when the blades are turning. To prevent injury always turn the heater off when loading or unloading cells.

All Roller Ovens are shipped with a covered back to prevent clothing from getting caught in the rotating chains and sprockets. This cover should remain in place at all times except when working on the chains or sprockets.

Disconnect all power cords when performing maintenance or replacing a fuse.

Be careful when working around the latch on the door, especially the knob and latch. Fingers can get caught in the latch resulting in injury.

The corners of the oven may cause injury if impacted directly. Be especially careful when working around the top stainless steel motor housing as sharp corners may cause cuts during cleaning.

Ovens should always be used in a ground circuit.

Setup

1. Turn the Power switch off.
2. Plug the oven into appropriate electrical outlet.
3. Turn the Power switch on.
4. Touch the Utilities icon on the bottom of the touchscreen.
5. Set the Date, Time, Sampling Rate, Temperature Units, and Band Tolerance. See page 16 for details.

Operation

1. Make sure the oven is connected to a power supply. Refer to page 12 for instructions on operating the touchscreen.

2. The oven can be preheated while the samples are being prepared. It is recommended that the samples be placed in the OFITE Aging Cells

Important

Refer to the Aging Cell instruction manuals to determine the appropriate fluid volume for your test conditions. Fluid will expand as temperature increases so expansion space must be allowed.

Note

If the aging cells are going to be rolled during a test, install o-rings on the outer perimeter on the top and bottom of the cells. Failure to do so can damage the rollers. Teflon (#175-46) and Buna (#175-54) o-rings are available. For tests above 300°F (148.9°C), use Viton o-rings.

Note

If for some reason the touchscreen fails, the redundant Temperature Controller will take over and maintain the temperature. We recommend setting the redundant Temperature Controller to the same temperature as the touchscreen.

Note

If both the touchscreen and the redundant Temperature Controller fail, the thermostat will cut power to the heater at 500°F (260°C), which is the maximum temperature.

Important

Be careful when handling hot aging cells. Do not open cells while hot or under pressure. Properly bleed off pressure and be sure the valve stem is always pointed away from people or equipment. Always wear personal safety equipment.

3. Place the aging cells in the oven.

4. For manual tests:

   a. Turn on the heaters by touching Start Heating on the touchscreen. The heaters and the red indicator light will turn on. The indicator light will turn on and off as the touchscreen maintains the desired heat.

Important

The circulating fan will automatically turn on when the heaters are on. The fan blades can be dangerous when the fan is on. To prevent injury, always turn the heaters off when loading and unloading cells.

   b. Turn on the motor by touching Start Motor on the touchscreen.

5. For programmed tests:

   a. Build a test profile on the touchscreen. See page 15.

   b. On the Test Setup screen select Profile.

   c. Choose a test profile and select Load.

   d. Touch Start Test.

6. The touchscreen shows the current temperature on top and the temperature setpoint on the bottom. During manual tests, use the up and down arrows to adjust the temperature setpoint.


Note

   The temperature will rise at approximately 150°F (65.5°C) per hour.

7. When the test is complete, touch the “Stop Heating” button to turn off the heaters. Leave the Power switch on until the oven and sample have cooled completely. The touchscreen will indicate the oven temperature as long as the power is on. For faster cooling, open the door.

8. Touch the “Stop Motor” button to stop the rollers before removing the cells.

Maintenance

1. Every 90 days, put a small amount of grease on the chain and sprockets.
2. Do not lubricate the Teflon® roller bearings.
3. The oven has been preset at the factory to operate at either 115 VAC or 230 VAC. However, it can be easily converted.

Important

Disconnect the unit from the power source before opening the unit casing.

   a. Remove the top panel.

   b. Locate the two voltage conversion switches on the circuit board. Switch both of these switches to the appropriate voltage (switch them both to the right for 115 VAC and to the left for 230 VAC).

   c. Change all three fuses. See page 10.

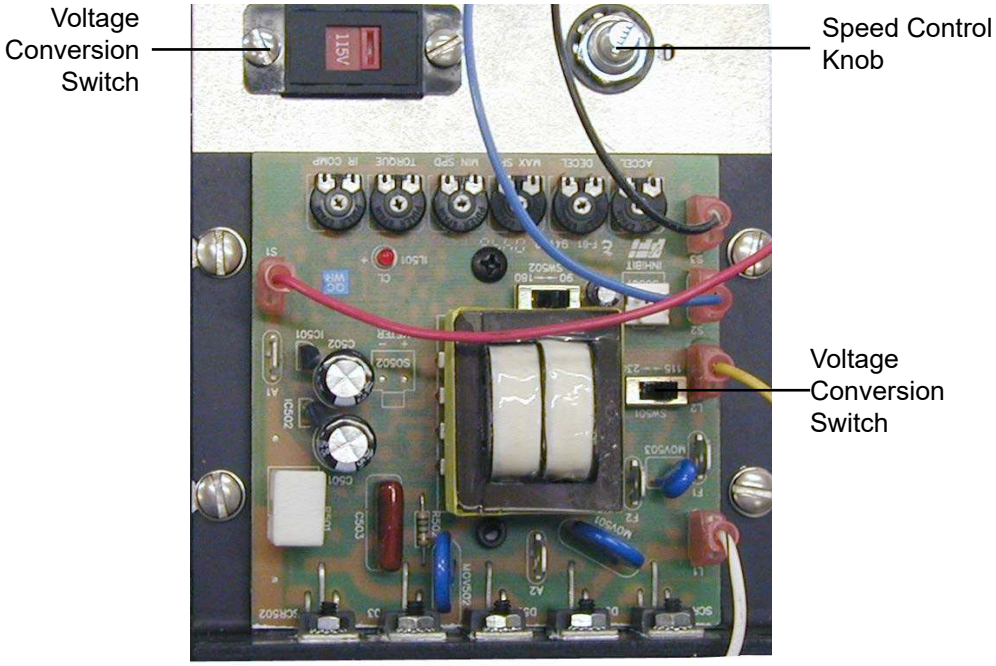
   d. Re-install the top panel.

4. The oven motor speed is preset to 25 rpm. To change the speed:

   a. Open the unit casing as described above and turn the speed control knob (clockwise to increase, counterclockwise to decrease).

   b. Measure the speed with a tachometer.

   c. Turn the speed control knob until the desired speed is reached.



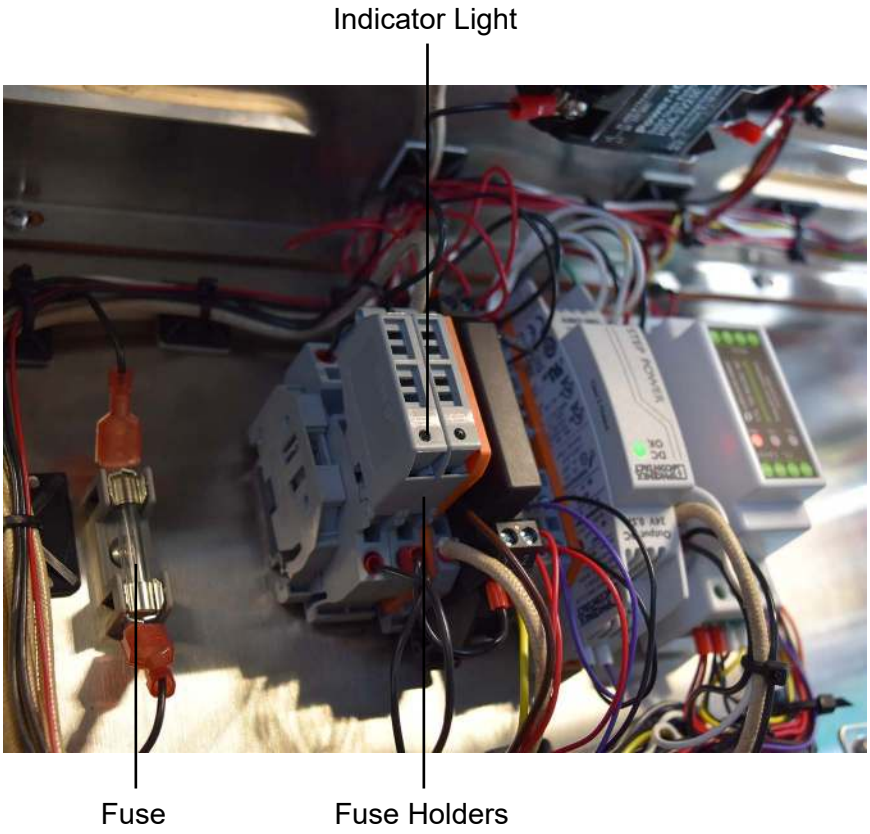
5. The oven has three fuses to protect the electronic components. All three fuses are located inside the control box on top of the oven.

   a. Remove the top panel.

   b. Locate the fuse holders. Two of the fuse holders have indicator lights. If the light is on, the fuse needs to be replaced. The third fuse is visible inside the holder.

   c. Remove the affected fuse and replace it with a new one.

   d. Re-install the top panel.



6. Most of the heat is lost around the door. The door insulation material should be soft and pliable. Over time it will become rigid and hard and will not insulate as well. If this happens, replace the insulation (#172-10).

7. Occasionally check the chains and sprockets in the back of the oven. The chain will stretch and the sprocket spokes may become worn down. This affects the operation of the oven requiring an occasional replacement of the chain and sprockets. Every three months, apply a small amount of grease to the chains and sprockets.

8. The cover on the back of the oven will need to be removed. Always replace it after the necessary repairs have been completed.

Roller Oven – Rear
With Back Panel in Place

Chain Drive and Sprockets

Onboard Display

The OFITE Roller Ovens feature an onboard display. This display provides access to basic test configuration and control. The display can be operated either as a touchscreen or with the control wheel.

To operate the display:

1. Turn the Control Wheel to scroll through the available parameters.
2. Press the Control Wheel to select a parameter.
3. Turn the Control Wheel to scroll through available values for the parameter.
4. Press the Control Wheel to select a value.

Onboard Display

Real-Time Data

The Real-Time Data screen is the default screen. Here you can see the current test parameters. You can use the up and down arrows to change the temperature setpoint.

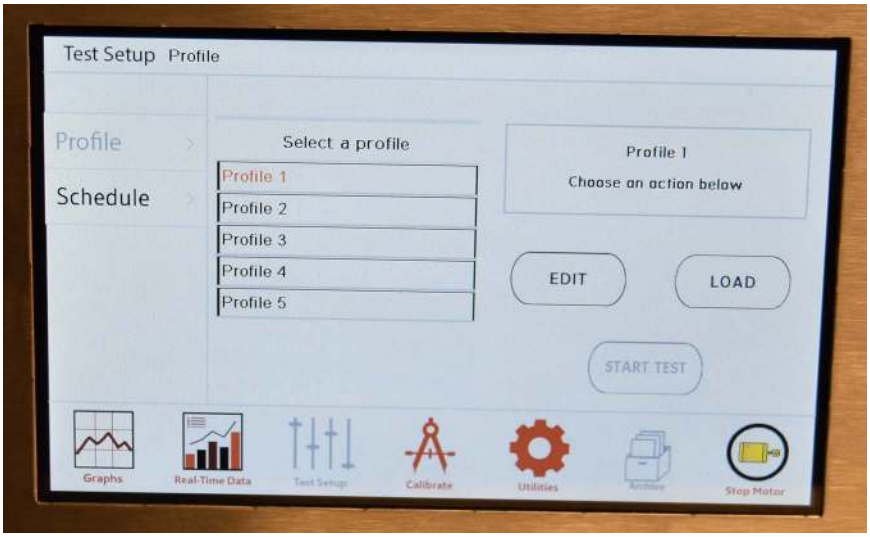
Onboard Display

Test Setup - Profile

On the Profile tab of the Test Setup screen, you can create a custom temperature profile for your test.

1. Go to the Test Setup screen and select “Profile”.

2. Select a profile from the list and touch Edit.



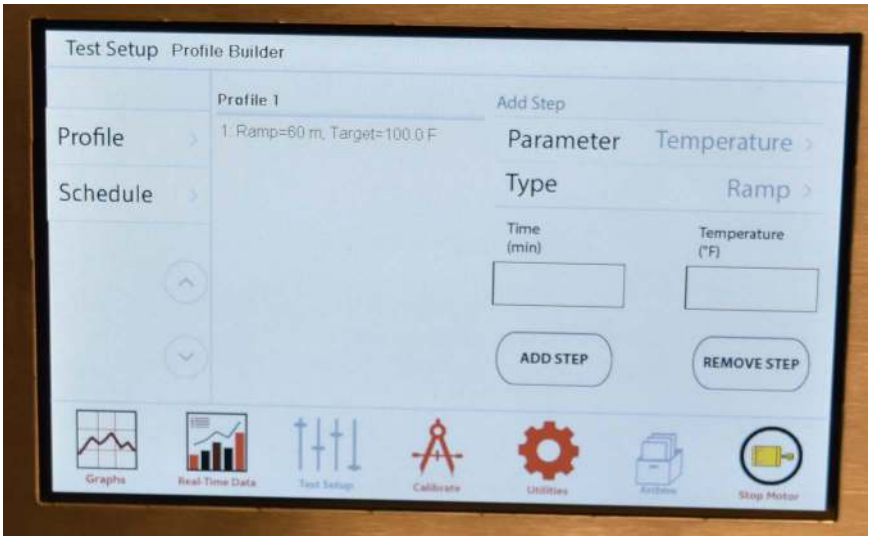
3. For each step you can choose either Dwell or Ramp.

   a. Dwell: Hold the current temperature for a set amount of time. Enter the time (in minutes).

   b. Ramp: Increase the temperature over a given amount of time. Enter the target temperature and the time period (in minutes).

4. Touch Add Step.

5. Repeat steps 3 and 4 for each step in your test.

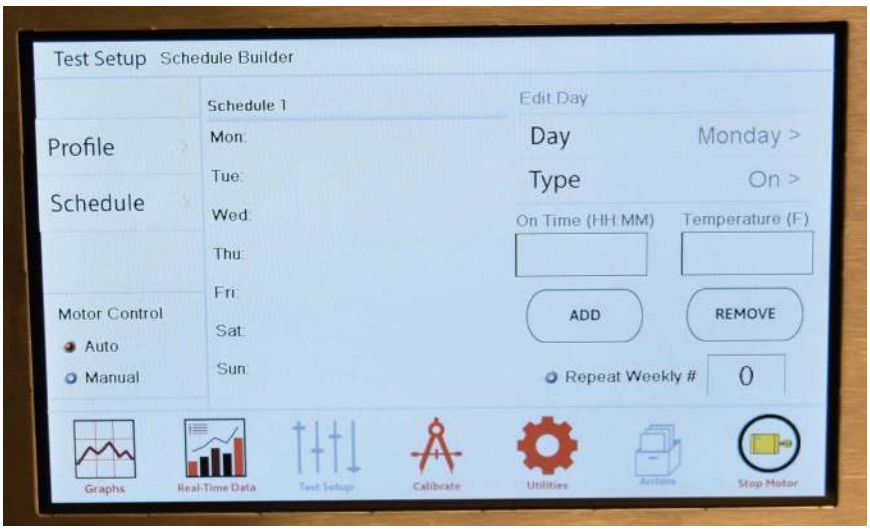


Onboard Display

Test Setup - Schedule

On the Schedule tab of the Test Setup screen, you can create a weekly schedule to turn the oven on and off.

1. Go to the Test Setup screen and select “Schedule”
2. Select a day of the week.
3. Select either On or Off.
4. For On steps, enter the time you want the oven to turn on and the temperature setpoint. For Off steps, enter the time you want the oven to turn off.
5. Touch Add.
6. Repeat steps 4 and 5 for each step in your test.
7. To remove a step, select it in the list and touch Remove.
8. Under Motor Control, choose either Auto or Manual.
    a. Auto: The motor will turn on when the oven turns on.
    b. Manual: The schedule will not control the motor. The motor must be turned on and off manually.
9. To set the schedule to repeat every week, select the “Repeat Weekly” option and enter the number of weeks you want the schedule to repeat.



Onboard Display

Utilities

The Utilities screen sets general parameters.

Date: Enter the month, day, and year. Touch Set Date.

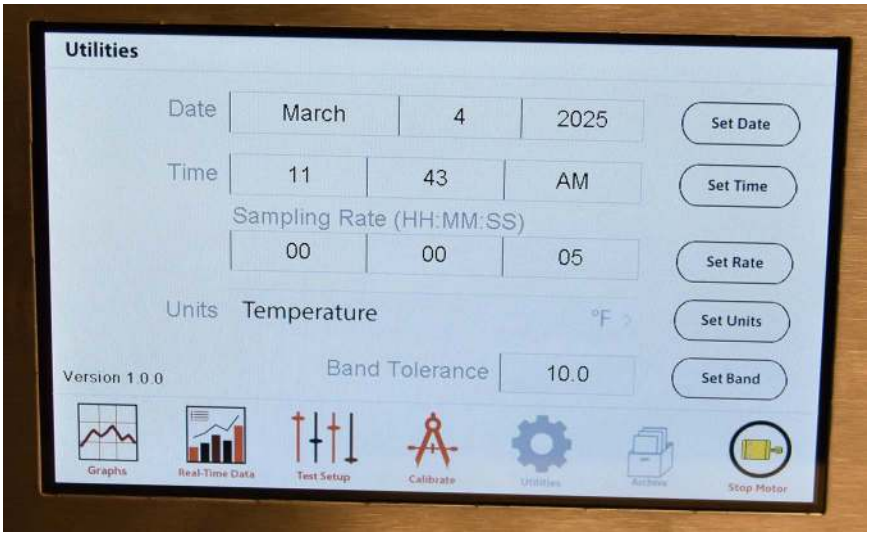
Time: Enter the hour, minute, and AM or PM. Touch Set Time

The touchscreen has a battery that will save the date and time information even when it is powered off.

Sampling Rate: This determines how often the touchscreen records the temperature. Enter the hours, minutes, and seconds. Touch Set Rate.

Units: Choose either °F (Fahrenheit) or °C (Celsius). Touch Set Units.

Band Tolerance: This value determines how far below the setpoint the current temperature can be before the touchscreen will show an error. Enter a value in degrees. Touch Set Band.

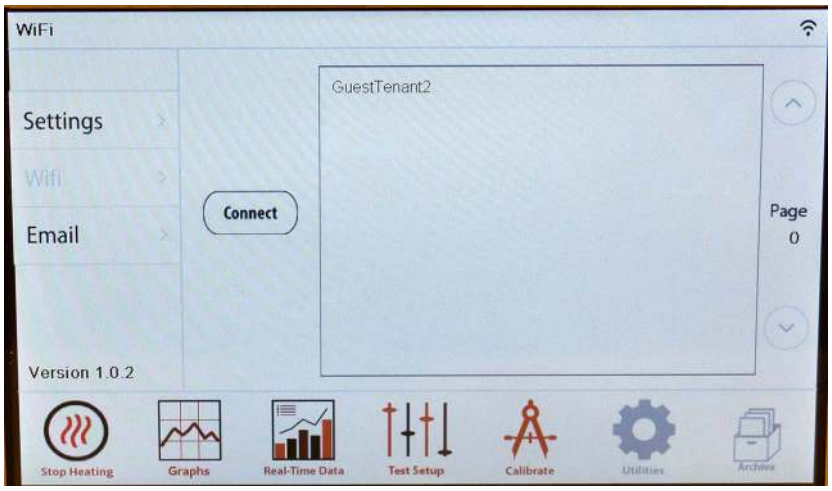


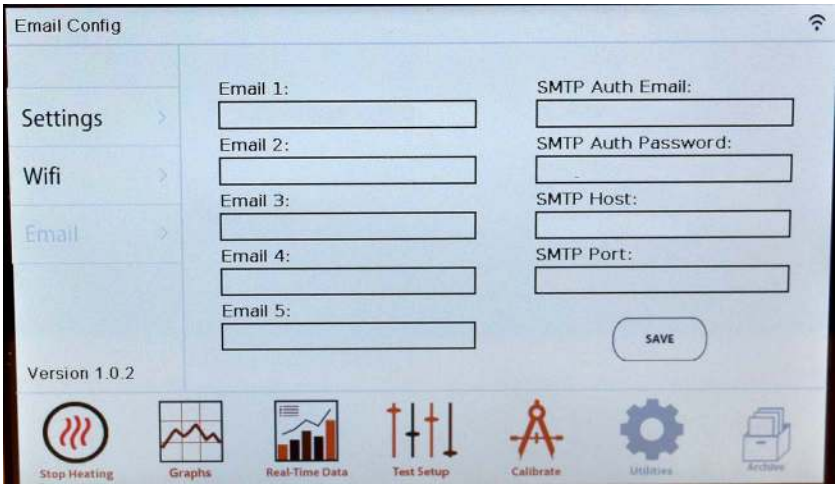
Onboard Display

Email Alerts

The Roller Oven will automatically resume testing after a power outage. You can also configure it to automatically send an email alert when the power is restored. This email will tell you the how long the power was out and what the temperature was when the power came back on.

1. On the Utilities screen, select “Wifi”.
2. Wait for the list of available networks to populate.
3. Choose a network and touch “Connect”.
4. Enter the password.
5. Once the Oven is connected to the network, select “Email”.
6. Enter at least one (up to five) email addresses.
7. Enter the SMTP email address, password, host, and port. Contact your network administrator for this information.
8. Touch Save.





Onboard Display

Graphs

The Graphs screen shows a graph of the temperature over time.

Onboard Display

Archive

On the Archive screen, saved tests can be exported to a USB drive.

1. Place a USB drive in the port on the right-hand side of the instrument.

   The port has an indicator light to show the status of the inserted drive:

   a. Green: The drive is inserted and supported.

   b. Amber: The drive is inserted and supported, but low on free space.

   c. Red: The drive is inserted but not supported. Make sure the drive is formatted in the FAT32 file system.

2. On the Archive screen you will see a list of available tests. Tests are organized from newest to oldest. The name of the test is the date it was run. The format is MMDDHHmm (month, day, hour, minute).

3. Choose the item to export.

4. Select “Export”. The file will be saved to the USB drive.

Warranty and Return Policy

Warranty:

OFI Testing Equipment, Inc. (OFITE) warrants that the products shall be free from liens and defects in title, and shall conform in all respects to the terms of the sales order and the specifications applicable to the products. All products shall be furnished subject to OFITE's standard manufacturing variations and practices. Unless the warranty period is otherwise extended in writing, the following warranty shall apply: if, at any time prior to twelve (12) months from the date of invoice, the products, or any part thereof, do not conform to these warranties or to the specifications applicable thereto, and OFITE is so notified in writing upon discovery, OFITE shall promptly repair or replace the defective products. Notwithstanding the foregoing, OFITE's warranty obligations shall not extend to any use by the buyer of the products in conditions more severe than OFITE's recommendations, nor to any defects which were visually observable by the buyer but which are not promptly brought to OFITE's attention.

In the event that the buyer has purchased installation and commissioning services on applicable products, the above warranty shall extend for an additional period of twelve (12) months from the date of the original warranty expiration for such products.

In the event that OFITE is requested to provide customized research and development for the buyer, OFITE shall use its best efforts but makes no guarantees to the buyer that any products will be provided.

OFITE makes no other warranties or guarantees to the buyer, either express or implied, and the warranties provided in this clause shall be exclusive of any other warranties including ANY IMPLIED OR STATUTORY WARRANTIES OF FITNESS FOR PURPOSE, MERCHANTABILITY, AND OTHER STATUTORY REMEDIES WHICH ARE WAIVED.

This limited warranty does not cover any losses or damages that occur as a result of:

- Improper installation or maintenance of the products
- Misuse
- Neglect
- Adjustment by non-authorized sources
- Improper environment
- Excessive or inadequate heating or air conditioning or electrical power failures, surges, or other irregularities
- Equipment, products, or material not manufactured by OFITE
- Firmware or hardware that have been modified or altered by a third party
- Consumable parts (bearings, accessories, etc.)

Returns and Repairs:

Items being returned must be carefully packaged to prevent damage in shipment and insured against possible damage or loss. OFITE will not be responsible for equipment damaged due to insufficient packaging.

Any non-defective items returned to OFITE within ninety (90) days of invoice are subject to a 15% restocking fee. Items returned must be received by OFITE in original condition for it to be accepted. Reagents and special order items will not be accepted for return or refund.

OFITE employs experienced personnel to service and repair equipment manufactured by us, as well as other companies. To help expedite the repair process, please include a repair form with all equipment sent to OFITE for repair. Be sure to include your name, company name, phone number, email address, detailed description of work to be done, purchase order number, and a shipping address for returning the equipment. All repairs performed as "repair as needed" are subject to the ninety (90) day limited warranty. All "Certified Repairs" are subject to the twelve (12) month limited warranty.

Returns and potential warranty repairs require a Return Material Authorization (RMA) number. An RMA form is available from your sales or service representative.

Please ship all equipment (with the RMA number for returns or warranty repairs) to the following address:

OFI Testing Equipment, Inc.
Attn: Repair Department
11302 Steeplecrest Dr.
Houston, TX 77065
USA

OFITE also offers competitive service contracts for repairing and/or maintaining your lab equipment, including equipment from other manufacturers. For more information about our technical support and repair services, please contact techservice@ofite.com.