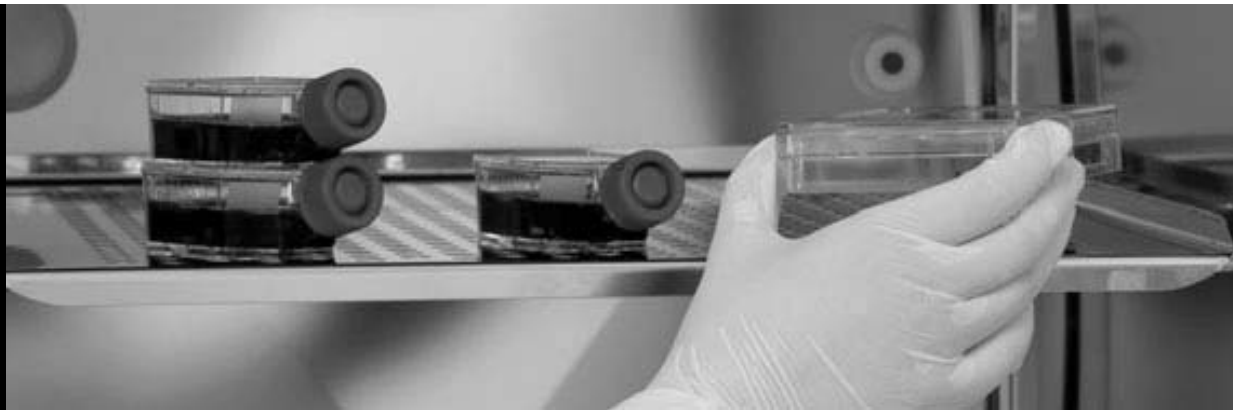


Midi 40 Series

CO₂ Incubator

Operating and Maintenance Manual 7003403 Rev. 1



Models covered by this manual:

Model 3403 120V
 Model 3404 230V

MANUAL NUMBER 7003403

1	26174	2/18/10	Clarifications and corrections per N. Pisani	ccs
0	--	12/1/09	Original, was 33602H01 Rev. A	ccs
REV	ECR/ECN	DATE	DESCRIPTION	By



Important Read this instruction manual. Failure to read, understand and follow the instructions in this manual may result in damage to the unit, injury to operating personnel, and poor equipment performance. ▲

Caution All internal adjustments and maintenance must be performed by qualified service personnel. ▲

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Important operating and/or maintenance instructions. Read the accompanying text carefully.



Potential electrical hazards. Only qualified persons should perform procedures associated with this symbol.



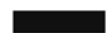
Equipment being maintained or serviced must be turned off and locked off to prevent possible injury.



Hot surface(s) present which may cause burns to unprotected skin, or to materials which may be damaged by elevated temperatures.



Marking of electrical and electronic equipment, which applies to electrical and electronic equipment falling under the Directive 2002/96/EC (WEEE) and the equipment that has been put on the market after 13 August 2005.



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Section 1 Introduction

These incubators are designed to create a stable, reliable environment for cell culture applications. They operate at temperatures ranging from 5°C above ambient temperature to +60°C, accurate to $\pm 0.2^\circ\text{C}$. The gas system controls within $\pm 0.1\%$ of measurable setpoint.

- Thermal conductivity sensor provides stable, automatic injection of CO₂.
- Automatic Gas Shutoff control turns off the gas supply when the inner glass door is opened to prevent wasting the control gas.
- Alarms:
 - High and low level CO₂ setpoint alarms, adjustable.
 - High and low temperature alarms; high alarm can be set by user.
 - Battery Low alarm; control system has tested the alarm battery and determined that it should be replaced.

Caution The function of the alarm battery is to operate the display and alarm system ONLY during a power loss, while the key switch is in the On or Alarm position. This battery system will not power the heaters, fan motor or gas control system. Only qualified service technicians should replace this battery. Replacement instructions and batteries are available from Thermo Scientific. ▲

Requirements

- A high quality two-stage, low pressure 15 psig (1.056 kg/cm²) pressure regulator is required for proper operation of the CO₂ gas supply.
- In-line gas supply filters must be used on the CO₂ supply to prevent damage to the solenoid valve(s):
 - Type: Microbiological
 - Specification: 0.3 micron
 - Location: rear of unit
- CO₂ used in the incubator must be at least 99.9% pure.

Specifications

Technical Specifications	Model 3403	Model 3404
Dimensions		
Exterior (w x h x d) inch/cm	18.5 x 18 x 23.5 (47 x 46.5 x 59.7)	
Interior (w x h x d) inch/cm	12 x 18 x 14 (30.5 x 46.5 x 35.3)	
Construction		
Cabinet configuration	Benchtop	
Interior	non-corrosive stainless steel, type 304, mirror finish	
Interior volume		
Exterior	1.4 cu ft (39.6 l)	
Shelves	4	
Construction	stainless steel, perforated	
Shelf dimensions (w x d)	13.5" x 11.5"	
Surface area per shelf	1.08 sq ft (0.1 sq m)	
Temperature		
Range	5°C above ambient to 60°C	
Control	±0.1°C	
Uniformity	±0.4°C @ 37°C	
Alarm	user programmable high/low	
CO2		
Range	0-20%	
Control	±0.1%	
Sensor	long life thermal conductivity sensor	
Uniformity	0.10%	
Inlet pressure required	15 PSIG (1.0 bar), 99.5 medicinal grade CO2	
Inlet air filtration	0.3 micron anti-microbial filter	
Alarm	user programmable high/low	
Humidity		
rH	to 95% @ 37°C	
Source	heated humidity pan, removable	
Electrical		
Rated voltage	120V, 60Hz	230V, 50Hz
Amps/breaker	1.5/15	1.0/15
Weight		
Net	60 lbs. (27kg)	
Shipping	70 lbs. (32kg)	
Warranty	1 year	

All specifications are subject to change without notice.

Section 2 Safety Precautions

In this manual and on labels attached to this product, the words WARNING and CAUTION mean the following:

- **WARNING:** a potentially hazardous situation which, if not avoided, could result in serious injury or death.
- **CAUTION:** a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to the equipment.

The following symbols are used in caution, warning and informational labels attached to the incubator:

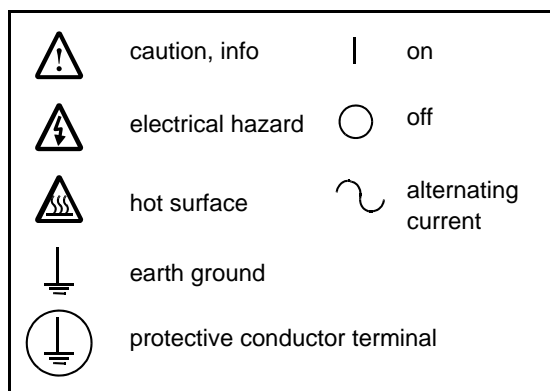


Figure 1-1. Symbols Used in Labels on Incubator

Before installing, using or maintaining this product, please be sure to read this manual and product warning labels carefully. Failure to follow these instructions may cause this product to malfunction, which could result in injury or damage.

Below are important safety precautions that apply to this product:

- Use this product only in the way described in the product literature and in this manual. Before using it, verify that this product is suitable for its intended use.
- Do not modify system components, especially the controller. Use OEM exact replacement equipment or parts. Before use, confirm that the product has not been altered in any way.
- Disconnect the unit from all power sources before cleaning, troubleshooting, or performing other maintenance on the product or its controls. To disconnect power supply to the incubator, unplug the supply cord at the back of the incubator. Note that turning the key switch on the front control panel to the Off position is not sufficient to disconnect power.

Warning The user is responsible for carrying out appropriate decontamination procedures when hazardous materials are spilled on or inside the incubator. ▲

Section 3 Operating Standards

The incubators described in this manual are classified for use as stationary equipment in a Pollution Degree 2 and Overvoltage Category II environment, according to the UL3101-1 and IEC 664 standards.

These units are designed to operate under the following environmental conditions:

- Indoor use
- Altitude up to 2000m
- Maximum relative humidity 80% for temperatures up to 31°C
- Main supply voltage fluctuations not to exceed 10% of the nominal voltage.

Section 4 Pre-Installation

At delivery, examine the exterior for physical damage while the carrier's representative is present. If exterior damage is present, carefully unpack and inspect the unit and all accessories for damage. If there is no exterior damage, unpack and inspect the equipment within five days of delivery. If you find any damage, keep the packing materials and immediately report the damage to the carrier. Do not return goods to the manufacturer without written authorization. When submitting a claim for shipping damage, request that the carrier inspect the shipping container and equipment.

Included Parts

The following items are packaged and shipped inside the incubator cabinet:

- This manual
- Shelves and shelf brackets
- 3/16 in. (476 mm) ID clear tubing for the gas connection
- Cordset
- 5" round humidity pan
- Additional CO₂ sensor gasket
- CO₂ disposable filter 99.97

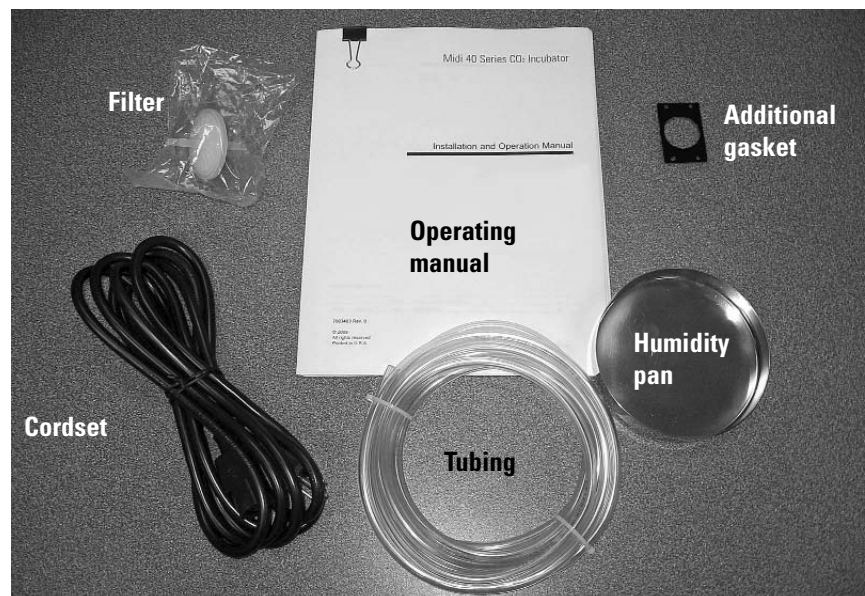


Figure 4-1. Included Components (shelves and brackets not shown)

Set-Up

Remove shelves from the inside of the incubator and clean the chamber. Shelves and brackets can be autoclaved.

Location

Install the unit in a level area free from vibration with a minimum of three inches (7.6 cm) of space on the sides and rear, and 12 inches (30.5 cm) at the top. The floor must be able to support 40 PSI (single chamber incubator) or 75 PSI (stack of two incubators).

Be sure to position the incubator so that the power cord (mains disconnect) is easily accessible to disconnect power.

Do not position the equipment in direct sunlight or near any HVAC duct/diffusers. The ambient temperature range at the work location must be 59 to 90°F (15 to 32°C).

Gas Supplies

Verify that the incubator CO₂ gas supplies are available near the installation area. The required gas supply pressure is 15 PSI, controlled by a high-quality, two-stage regulator suitable for the connected input gas.

Warning Do not connect the gas at this time. ▲

Wiring

Caution Connect the equipment to the correct power source. Be sure to operate the incubator at the voltage specified on the dataplate. Incorrect voltage can result in severe damage to the equipment. ▲

Warning For personal safety and trouble-free operation, this unit must be properly grounded before it is used. Failure to ground the equipment may cause personal injury or damage to the equipment. Always conform to the National Electrical Code and local codes. Do not connect the unit to overloaded power lines. ▲

The incubators described in this manual are available with the following voltages: 115/120VAC, single-phase, 60Hz, 3A and 230VAC, single phase, 50Hz, 2A

Be sure to check your dataplate to verify the correct voltage for your unit.

Always connect the unit to a dedicated (separate) circuit. Do not exceed the electrical and temperature ratings printed on the dataplate located near the upper hinge of the unit. Electrical codes require fuse or circuit breaker protection for branch circuit conductors. Use time delay fuses for #12 AWG circuits.

CO₂ Gas Connections

CO₂ gas connection(s) are located at the rear of the unit.

Note The required gas supply pressure is 15 PSI. Make sure the supply is available in the installation area. ▲

To install the CO₂ connections, complete the following steps:

1. Locate the included 3/16 in. (5mm) interior diameter tubing.
2. Cut a small length (approximately 6 in. [15cm]) from the roll of 3/16 in. (5mm)ID tubing.
3. Pull the cap off the gas connection port at the rear of the incubator and attach one end of the tubing to the gas connection port.
4. Connect the opposite end of the tubing to a high-quality input gas filter (0.3 micron supplied). Note that the side of the filter marked “IN” faces the incoming gas connection, not the back of the incubator (refer to Figure 1-2).

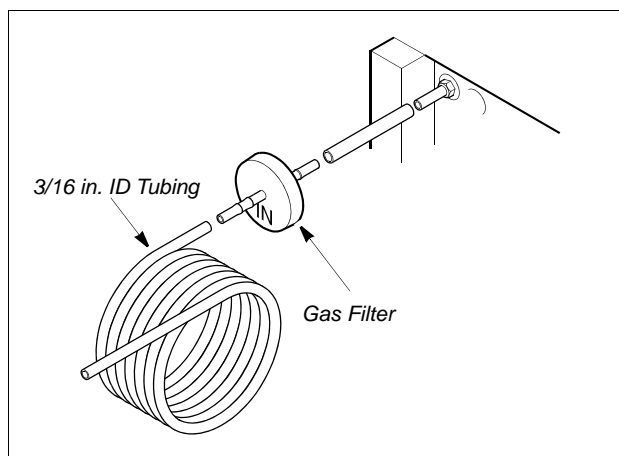


Figure 1-2. CO₂ Gas Connections

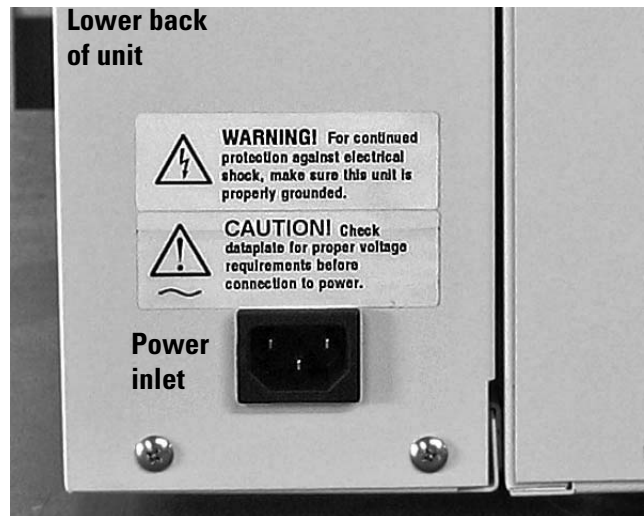
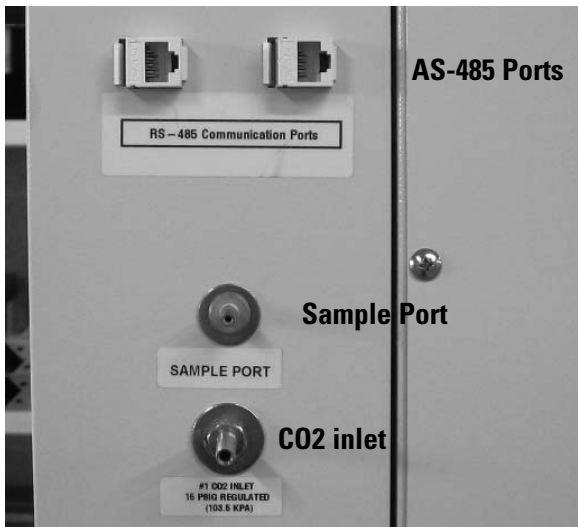
5. Use the remaining 3/16 in. ID tubing to connect the input gas to the gas filter. Keep the tubing length as short as possible to minimize the pressure drop.

Caution DO NOT turn on the gas supply at this time. ▲

Component Locations



Upper back of unit

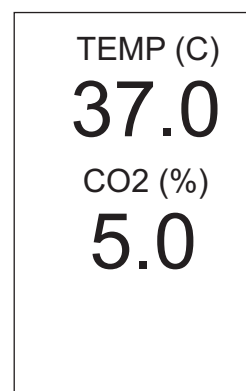


Section 5 Initial Start-Up Procedures

Start-Up Prompts

On first start-up of the incubator, the control display will go through several prompts to guide you through the entire set-up process, from leveling the incubator to adjusting the operating parameters.

During normal operation, the control panel display looks like Figure 5-1. The next section explains all the control functions available during normal operation. On initial start-up, however, a series of prompts displays. This section explains the start-up prompts and the procedures to follow.



Power / Key Switch

Turn the key switch (shown in Figure 5-1) to the "1" position. Press and hold the up arrow button to initiate the special start-up prompts. If a temperature displays instead of a start-up prompt, the up arrow button hasn't been held long enough. Turn the key switch back to "0" and try again.

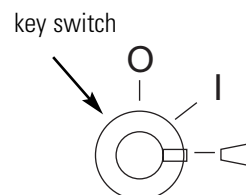


Figure 5-1. Control Panel

Setpoint Parameters

A prompt displays to accept or adjust the values of several operating parameters. In each case, press the up or down arrow buttons (increase or decrease) to change a displayed value. Press Mode when the displayed value is the one desired. The modifiable value is always the one flashing.

If a displayed parameter is not adjusted and 60 seconds elapse, the software registers the existing default value and moves to the next parameter.

If no changes are needed to the factory-set defaults, press Mode repeatedly until the end of the prompts.

Setpoint Parameters (continued)

The adjustable parameters are:

- Temperature (default 37°C)
- Warm alarm (default 40°C; cannot deviate from the temperature setpoint by less than 0.3°C)
- Cold alarm (default 34°C; cannot deviate from the temperature setpoint by less than 0.3°C)
- CO₂ (default 5%)
- High CO₂ alarm (default 6%; cannot deviate from the CO₂ setpoint by less than 1%)
- Low CO₂ alarm (default 4%; cannot deviate from the CO₂ setpoint by less than 1%)

When parameter adjustments are complete, the screen returns to the normal display (Figure 5-1). An additional message indicates that the stabilization period has begun.

During this initial stabilization period, leave the door closed.

Section 6 Key Switch and Control Operation

To operate the incubator with alarms activated, be sure to turn the key switch all the way to the rightmost position (as shown in Figure 6-1). To avoid nuisance alarms, work with the key switch in the “I” position during the set-up procedures described in Section 5.

The control panel is located on the front of your incubator.

Before loading and using your incubator, be sure to take some time to review the control panel functions.

The main display, during normal operation, shows: cabinet temperature in degrees Celsius, as measured by the sensor inside the cabinet; and percentage levels of carbon dioxide (CO₂). When one or more of these fields flashes during normal operation, an alarm or error condition is indicated. Note that alarm conditions are displayed only when the key switch is turned to the alarm position.

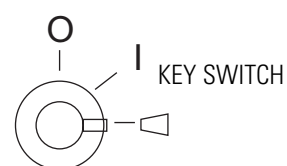
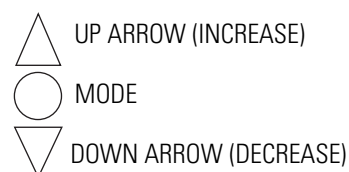
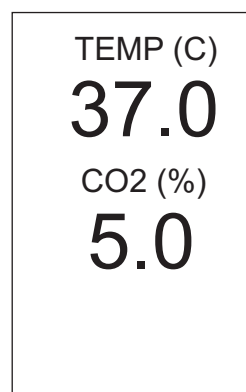


Figure 6-1. Key Switch

Section 6

Key Switch and Control Operation

In programming mode (described in detail in Table 6-1) the main display changes to show the setpoint being viewed and related alarm setpoints. For example (Figure 6-2):

Set Temp SETPOINT:
37.0C
40.2C
33.8C

The first value displayed is the temperature setpoint; the next two values are the high temp alarm and low temp alarm setpoints. The flashing value is one that can be changed, using the up and down arrow buttons.

Figure 6-2.
Programming Mode

The up and down arrow buttons are used to change setpoint values in programming mode and for various display functions.

The Mode pushbutton is used: to silence an audible alarm; to enter programming and service modes; and in combination with the other buttons for various display functions.

For full descriptions of display, programming, and service functions, refer to Tables 6-1, 6-2, and 6-3.

Table 6-1. Control Panel Display

Function	Meaning	Sequence	Display
Normal operation	Default display while incubator is running	—	Display shows cabinet temperature, CO2, Relative Humidity, O2.
Cold excursion	Show coldest cabinet temperature since last startup or reset	Press ▼	Display shows cold excursion while button is pressed.
Warm excursion	Show warmest cabinet temperature since last startup or reset	Press ▲	Display shows warm excursion while button is pressed.
Mode	Silence audible alarm	Press Mode	Display shows current values, alarm or error field continues to flash.
Reset	Return to default display after excursion or alarm condition	Press ▲ and ▼ simultaneously	Excursion values are reset; display shows current values. Display flashes twice

Setpoint and Alarm Programming

To enter Program mode, press and hold the MODE button until the display indicates it is changing to Program mode. Press Mode repeatedly to scroll through the available functions. Exit Program mode by scrolling through all available functions and parameters using the Mode button, or the display will automatically return to normal operating mode 30 seconds after the last key entry.

Table 6-2. Setpoint and Alarm Programming Functions

Function	Programming Sequence
Adjust temperature setpoint	Enter programming mode by pressing Mode and holding for 5 seconds. On release, the current temperature setpoint value flashes in the display; use ▼ and ▲ to adjust it.
Adjust warm alarm setpoint	Press Mode again. The current warm alarm setpoint value then flashes in the display; use ▼ and ▲ to adjust it. There is a minimum deviation of 0.3° C between each alarm setpoint and the temperature setpoint.
Adjust cold alarm setpoint	Press Mode again. The current cold alarm setpoint value then flashes in the display; use ▼ and ▲ to adjust it. There is a minimum deviation of 0.3° C between each alarm setpoint and the temperature setpoint.
Adjust CO ₂ setpoint	Press Mode again. The display changes to display CO ₂ setpoint and high and low CO ₂ alarm setpoints, with the operating CO ₂ setpoint flashing. Use ▼ and ▲ to adjust it. There is a minimum deviation of 1% between each alarm setpoint and the operating CO ₂ setpoint.
Adjust CO ₂ high alarm setpoint	Press Mode again. The current high CO ₂ alarm setpoint then flashes; Use ▼ and ▲ to adjust it. There is a minimum deviation of 1% between each alarm setpoint and the operating CO ₂ setpoint.
Adjust CO ₂ low alarm setpoint	Press Mode again. The current high CO ₂ low setpoint then flashes; Use ▼ and ▲ to adjust it. There is a minimum deviation of 1% between each alarm setpoint and the operating CO ₂ setpoint.
Set Temp offset	Press Mode again. The display changes to display temperature offset (for calibration purposes). Use ▼ and ▲ to adjust it.
Set CO ₂ offset	Press Mode again. The display changes to display CO ₂ offset (for calibration purposes). Use ▼ and ▲ to adjust it.

Service Mode Parameters

Service mode can be entered from Program mode by pressing Mode and holding for 5 seconds. Pressing Mode repeatedly scrolls through the available functions. For any modifiable parameter, the up and down arrow buttons can be used to adjust the value. The display automatically returns to normal operating mode 30 seconds after the last key entry, or after scrolling through all available functions and parameters.

Table 6-3. Service Parameters

Parameter	Notes
Network Adr	Network address (for RS485 applications). Default 238.
SN	Serial number.
Check Sum	Checksum to identify firmware version
Baud rate	For RS485 applications
PWM Info	CO ₂ sensor and excursion information

Restore Function

When the incubator is first powered up, all factory-set program parameter defaults can be restored as follows:

Table 6-4. Restore Defaults

Function	Sequence	Notes
Restore program defaults	Press ▲ and ▼ simultaneously, hold for five seconds	Restores original (factory-set) values of all program parameters.

Calibration - Optional

CO₂ Measurement and Calibration

This method uses an instrument, such as the Fyrite, to read the actual CO₂% in the chamber. The display can be changed to agree with the measured reading. The factory standard method, using traceable gas standards, assures an accuracy of $\pm 0.2\%$. The Fyrite instrument obtains $\pm 0.5\%$ accuracy. To use the Fyrite for CO₂ concentration measurement, complete the following steps:

1. Wait at least 15 minutes after the CO₂ level arrives at setpoint before attempting any concentration measurement.
2. Make sure that the wick in the Fyrite sample tube is moist and make sure that the tubing is in good condition (no cracks or cuts).
3. Hold the Fyrite upright and away from your face. Depress the plunger valve briefly to vent the Fyrite and release the valve.

Warning Never depress the plunger valve when the Fyrite is in the inverted position. Doing so causes fluid, which is corrosive and contains poisonous elements, to spill. Refer to the MSDS sheet contained in the Fyrite instruction packet for additional information. ▲

4. Invert the Fyrite, holding it at a slight angle to drain the fluid into the top reservoir.
5. Turn the Fyrite up to a 45 degree angle momentarily to allow fluid droplet drainage into the bottom reservoir.
6. Hold the Fyrite completely upright and away from your face. Depress the plunger valve briefly and release the valve.
7. Loosen the locknut at the rear of the scale. Slide the scale until the top of the fluid column lines up with zero on the scale. Tighten the locknut.

Note When setting zero, hold the Fyrite vertically and level with your eyes while sighting across the scale to the top of the fluid column. Use this same procedure for adjusting zero and reading percent CO₂.

8. Slide the open end of the sample tubing over the sample fitting on the front of the incubator, in the recessed area on the left just below the control panel. Holding the Fyrite in the upright position, place the sampling rubber connector tip over the plunger valve on the Fyrite. Purge the sample line by squeezing the aspirator bulb twice, then depress the plunger valve firmly with the connector tip. Squeeze and release the aspirator bulb 18 times. During the 18th squeeze and with bulb held deflated, release the connector tip and the plunger valve.

Calibration - Optional (continued)

Note Always hold the Fyrite by the fins only to prevent warming of the Fyrite fluid during analysis. ▲

9. Invert the Fyrite until the fluid drains into the top reservoir, then turn the Fyrite upright to drain the fluid into the bottom reservoir. Repeat this step once.
10. Briefly hold the Fyrite at a 45° angle to allow the fluid to drain into the bottom reservoir.
11. Hold the Fyrite completely upright and immediately read the CO₂ percent on the scale at the point corresponding to the top of the fluid column.
12. Wait a few minutes, then repeat the entire procedure (steps 3 through 11) to confirm the reading.
13. To offset the CO₂% level, enter programming mode by pressing Mode and holding for 5 seconds. On release, the current temperature setpoint value flashes in the display.

Continue to press Mode until the display changes to display CO₂ offset.

Use up and down arrow keys to adjust the offset.

Press Mode to revert back to normal display.

Temperature Correlation

The factory standard method of temperature calibration uses instruments with an accuracy of $\pm 0.1^{\circ}\text{C}$ or better. To place an offset on the displayed reading to match any other calibrated temperature measuring instrument:

- a. Enter programming mode by pressing Mode and holding for 5 seconds. On release, the current temperature setpoint value flashes in the display.
- b. Continue to press Mode until the display changes to display Temperature offset.
- c. Use up and down arrow keys to adjust the offset.
- d. Press Mode to revert back to normal display..

Section 7 Control Systems Theory

Laboratory CO₂ Incubators have a “jacket” between the incubator chamber and the exterior wall of the unit. In water jacketed incubators, the jacket is filled with water; in dry wall incubators, the jacket contains air. The temperature control system operates in the same manner for both types of incubators.

Interior chamber temperature control is maintained by two sensors. One sensor is located in the jacket and the other sensor is located in the chamber air. Both sensors constantly signal the electronic circuitry. The chamber air provides a reference point while the jacket is being controlled. This circuitry recognizes that jacket temperature is very slow to react to any change in either ambient or chamber temperature but the chamber temperature can change very rapidly due to door opening.

For example: The chamber inner door is opened. The chamber air sensor immediately signals a large drop in temperature but the control recognizes that, unless there is a corresponding (smaller) drop in jacket temperature, there is no need to increase the heat. The system does nothing until sufficient time passes to measure how fast the chamber air temperature is rising to meet the jacket temperature after the door is closed. Heat is applied to the jacket in short bursts. The rate of heat application changes as the circuit monitors the two sensors. This control scheme is extremely accurate and stable, with the ability to control within $\pm 0.1^{\circ}\text{C}$ of the setpoint.

Overtemperature Monitoring System

This system is activated anytime the chamber air sensor detects a temperature above the overtemperature setpoint, which should be set no closer than 0.3°C above the chamber temperature. When the system is activated, the jacket heater is turned off and both audio and visual alarms are activated. Control is now effectively switched to the overtemperature monitoring system. The overtemperature sensor is the chamber air sensor which also provides the signal for the digital display on the control panel.

Door Heat System

Heating the inner surface of the outer door with a low wattage, large area heater provides enough radiant heat to the glass door to control condensation. The micro-processor control operates the door heater.

CO2 Control System

This system uses a sensor assembly consisting of a pair of matched, thermistor sensors in a housing. One of the sensors is sealed in a nitrogen filled housing and provides the 0 to 1 VDC reference signal for the gas control board. The other sensor continually samples filtered chamber air. The main control board compares these signals with the input from the control panel CO2 setpoint. If the difference exceeds 0.5% below setpoint, the CO2 solenoid remains open 100% of the time. If the difference is less than 0.5%, the CO2 solenoid cycles until setpoint is reached.

CO2 Recovery (after door opening)

When the chamber inner door is opened, the door switch shuts off all gas flow into the chamber. When the door is closed, gas again flows into the chamber under the control of the TC gas concentration sensor. At this time the gas solenoid is open 100% of the time and remains open until the CO2 level has recovered to within 5% of the setpoint. The solenoid then reverts to cycling.

Section 8 Maintenance

Warning Maintenance procedures involve working with high voltages which can cause injury or death. Maintenance should only be performed by trained personnel. ▲

The incubator can be easily cleaned and disinfected in about 30 minutes.

Be sure to use an appropriate disinfectant solution: Roccal II; its Lysol equivalent, 5 milliliters per liter; or O-Syl in a one percent solution. Disinfectants should always be diluted with sterile, distilled water.

Caution Before using any cleaning or decontamination method except for those recommended in the manufacturer, contact Technical Services to verify that you will not damage the equipment. ▲

Caution Do not use strong alkaline or caustic agents, which can cause corrosion, rust and pitting of stainless steel surfaces. Stainless steel is corrosion-resistant but not corrosion-proof. ▲

Caution Do not use sodium hypochlorite solutions such as Purex and Clorox. These can also cause corrosion and pitting of stainless steel. ▲

Caution Do not use steel wool pads such as Brillo; they deposit carbon particles in the chamber. ▲

When cleaning stainless steel, use the mildest cleaning procedure that will do the job effectively. To avoid marring the surface, always rub in the direction of the finish polish lines.

Caution Do not use aromatic solvents to clean the cabinet interior: residues could cause contamination of the cabinet environment. ▲

Cleaning

To clean and disinfect your incubator:

1. Remove the shelves, support walls and pans.
2. Clean all interior surfaces with the disinfectant solution using a clean sponge.
3. Rinse the interior surfaces at least twice with sterile distilled water.
4. Clean the inner door gasket thoroughly.
5. Clean the inside of the glass door with the disinfectant solution, then rinse twice with sterile distilled water.
6. Clean the shelves, support walls and pans with disinfectant and rinse thoroughly with sterile distilled water.
7. Wipe down all disinfected surfaces with an alcohol solution.

Caution Alcohol is volatile and flammable. Use only in a well-ventilated area removed from open flames and other heat sources. Allow sufficient time for fumes to dissipate before using cleaned components. ▲

CO2 Filter Replacement

To replace the CO2 Filter:

1. Turn the main power switch to OFF.
2. Turn the gas supply (or supplies) to OFF.
3. Remove the tubing from both ends of the gas filter.
4. Note the flow direction on the filter. The side marked IN points to the gas supply. Install the new filter onto the tubing connected to the incubator and the tubing connected to the gas supply (refer to Gas Supplies in Section 4 and Figure 3-1).
5. Turn the gas supply (or supplies) to ON.
6. Turn the main power switch to ON.

Fuses

The fuses used in this incubator are located on the power supply board and should only be replaced by a qualified technician.

The F1 and F2 fuses are Type “T”, rated at 120V/6A or 230VAC/3A.

The F3 and F4 fuses are Type “T”, rated at 120V/500mA or 230VAC/300mA.

Door Seal Check

To check the door seal, complete the following steps:

1. Open the inner glass door.
2. Insert a strip of paper (a couple of inches wide) between the door gasket and the cabinet flange and close the door.
3. Slowly pull the paper strip from the outside. You should feel some resistance.
4. Repeat this test at 4 inch (10 cm) intervals around the door. If the door does not seal properly, call Technical Services ; the gasket needs to be adjusted or replaced.

Section 9 Parts List

Description	Part Number
Door Gasket, Inner Assy (8 ft)	103140
MIDI Door Heater 120V	132073
MIDI Chamber Heater 120V	132083
MIDI Door Heater 230V	132113
MIDI Chamber Heater 230V	132121
MIDI Control Panel Overlay	140393
SYMPHONY Control Panel Overlay	140394
MIDI Display Assembly SRO	192039
MIDI Micro Board SRO	192040
MIDI, Power Board 120V SRO	192041
MIDI, Power Board 230V SRO	192042
MIDI CO2 Incubator Decal (VWR)	220881
MIDI Inc Decal (SYMPHONY)	220882
MIDI RTD Temp Sensor 1000HM	290194
MIDI CO2 Sensor Assembly	290195
MIDI EPROM Programmed	320546
MIDI Inc Power To Micro Harness	350061
MIDI Inc Door Switch and Harness	350062
MIDI Incubator Key Switch and Harness	350064
MIDI, Lead-Acid Battery 12V	400194
Cordset 10A/125V,18/3,USA	430108
Cordset 10A,250V, European	430109
2 Black Rubber Suction Type Foot	505180
Disposable Filter 99.97	770001
MIDI Exterior Door Gasket	990044
MIDI Inner Glass Door SRO	1900435
MIDI Inner Door Latch SRO	1900436
Valve Assembly, CO2 Solenoid SRO	1900437

THERMO FISHER SCIENTIFIC STANDARD PRODUCT WARRANTY

The Warranty Period starts two weeks from the date your equipment is shipped from our facility. This allows for shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner during the first year warranty period.

During the first year, component parts proven to be non-conforming in materials or workmanship will be repaired or replaced at Thermo's expense, labor included. Installation and calibration are not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters and gaskets are excluded from this warranty.

Replacement or repair of components parts or equipment under this warranty shall not extend the warranty to either the equipment or to the component part beyond the original warranty period. The Technical Services Department must give prior approval for return of any components or equipment. At Thermo's option, all non-conforming parts must be returned to Thermo Fisher Scientific paid and replacement parts are shipped FOB destination.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL OR IMPLIED. NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. Thermo shall not be liable for any indirect or consequential damages including, without limitation, damages relating to lost profits or loss of products.

Your local Thermo Sales Office is ready to help with comprehensive site preparation information before your equipment arrives. Printed instruction manuals carefully detail equipment installation, operation and preventive maintenance.

If equipment service is required, please call your Technical Services Department at 1-800-438-4851 (USA and Canada) or 1-740-373-4763. We're ready to answer your questions on equipment warranty, operation, maintenance, service and special application. Outside the USA, contact your local distributor for warranty information.



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THERMO FISHER SCIENTIFIC INTERNATIONAL DEALER WARRANTY

The Warranty Period starts two months from the date your equipment is shipped from our facility. This allows for shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner during the first year warranty period. Dealers who stock our equipment are allowed an additional six months for delivery and installation, provided the warranty card is completed and returned to the Technical Services Department.

During the first year, component parts proven to be non-conforming in materials or workmanship will be repaired or replaced at Thermo's expense, labor excluded. Installation and calibration are not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters, reagents, tubing, and gaskets are excluded from this warranty.

Replacement or repair of components parts or equipment under this warranty shall not extend the warranty to either the equipment or to the component part beyond the original warranty period. The Technical Services Department must give prior approval for return of any components or equipment. At Thermo's option, all non-conforming parts must be returned to Thermo postage paid and replacement parts are shipped FOB destination.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL OR IMPLIED. NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. Thermo shall not be liable for any indirect or consequential damages including, without limitation, damages relating to lost profits or loss of products.

Your local Thermo Sales Office is ready to help with comprehensive site preparation information before your equipment arrives. Printed instruction manuals carefully detail equipment installation, operation and preventive maintenance.

Contact your local distributor for warranty information. We're ready to answer your questions on equipment warranty, operation, maintenance, service and special application.



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Declaration of Conformity

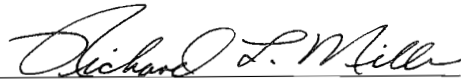
Manufacturer's Name: Thermo Fisher Scientific (Asheville) LLC
Manufacturer's Address: 401 Millcreek Road
Marietta, Ohio 45750
U.S.A.
Product Description: Laboratory Incubators
Product Designations: 3404
Year of Initial Marking (CE): 2009
Affected Serial Numbers: Release 1
(Release Level [REL#] shown on Serial Tag)

These products conform to the following European Union Directive(s):

EMC: 89/336/EEC
LVD: 73/23/EEC

These products conform to the following Harmonized, International and National Standards:

EMC:	LVD:
EN 61326-1:1997/A1:1998	EN 61010-1
EN 55011 :1991	
(Conducted Emissions – Class A)	
(Radiated Emissions – Class A & B)	
EN 61326-1:1997/A1:1998 Annex A	



Richard L. Miller, CQE
Regulatory Compliance Manager

ThermoFisher
S C I E N T I F I C

06 November 2009

Rev. 0

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