



MMM Group

Instructions for use
CO₂ INCUBATOR

CO₂Cell 190 Standard
CO₂Cell 190D Standard
(with decontamination 160 °C)



CONTENTS:

24. 1. 2013

1	SAFETY	3
1.1	LEGAL CONSIDERATIONS	3
1.2	INTENDED USE	3
1.3	SYMBOLS USED IN THIS MANUAL.....	3
1.4	GENERAL SAFETY INSTRUCTIONS.....	3
2	DESCRIPTION	3
2.1	CONSTRUCTION	4
2.2	DOORS	4
2.3	CONTROL SYSTEM.....	4
2.4	CO ₂ SENSOR.....	4
2.5	DIAGRAMS	4
2.5.1	FRONT AND INNER VIEWS	4
2.6	REAR CONNECTIONS.....	4
3	DELIVERY, TRANSPORTATION AND STORAGE.....	5
3.1	UNPACKING.....	5
3.2	LIFTING AND MOVING	5
3.3	STORAGE	5
4	INSTALLATION.....	5
4.1	LOCATION AND AMBIENT CONDITIONS.....	5
4.2	SHELVES AND USABLE SPACE	6
4.3	WATER TRAY	6
4.4	GAS CONNECTION	6
4.5	ELECTRICAL CONNECTION	6
5	GETTING STARTED.....	7
5.1	START UP	7
5.2	FACTORY PRESETS.....	7
5.3	MAIN DISPLAY.....	7
5.4	CONTROL MENU MAP	7
5.5	CHANGING TEMPERATURE SET POINT	8
5.6	CHANGING CO ₂ SET POINT	8
5.7	HIGH AND LOW TEMPERATURE ALARMS	8
5.8	CHANGING HIGH TEMPERATURE ALARM	8
5.9	CHANGING LOW TEMPERATURE ALARM.....	8
5.10	HIGH AND LOW CO ₂ ALARMS.....	9
5.11	CHANGING HIGH CO ₂ ALARM	9
5.12	CHANGING LOW CO ₂ ALARM.....	9
5.13	DOOR OPEN ALARM.....	10
5.14	CHANGING THE DOOR OPEN ALARM.....	10
6	HIGH TEMPERATURE 160 °C DECONTAMINATION.....	10
6.1	ABOUT THE DECONTAMINATION CYCLE.....	10
6.2	PREPARATION.....	10
6.3	STARTING THE CYCLE.....	11
6.4	CYCLE TIME.....	11
6.5	COOLING PHASE.....	11
7	OPTIONS	11

7.1	BMS VOLT FREE ALARM RELAY.....	11
7.2	MULTI-DOORS.....	11
8	ACCESSORIES.....	12
9	CLEANING.....	12
9.1	OUTER SURFACES.....	12
9.2	INNER SURFACES.....	12
9.3	OXIDATION AT HIGH TEMPERATURE.....	12
10	SERVICE.....	12
10.1	WARRANTY.....	12
10.2	PREVENTATIVE MAINTENANCE.....	12
10.3	RETURNING A UNIT.....	12
11	DISPOSAL.....	13
12	TECHNICAL INFORMATION.....	13
12.1	TECHNICAL DATA.....	13
12.2	DIMENSIONAL DRAWINGS.....	13

1 SAFETY

1.1 LEGAL CONSIDERATIONS



It is important that you read this manual completely and observe all instructions. Failure to follow these instructions may result in personal injury, equipment damage and incorrect performance of the incubator.

This manual contains information for installing, operation and maintenance of the incubator. It cannot cover all possible uses and applications. Please contact your dealer or MMM directly if you have a special application or the manual does not describe your problem in enough detail.

The contents of this manual and the incubator are subject to change without notice.

1.2 INTENDED USE

MMM CO₂ Cell Standard incubators are intended for mammalian cell cultivation under typical conditions of 37.0 °C. The pH of the cell media can be controlled by altering the CO₂ concentration within the incubator.

Other applications are not approved by MMM. Please contact your dealer or MMM directly, for advice if you intend to use this incubator for other applications.

1.3 SYMBOLS USED IN THIS MANUAL

The following symbols are used throughout this manual:

Risk of injury	Electrical hazard	Hot surface	Lifting hazard
Stability hazard	Compressed gas hazard	Asphyxiation hazard	Mandatory regulation
Read operating manual	Lift with several persons	Disconnect from electrical supply	Important information for correct operation

1.4 GENERAL SAFETY INSTRUCTIONS

This incubator is intended for use by suitably qualified laboratory personnel who are familiar with all precautions and standard safety practices for working in a laboratory environment.

These safety instructions are intended to be used alongside any local safety guidelines, rules and regulations. If in doubt please consult the Health and Safety Officer of your organisation.

Only skilled electricians or engineers authorised by MMM can perform repairs or maintenance on this incubator. Only original spare parts from MMM can be used. There are no user serviceable parts within the incubator.

MMM takes no responsibility for 3rd party accessories or equipment used with this incubator.

 DANGER	Electrical hazard Danger of death Do not remove any panels from incubator. Do not allow the incubator to become wet.
 HOT SURFACES	Danger of burning Risk of injury The glass door and inner chamber reach 200 °C during sterilisation. Do not force the door open during sterilisation.
 STABILITY HAZARD	Stability hazard Risk of injury Damage to unit Do not place the unit too close to the edge of a bench. Do not lean on the door when open.
 LIFTING HAZARD	Lifting hazard Risk of injury Damage to unit Lift with 2 people 95 kg Observe safe handling regulations

2 DESCRIPTION

MMM CO₂ Cell Standard incubators are fitted with a digital controller, ensuring precise control of temperature and CO₂ levels.

Accurate and stable heating throughout the entire chamber is ensured by the unique MMM designed five sided direct heating element. In addition a separate independently controlled door heater is fitted to ensure that the inner glass door is free from condensation.

The design of these element profiles promote natural convection of the air within the chamber, ensuring even temperature and gas distribution throughout the chamber.

MMM CO₂ Cell Standard 190 D incubator has extra heaters that allow high temperature 160 °C decontamination of the incubator chamber.

2.1 CONSTRUCTION

The inner chamber is made from 304 grade stainless steel. It is deep drawn from one piece with no welds and is electro-polished, meaning that the inner surfaces are smooth and easily cleaned.

The removable shelves, racking and water tray are also made from stainless steel.

The outer housing is made from stainless steel and powder coated with anti-bacterial biocide paint.

2.2 DOORS

The outer door has a heater on its inner face. This door is an integral part of the temperature control system and must be closed for the incubator to function normally. The door is hinged on the right hand side. Left hand opening is only available as an option at the point of ordering, retrofitting is not possible.

When this door is open, the CO₂ valve is closed and heater power is reduced to prevent over shoot of operating conditions. The door is linked to the controller alarm system. ⇒ **Section 5.13.**

An inner glass door seals against a thermoplastic elastomer gasket. This allows viewing of the samples within the chamber without disturbing the temperature or atmosphere of the chamber.

The incubator can be optionally equipped with a multi-door. These multi-doors improve temperature and CO₂ recovery after a door opening. Multi-doors can be retro fitted.

⇒ **Section 7.2.**

2.3 CONTROL SYSTEM

The digital controller allows the user to easily see operating conditions and to alter settings via push buttons.

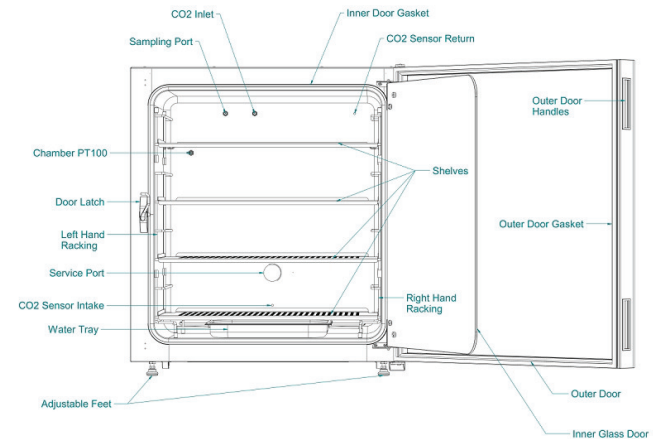
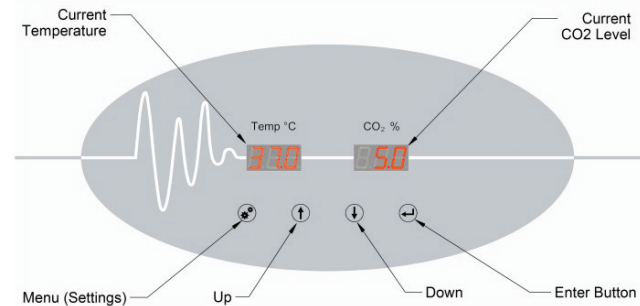
Software controlled PID loops constantly monitor temperature and CO₂ values, making automatic adjustments to keep the chamber atmosphere within limits.

2.4 CO₂ SENSOR

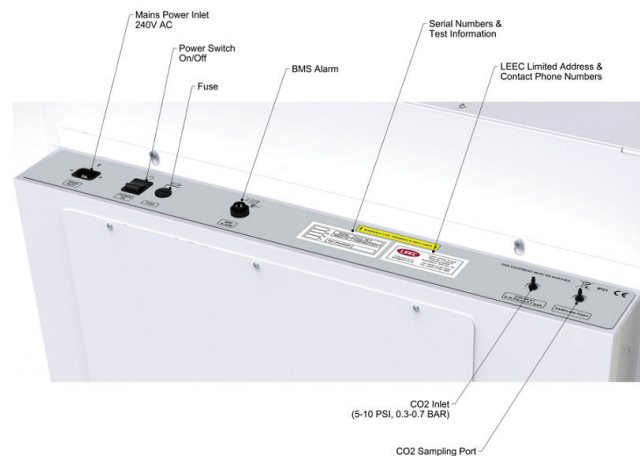
CO₂ is measured and controlled using a highly accurate infra-red sensor. This sensor remains practically drift free between calibration periods. The sensor is not mounted within the chamber; instead a small pump passes the chamber atmosphere through the sensor. The CO₂ sensor does not have to be removed during high temperature decontamination.

2.5 DIAGRAMS

2.5.1 FRONT AND INNER VIEWS



2.6 REAR CONNECTIONS



3 DELIVERY, TRANSPORTATION AND STORAGE

3.1 UNPACKING

Inspect the packaging for signs of transportation damage.

Carefully undo the top of the cardboard packaging and gently slide the packaging over the incubator.

Inspect the incubator and inform the carrier immediately if there are any signs of transportation damage.

Remove any packaging material from within the chamber. Remove any protective coverings from the surfaces of the inner chamber.

Remove the Instructions for use and accessory kit from within the chamber. Keep these safe.


Please check that the accessory pack contains the following items. Contact your dealer with details of any shortages.

Standard 190 / 190D accessory pack	Qty
Stainless steel perforated shelves	4
Shelf racking (left and right hand)	1 set
Racking support bar	1
Stainless steel water tray	1
Service port bungs	2
Instructions for use	1
3.5 meter length of CO ₂ tubing with HEPA filter	1
Hose clips	2
Test report	1
IEC mains power lead	1

3.2 LIFTING AND MOVING

Model CO₂ cell standard 190 weighs 95 Kg. Standard 190D weighs 104 Kg.

Please refer to Manual Handling Policy of your organisation before attempting to lift the incubators.

	<p>Risk of unit sliding or tipping.</p> <p>Risk of injury by lifting heavy loads.</p> <p>Risk of damage to the unit.</p>
	<p>Always lift using the handles on the outside of the incubator.</p> <p>Lift with 4 people.</p> <p>Do not lift by using the door.</p>

3.3 STORAGE

i If the incubator has been in a cold location for a period then it needs to acclimatise to room temperature.

Move the incubator to its final location and wait for 4 hours before start up. This will allow any condensation that may have formed to dry. It will also stop the incubator from overshooting temperature set point.

4 INSTALLATION

4.1 LOCATION AND AMBIENT CONDITIONS

i The incubator can be placed on a table or worktop. Please ensure that the site is sufficiently strong enough to carry the weight of the incubator.

MMM do not recommend placing the incubator directly on the floor as this increases the risk of contamination.

Wheeled platforms are available to lift the incubator off the floor. Alternatively two incubators can be stacked using an optional stacking kit. ⇨ **Section 8.**

Correct location of an incubator is very important. The incubator is designed to work in a typical laboratory environment.

For good performance the ambient conditions should be at least 6 °C below the working temperature.

E.g. for a set point of 37.0 °C the ambient temperature must not exceed 31.0 °C.

If the difference between the set point and ambient temperatures is less than 6.0 °C then the set point can be exceeded and temperature fluctuation will occur.

Our performance data was produced at the ideal ambient condition of 25.0 °C. For best performance the ambient temperature should not drastically exceed this figure.

Maximum ambient humidity is 70 % rH, non-condensing. Condensation can occur within the chamber if this figure is exceeded.

A poorly located incubator can experience temperature fluctuations, poor cell growth and contamination of cell cultures. These guidelines will ensure best performance:

- The incubator should be sited on a flat, even surface.
- It should be in a well ventilated and dry area, but not sited directly in the path of ventilation ducts.
- It should be free from vibration.
- It should be kept away from heat sources e.g. radiators, heating pipes, refrigeration plant.
- It should not be in direct sunlight.
- To avoid contamination it should not be placed directly on the floor.
- Allow sufficient distances between adjacent equipment.
- There should not be big swings in ambient temperature.

Leave a clearance of 50 mm from each side and 100 mm from the rear.

Level the incubator by adjusting the four feet. Place a small spirit level on the centre position of the middle shelf as a guide.

When it is level, secure the feet by tightening the lock nuts with a 10 mm spanner.

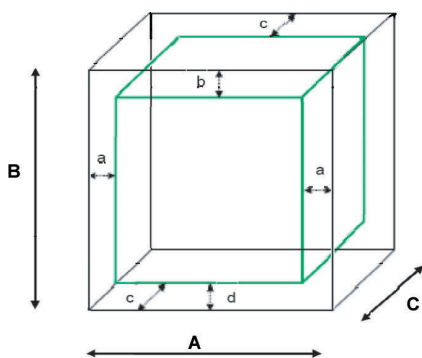
4.2 SHELVES AND USABLE SPACE

Each incubator is supplied with 4 perforated stainless steel shelves. The shelves locate into removable stainless steel racking. The shelves incorporate an anti-tilt mechanism, stopping the shelves from being pulled out too far.

Each shelf measures 690 mm wide by 390 mm deep. The minimum spacing between shelves is 80 mm. There are 8 possible positions for the shelves.

The shelves and racking can be left in place during decontamination.

i The usable space within the incubator is the volume in which the conditions are within our published data.



A, B, C = Internal dimensions

a = distance from left and right wall = 70 mm

b = distance from top = 70 mm

c = distance from front and back wall = 70 mm

d = distance from base = 70 mm

For practical purposes this is the perforated area on each shelf.

- Do not place any samples outside of this space.
- Do not over fill each shelf.
- Allow sufficient room between samples to allow for airflow.
- Do not use the top shelf for very deep samples.

4.3 WATER TRAY

A stainless steel water tray is supplied which allows the incubator to provide 90 % rH.

Place the tray on the floor of the incubator, locating it with the side racking.

Carefully fill the tray with 1,5 litres of distilled, sterilised water.

MMM recommend that you clean and refill the tray every week.

Any spillages within the chamber should be removed and cleaned immediately. Water left on the chamber floor will cause condensation to form.

Under no circumstances should any equipment be placed in the water tray or on the chamber floor.

Remove the water tray before moving the incubator.

Empty the water tray if the incubator is switched off, otherwise condensation will occur.

4.4 GAS CONNECTION

	Risk of injury. Compressed gas. Risk of damage to unit.
	Observe relevant regulations for handling CO₂ Risk of asphyxiation. Site must have adequate ventilation.
	Risk of CO₂ poisoning. Site must have adequate ventilation.

i The incubator is designed for use with CO₂ of 99.5 % purity. Input pressure greater than 1.0 bar (15 psi) will damage the incubator so a pressure reducing valve (PRV) must be used.

The CO₂ inlet to the incubator is via a 4 mm barbed push fitting.

PRV's with the correct fittings and other gas accessories can be supplied by MMM. ⇨ **Section 8.**

For correct connection of CO₂, follow these steps in order:

- 1) Connect the supplied tubing and HEPA filter to the gas supply.
- 2) Fully close the PRV.
- 3) Open the main valve on the gas bottle or central supply.
- 4) Adjust the PRV pressure of the gas supply to between 0.3 bar and 0.7 bar (4.5 to 10 psi).
- 5) Close the main valve on the gas bottle / central supply.
- 6) Connect the other end of the tubing to the incubator CO₂ inlet. Secure with the supplied clip.

Repeat these steps whenever you change the CO₂ bottle or supply.

Turn off the main valve and disconnect from the CO₂ supply if the incubator is to be unused for extended periods.

4.5 ELECTRICAL CONNECTION

	Risk of injury. Risk of damage to unit. Observe correct mains supply voltage.
	Risk of electrical shock. Do not connect with wet hands. No user serviceable parts. Do not remove service panels.
	Disconnect unit in an emergency.

Before connecting the incubator, check that the electrical supply corresponds with the values on the incubator data plate. If in doubt consult a qualified electrician.

The incubator is designed to operate from a single phase electrical supply of: 230 V AC ±10 % 50/60 Hz.

This incubator **MUST** be connected to a protective earthed supply.

Further details can be found in the technical data.

⇒ **Section 12.1**

Plug the supplied power lead into the IEC connector on the rear of the incubator.

Plug the other end of the IEC lead into the electrical supply.




In an emergency you may need to isolate the incubator from the electrical supply by disconnecting the mains supply plug. Make sure that the mains supply plug is easily accessible.

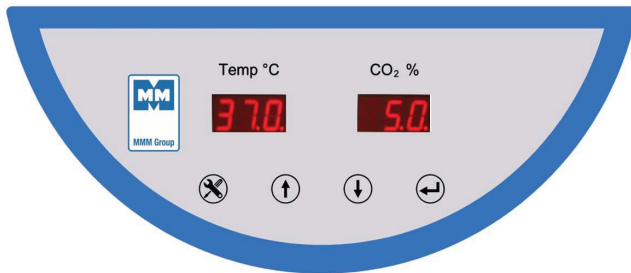
5 GETTING STARTED

5.1 START UP

Turn the incubator on using the power switch on the rear panel. The incubator will power up and the digital displays will show the current temperature and CO₂ level inside the chamber.



If an alarm sounds on start up, press  to silence it. The display will also flash when an alarm activates to show which system is in an alarm state (Temperature, CO₂ or both).



5.2 FACTORY PRESETS


The following values are preset to allow you to work straight away:

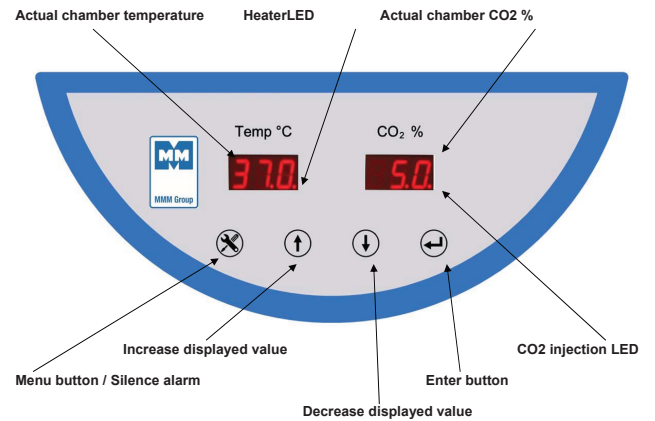
Parameter	Parameter	Value
SPt	Set Point, Temperature	37.0 °C
SPc	Set Point, CO ₂	5.0 %
Hi t	High temperature alarm	+1.0 °C relative to set point
Lo t	Low temperature alarm	-1.0 °C relative to set point
Hi c	High CO ₂ alarm	+1.0 °C relative to set point
Lo c	Low CO ₂ alarm	-1.0 °C relative to set point
dod	Door open alarm delay timer	30 seconds

5.3 MAIN DISPLAY

The main displays show the current temperature and CO₂ conditions inside the chamber. If one of the displays is flashing, an alarm condition exists. ⇒ **Section 5.6** and **Section 5.9** for alarms.



If an alarm sounds on start up, press  to silence it.



The buttons require a 1 second press before any change happens. This is to guard against accidental changes.




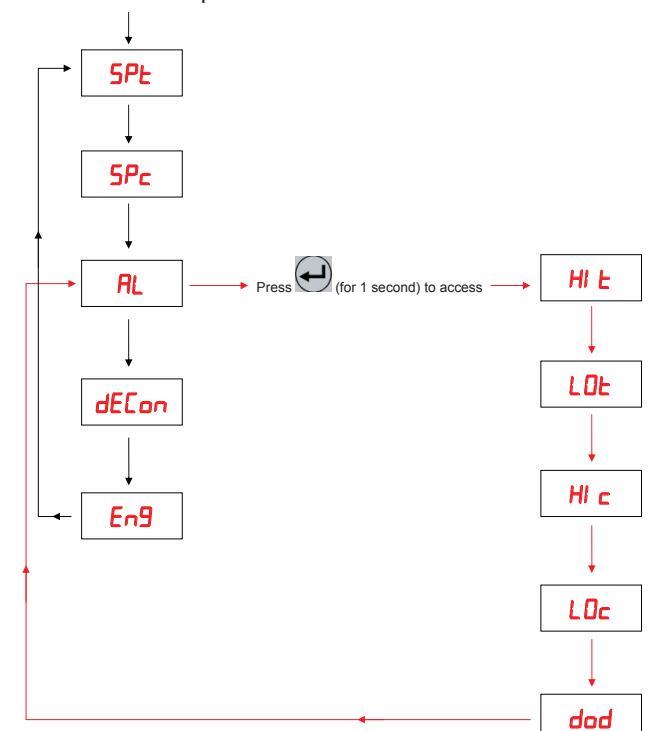
When using the  or  buttons, a long press will result in a faster change of value on the display.

The controls menu map is shown on the next page.

5.4 CONTROLS MENU MAP




Press  (for 1 second) then each subsequent press moves on one step.






5.5 CHANGING TEMPERATURE SET POINT


To change the chamber temperature:

Press  (for 1 second). *SPt* will show in the left display and a value *37.0* in the right display.

Press the  button or the  button to change the value in the right display.


Press  (for 1 second) to confirm.


Hold  and  together at the same time to go back to the main display.

 Minimum set point is limited to 0.0 °C.
Maximum set point is limited to 60.0 °C.


5.6 CHANGING CO₂ SET POINT



To change the chamber CO₂ level:


Press  (for 1 second). *SPc* will show in the left display and a value *37.0* in the right display.

Press  (for 1 second). *SPc* will show in the left display and a value *5.0* in the right display.

Press the  button or the  button to change the value in the right display.

Press  (for 1 second) to confirm.

Hold  and  together at the same time to go back to the main display.

 Minimum set point is limited to 0.0 %
Maximum set point is limited to 20.0 %.

5.7 HIGH AND LOW TEMPERATURE ALARMS

The incubator has high and low temperature alarm system as standard. When the chamber temperature triggers the alarm, the Temperature display will flash and a buzzer will sound.

The high and low alarm limits are relative to the chamber set point which means that they do not need adjusting when you change the chamber temperature. The over and


under temperature alarms will “follow” the changes in your chamber temperature.

For example:

If the chamber temperature set point is 37.0 °C and the high alarm limit is +1.0 °C, the alarm will trigger at 38.0 °C (1.0 °C higher than the chamber temperature).

If the chamber temperature set point is changed to 39.0 °C, the high alarm limit will still be +1.0 °C, so the alarm will trigger at 40.0 °C (1.0 °C higher than the chamber temperature).





If an alarm sounds, press  to silence it.

To change the high temperature alarm ⇒ **Section 5.8**


To change the low temperature alarm ⇒ **Section 5.9.**



5.8 CHANGING HIGH TEMPERATURE ALARM

Press  (for 1 second). *SPt* will show in the left display and a value *37.0* in the right display.



Press  (for 1 second). *SPc* will show in the left display.

Press  (for 1 second). *AL* will show in the left display.


Press  (for 1 second). *Hi t* will show in the left display.


Press  or  to change the value in the right display. (Default value is *1.0*).

Press  (for 1 second) to confirm new value.


Hold  and  together at the same time to go back to the main display.


5.9 CHANGING LOW TEMPERATURE ALARM



Press  (for 1 second). *SPt* will show in the left display and a value *37.0* in the right display.


Press  (for 1 second). *SPc* will show in the left display.



Press  (for 1 second). *AL* will show in the left display.

Press  (for 1 second). *Hi L* will show in the left display.

Press  (for 1 second). *LoL* will show in the left display.

Press  or  to change the value in the right display. (Default value is *1.0*).

Press  (for 1 second) to confirm new value.

Hold  and  together at the same time to go back to the main display.

5.10 HIGH AND LOW CO₂ ALARMS

The incubator has high and low CO₂ alarm system as standard. When the chamber CO₂ level triggers the alarm, the CO₂ display will flash and a buzzer will sound.


The high and low alarm limits are relative to the chamber set point which means that they do not need adjusting when you change the chamber temperature. The over and under CO₂ alarms will “follow” the changes in your chamber CO₂ level.

For example:

If the chamber CO₂ set point is 5.0 % and the high alarm limit is +1.0 %, the alarm will trigger at 6.0 % (1.0 % higher than the chamber CO₂ set point).

If the chamber CO₂ set point is changed to 10.0 %, the high alarm limit will still be +1.0 %, so the alarm will trigger at 11.0 % (1.0 % higher than the chamber CO₂ set point).





If an alarm sounds, press  to silence it.


To change the high CO₂ alarm ⇒ **Section 5.11**


To change the low CO₂ alarm ⇒ **Section 5.12.**


5.11 CHANGING HIGH CO₂ ALARM


Press  (for 1 second). *SPH* will show in the left display and a value *37.0* in the right display.



Press  (for 1 second). *SPC* will show in the left display.


Press  (for 1 second). *HL* will show in the left display.



Press  (for 1 second). *Hi L* will show in the left display.

Press  (for 1 second). *LoL* will show in the left display.


Press  (for 1 second). *Hi C* will show in the left display.


Press  or  to change the value in the right display. (Default value is *1.0*).


Press  (for 1 second) to confirm new value.


Hold  and  together at the same time to go back to the main display.


5.12 CHANGING LOW CO₂ ALARM


Press  (for 1 second). *SPH* will show in the left display and a value *37.0* in the right display.


Press  (for 1 second). *SPC* will show in the left display.



Press  (for 1 second). *HL* will show in the left display.


Press  (for 1 second). *Hi L* will show in the left display.



Press  (for 1 second). *LoL* will show in the left display.

Press  (for 1 second). *Hi C* will show in the left display.

Press  (for 1 second). *LoC* will show in the left display.

Press  or  to change the value in the right display. (Default value is *1.0*).


Press  (for 1 second) to confirm new value.


Hold  and  together at the same time to go back to the main display.


5.13 DOOR OPEN ALARM


The incubator is fitted with a “door open” alarm system to alert you when the outer door has not been closed properly or when it has been left open for a period of 30 seconds or more. The 30 second delay timer should be suitable for most users, but if more time is needed to load and unload the chamber, the door open timer can be adjusted.


5.14 CHANGING THE DOOR OPEN ALARM DELAY TIMER


Press  (for 1 second). *SPt* will show in the left display and a value *37.0* in the right display.


Press  (for 1 second). *SPc* will show in the left display.


Press  (for 1 second). *RL* will show in the left display.



Press  (for 1 second). *Hi t* will show in the left display.


Press  (for 1 second). *LOt* will show in the left display.



Press  (for 1 second). *Hi c* will show in the left display.

Press  (for 1 second). *LOc* will show in the left display.

Press  (for 1 second) *dad* will show in the left display and a value *3.0* in the right display.

Press  or  to change the value in the right display. Default value is *3.0* which is 30 seconds (ignore the decimal point).

Press  (for 1 second) to confirm new value.

Hold  and  together at the same time to go back to the main display.

6 HIGH TEMPERATURE STERILISATION



Risk of damage to unit.

The CO₂ Standard D is not intended to be used as an autoclave and must not be used for sterilising any other equipment.



Only the shelves, racking and water tray can be left inside the incubator during decontamination.



Risk of injury. Risk of burning. Internal surfaces reach 160 °C during the decontamination cycle.



The CO₂ Standard D incubator is equipped with a high temperature decontamination function. This raises the chamber temperature to 160 °C for 4 hours.

Independent evaluation has shown this to be effective against all spores and bacteria commonly associated with laboratory incubator contamination.

6.1 ABOUT THE DECONTAMINATION CYCLE

The decontamination cycle consists of 3 distinct phases:

Phase	What happens?
Heat up	During the heat up phase, maximum power is applied to the heating elements. CO ₂ control is disabled to protect the sensor.
4 hour dwell	The dwell phase starts once the chamber temperature reaches 160 °C. Heater power is automatically reduced to regulate the temperature at 160 °C.
Cool down	After 4 hours at 160 °C power is removed from the heaters and the cooling phase begins. The chamber is allowed to cool naturally. When the chamber temperature reaches 38 °C the CO ₂ control is re-enabled.

6.2 PREPARATION


Empty and dry the water tray. (The empty water tray can be left inside the chamber for the duration of the decontamination incubator if required).


Clear any samples or equipment from the shelves.


The shelves and racking can be left in place during the decontamination cycle.


Leave the CO₂ pipe connected.


6.3 STARTING THE DECONTAMINATION CYCLE


Press  (for 1 second). *SPt* will show in the left display and a value *37.0* in the right display.


Press  (for 1 second). *SPc* will show in the left display and a value *5.0* in the right display.


Press  (for 1 second). *AL* will show in the left display.

Press  (for 1 second). *DEC On* will show on the left displays.

Press  (for 1 second). *REi QUE TRAY* (remove tray) will show on the displays.

Press  (for 1 second). *StARt CYCLE* (start cycle) will show on the displays.

Press  (for 1 second). *ARE YOU SURE ?* (are you sure?) will show on the displays.

Press  (for 1 second) to start the decontamination cycle.

The decontamination cycle will start. The cycle timer starts and counts down from 240 minutes (4 hours).

DEC 240 will show on the displays.



The time taken for a full decontamination cycle is dependent on the cool down phase.

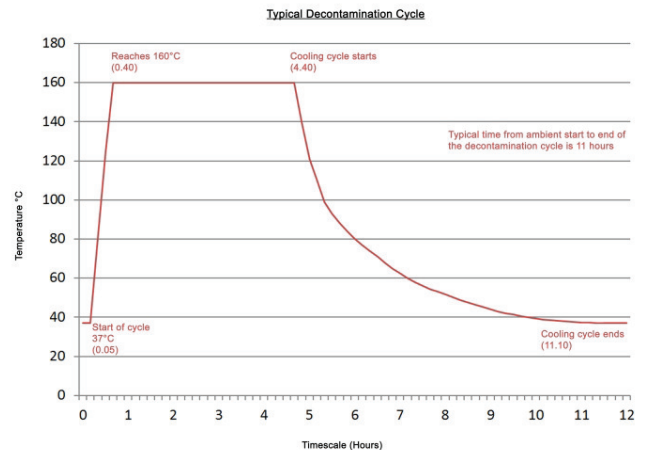
More about decontamination cycle time ⇒ **Section 6.4.**

6.4 CYCLE TIME

As cooling relies on the natural heat loss through the chamber walls the time taken is affected by the location of the incubator and the ambient temperature. So, an incubator placed under a worktop will take longer to cool than a freestanding incubator on a worktop.

We recommend that you carry out the decontamination cycle at the end of a working day. That way, when you return to work in the morning the incubator will be ready for you to use.

This decontamination cycle graph shows a typical start-to-finish duration of 11 hours:



6.5 COOLING PHASE

After the 4 hour dwell is completed the incubator goes into the cooling phase of the decontamination cycle. All power to the heaters is removed and the incubator cools naturally. CO₂ control is also disabled.

The cooling phase ends once the temperature falls to within 10.0 °C of the working set point (47.0 °C if working set point is 37.0 °C). At this point normal control of temperature and CO₂ resumes.

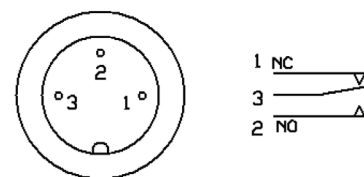
7 OPTIONS

7.1 VOLT FREE ALARM RELAY (BMS)

The CO₂ Standard Dincubators are fitted as standard with a volt free changeover relay for connection to a building maintenance system (BMS).

This relay changes state whenever the incubator is in an alarm condition. The relay changes back to its original state once the alarm condition clears.

The connections are as shown below:



SOLDER VIEW OF CABLE SOCKET

7.2 MULTI-DOOR (8ID)

This can be retro fitted.

The inner glass door can be replaced with a multi-door. This has 8 smaller glass doors in a stainless steel frame.

By only opening one small door to access the sample you require, less heat, humidity and CO₂ are lost.

This improves recovery of the chamber back to ideal conditions and reduces the amount of CO₂ used.



8 ACCESSORIES

This is the list of some of the accessories currently available.

Please contact MMM if the part you require is not listed.

PTSK2	Stacking kit for 2 x Standard 190 / 190D
PTST2	Wheeled platform for Standard 190 / 190D
PRV	Single stage CO ₂ pressure reducing valve
PRV2	Two stage CO ₂ pressure reducing valve
RO6	In line CO ₂ reducing valve with gauge
PNEU	Automatic change over unit for two cylinders
TYGON	Tygon gas tubing

9 CLEANING

	Electrical hazard. Do not spill water or cleaning fluids over the inner or outer surfaces.
	Disconnect before cleaning.
	Completely dry the unit before reconnecting the power.

9.1 OUTER SURFACES

Always disconnect the incubator before cleaning.

It is recommended that the exterior of the incubator regularly wiped clean. Use a non-abrasive soft cloth dampened with a warm soapy water solution.

Make sure the exterior is thoroughly dry after cleaning.

9.2 INNER SURFACES

It is advisable to clean the chamber regularly.

Use a 70 % isopropanol 30 % distilled water solution. Apply using a sterile cloth so as not to introduce any contamination.

Never use any of the following:

- Any chlorine based detergents or bleaches.
- Any acidic cleaning agents.
- Sodium Azide
- Iodine
- Ferric Chloride

Wipe over the inner surfaces of the stainless chamber, all the shelves including the underside of the shelves, the shelf racks and the water tray.

The shelves, racking and water tray can be sterilised in an autoclave if required.

Clean the glass door and the inner gasket seal.

Clean the inner stainless steel surfaces of the outer door and the outer door gasket.

9.3 OXIDATION AT HIGH TEMPERATURE (CO₂ STANDARD D ONLY)

When operated at 160 °C the action of atmospheric oxygen may cause discolouration of the stainless steel surfaces. This natural oxidation is not detrimental to the quality of the incubator and is completely harmless.

10 SERVICE

10.1 WARRANTY

CO₂ Standard D incubators are supplied with a two year manufacturer's warranty from the date of installation.

To register your warranty, please fill in the User Guarantee Registration Card and post to MMM or to your local distributor.

10.2 PREVENTATIVE MAINTENANCE

CO₂ Standard D incubators are built to last for many years, but to ensure that the unit continues to perform to the highest level we recommend that you purchase a preventative maintenance contract from MMM.

The incubator should be calibrated annually.

10.3 RETURNING A UNIT

Should your incubator require repair or maintenance then contact your local distributor in the first instance. Returns to MMM will only be accepted with prior authorisation from the Service Department. We recommend that you keep all packaging.

When returning a unit please include the following information:

- Incubator model and serial number
- Date of purchase
- Authorisation number
- Name of local distributor if not purchased from MMM
- A detailed description of the fault (we can never have too much information)
- Where was the incubator located
- Contact details of the person who reported the fault
- A completed decontamination certificate (plus a copy faxed through in advance).



MMM cannot accept any returns without a completed decontamination certificate.

11 DISPOSAL



The incubator must not be disposed of at public waste collection points. It must only be disposed of by licensed waste recycling companies.

Contact MMM for further information regarding WEEE regulations.

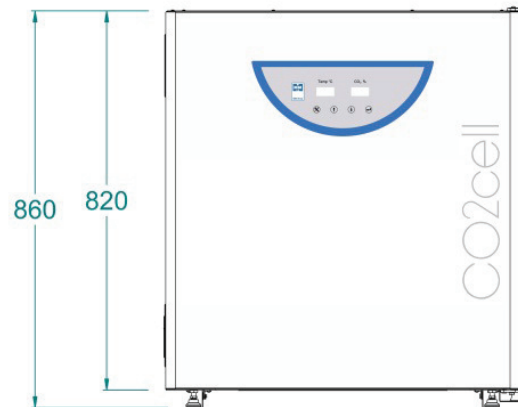
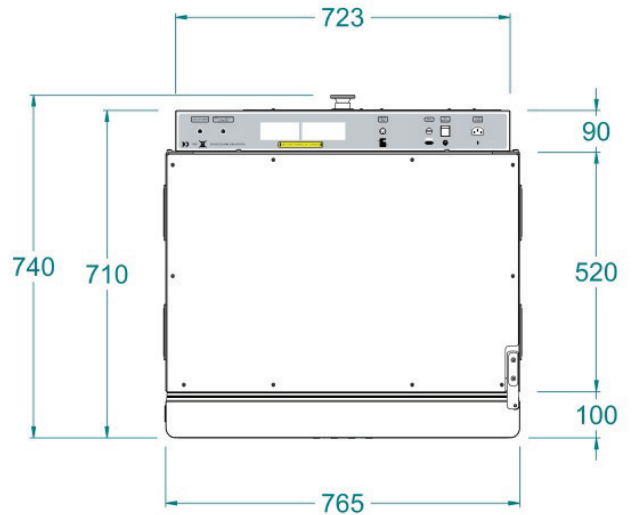
12 TECHNICAL INFORMATION

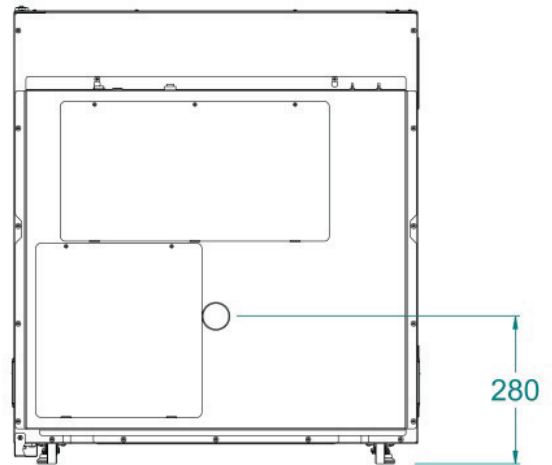
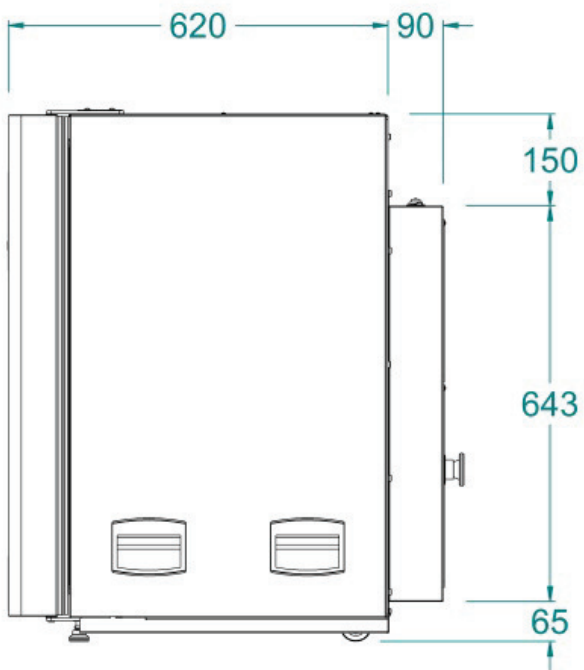
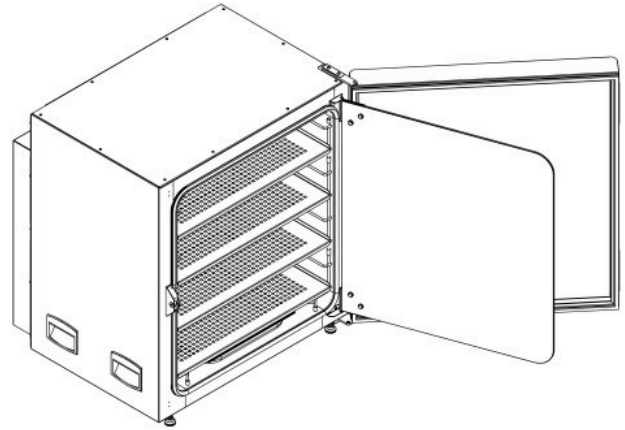
12.1 TECHNICAL DATA

TEMPERATURE MANAGEMENT		
Range	°C	5 °C above ambient to 60 °C
Control	°C	0.1 °C
Stability	°C	± 0.1 °C @ 37.0 °C
Uniformity	°C	±0.25 °C @ 37.0 °C
Door recovery, 30 s opening	minutes	13
CO ₂ MANAGEMENT		
Range	% CO ₂	0-20 %
Control	% CO ₂	± 0.1 %
Stability	% CO ₂	± 0.2 %
Uniformity	% CO ₂	± 0.2 %
Door recovery, 30 s opening	minutes	6
CO ₂ sensor type	NDIR	
CO ₂ inlet pressure	Bar	0.3 to 0.7
CO ₂ inlet connection type	4 mm push fit barbed type	
HUMIDITY MANAGEMENT		
Humidity control type	Passive	
Range	% rH	90 % ± 5 %
Door recovery, 30 s opening	minutes	50
ELECTRICAL DATA		
Nominal voltage 50/60 Hz	V	230 1N ~PE
Power; Standard 190	W	380
Power; Standard 190D (decon cycle)	W	1800
Power consumption	kWh	0.058
Main fuse F1; Standard 190	5.0 A / 6.3 x 32 mm / 250 V / TT	
Main fuse F1; Standard 190D	8.0 A / 6.3 x 32 mm / 250 V / TT	
EXTERIOR DIMENSIONS		
Width	mm (inches)	765 (30.1)
Height	mm (inches)	862 (34)
Depth	mm (inches)	734 (28.9)
Wall clearance, rear	mm (inches)	100 (3.94)
Wall clearance, side	mm (inches)	50 (1.97)
INTERIOR DIMENSIONS		
Width	mm (inches)	632 (24.9)
Height	mm (inches)	686 (27)
Depth	mm (inches)	440 (17.3)

Volume	Litres (cu. ft.)	190 (6.7)
Number of shelves	8 shelves Maximum of 8.	
SHIPPING DIMENSIONS		
Width	mm (inches)	925 (36.4)
Height	mm (inches)	1080 (42.5)
Depth	mm (inches)	850 (33.5)
WEIGHT		
Standard 190, Net	kg (lbs)	94,5 (208)
Standard 190D, Net	kg (lbs)	104 (229)
Standard 190, Shipping	kg (lbs)	109 (240)
Standard 190D, Shipping	kg (lbs)	117,5 (259)

12.2 DIMENSIONAL DRAWINGS







EC-DECLARATION OF CONFORMITY



Date 2012-06-09	European Directive 2006/95/EC, 2004/108/EC
---------------------------	--

Manufacturer

MMM Medcenter Einrichtungen GmbH, Semmelweisstrasse 6, D-82152 Planegg / München

declare on our own responsibility that product

incubator:	All culture safe touch and precision CO ₂ incubator
trade name:	CO2CELL
model:	CO2Cell Standard CO ₂ , CO2Cell Comfort CO ₂

meets all the provisions of the Directives no. 2006/95/EC, 2004/108/EC, which apply to him.

This declaration is valid for all of the above products, that are marketed after the date of issue and is valid until changes in the facts contained therein.

Standards applied:

EN 60601-1:2006	Medical electrical equipment - Part 1: General requirements for basic safety and essential performance
EN 60601-1-2:2007	Medical electrical equipment - Part 1-2: General requirements for basic safety and essential performance - Collateral standard: Electromagnetic compatibility - Requirements and tests
EN 61000-3-2:2006	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current \leq 16 A per phase)
EN 61000-3-3:1995 +Amd 1+2	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current \leq 16 A per phase and not subject to conditional connection

Ing. Milan Krajcar
executive
jednatel



... excellence
in medical and laboratory
engineering

Manufactured in the EU



MMM Medcenter Einrichtungen GmbH
Sommelweisstrasse 6
D-82152 Planegg
Germany

T. +49 89 89 92 26 20
F. +49 89 89 92 26 30
e-mail: medcenter@mmmgroup.com