

| Model Number                        | MIR-154                                                                                | MIR-254                    | MIR-554                    |
|-------------------------------------|----------------------------------------------------------------------------------------|----------------------------|----------------------------|
| External dimensions (W x D x H)*1   | 700 x 580 x 1018                                                                       | 700 x 580 x 1418           | 800 x 832 x 1810           |
| Internal dimensions (W x D x H)     | 620 x 348 x 555                                                                        | 620 x 348 x 1088           | 640 x 550 x 1160           |
| Volume                              | 123                                                                                    | 238                        | 406                        |
| Net weight                          | 78                                                                                     | 108                        | 195                        |
| Performance                         |                                                                                        |                            |                            |
| Temperature range                   | -10°C to +40°C (Ambient temperature: 5°C to 35°C, no load)                             |                            |                            |
| Temperature fluctuation             | ±0.2 degrees at Heater PID control (SV 50°C, Ambient temperature: 20°C, no load)       |                            |                            |
| Temperature uniformity              | ±1.5 degrees at Compressor ON-OFF control (SV 5°C, Ambient temperature: 20°C, no load) |                            |                            |
| Control                             |                                                                                        |                            |                            |
| Temperature setting indication      | Digital setting with keypad, digital display                                           |                            |                            |
| Temperature control                 | Microprocessor PID system (When compressor operates, ON-OFF control)                   |                            |                            |
| Temperature sensor                  | Thermistor                                                                             |                            |                            |
| Construction                        |                                                                                        |                            |                            |
| Exterior material                   | Galvanised steel with baked-on finish                                                  |                            |                            |
| Interior material                   | Stainless steel                                                                        |                            |                            |
| Door                                | Galvanised steel with baked-on finish, triple-pane glass                               |                            |                            |
| Shelves                             | 3                                                                                      | 5                          | 5                          |
| Insulation                          | Polyethylene coated steel wire, adjustable                                             |                            |                            |
| Circulation system                  | Foamed-in-place rigid polyurethane                                                     |                            |                            |
| Compressor                          | Forced air circulation                                                                 |                            |                            |
| Evaporator                          | Hermetic type                                                                          |                            |                            |
| Condenser                           | Single phase, Output 150 W                                                             | Single phase, Output 200 W | Single phase, Output 270 W |
| Defrosting system                   | Fin and tube type, forced circulation                                                  |                            |                            |
| Heater                              | Wire and tube type natural air cooling system                                          |                            |                            |
|                                     | Manual / Automatic                                                                     |                            |                            |
|                                     | Cord heater 141 W                                                                      | Cord heater 218 W          | Cord heater 322 W          |
| Alarms                              |                                                                                        |                            |                            |
| Automatic setting temperature alarm | When temperature deviates more than ±1.0°C to ±5.0°C, visual and audible alarm         |                            |                            |
| Over temperature protection device  | Visual and audible alarm                                                               |                            |                            |
| Program function                    | 12-step repeat from 1 to 98 times or unlimited. Max. 10 programs memorized.            |                            |                            |
| Interior lamp                       | 15 W x 1, Fluorescent lamp (Setting temperature -10°C to 40°C)                         |                            |                            |
| Accessories                         | —                                                                                      |                            |                            |
| Key 1 set                           | —                                                                                      |                            |                            |
| Electrical                          |                                                                                        |                            |                            |
|                                     | MIR-154-PK                                                                             | MIR-154-PE                 | MIR-154-PA                 |
|                                     | MIR-254-PK                                                                             | MIR-254-PE                 | MIR-254-PA                 |
|                                     | MIR-554-PK                                                                             | MIR-554-PE                 | MIR-554-PA                 |
| Power supply                        | V 220                                                                                  | 220 - 240                  | 115                        |
| Frequency                           | Hz 60                                                                                  | 50                         | 60                         |
|                                     |                                                                                        | 50                         | 60                         |
|                                     |                                                                                        | 50                         | 60                         |
| Quality Management System           |                                                                                        |                            |                            |
| Certification                       | ISO9001                                                                                |                            |                            |

Caution: PHC Corporation guarantees the product under certain warranty conditions. PHC Corporation is in no way shall be responsible for any loss of content or damage to content.

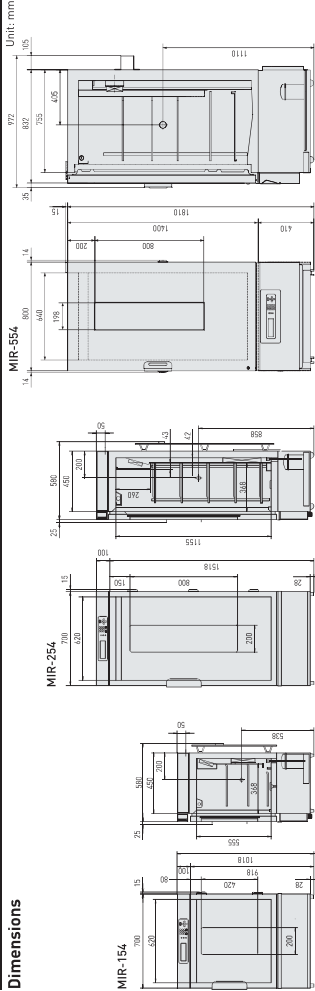
\*1 External dimensions of main cabinet only - see dimension drawings showing handles and other external projections. • Appearance and specifications are subject to change without notice.

## Options

- Stacking plate: **MIR-516B-PW** (for MIR-154)
- Lock Kit: **MIR-LP-PW** (for MIR-154, MIR-254)
- Additional Illumination Kit: **MIR-L15-PE**, **MIR-L15-PK**, **MIR-L15-PA**
- Interface Board (For data acquisition system MTR-5000 users only): **MTR-L03-PW** or **MTR-480-PW**

Note: When the MIR-L15 is installed, the illumination lamps will automatically turn off at temperatures outside the +2°C to +50°C range.

## Dimensions



**Preservation Equipment, Experimental Environment Equipment, Dispensary Laboratory use**  
The management of the design, development, production and servicing of the above.

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# Incubation

## Cooled Incubators

Versatile incubators meet a wide range of experimental needs with expanded temperature control range and enhanced functions



# Cooled Incubators

PHCbi's MIR series incubators have been recognised as exceptional units suitable for a wide range of applications. The wide variety of temperatures and lighting patterns that are essential in biological research and environmental studies can now be accurately reproduced and controlled.



Effective capacity:  
**123 litres**

MIR-154



Effective capacity:  
**238 litres**

MIR-254



Effective capacity:  
**406 litres**

MIR-554

## Improved Experimentation of Repetitive Operation and Operability

### Programmable Function with Microprocessor Control

Combining flexible Temperature (H), Light ON/OFF (L) and Time control (T), a maximum 12-step plus constant operation or max. 12-step repeating operation can be programmed according to the experimentation requirements. A program can be set to repeat for a minimum of one time to a maximum of 99 times or continuous repeat.

Program input is simple and the incubator accommodates a range of diversified experimentation requirements, proving ideal for experimentation during night time and holidays; experimentation that requires settings to be changed, microorganism culture and preservation.

The new MIRs also offer the choice of timer mode, 24-hour Clock mode and Timer mode to suit user experiments. Up to 10 programs can be stored for convenient retrieval and set-up of frequently run experiments. Individual programs can be combined using the Join function. Constant operation mode without step operation is also available.

#### Sample program 1

##### 24-hour Clock mode

10 steps, cycle: 31 times

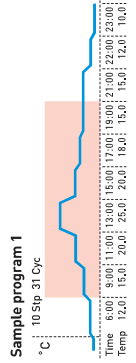
This is one cycle consisting of 10 steps, repeated 31 times in this program. (Max is 99 cycles or continuous repeat) At program start, select "Clock mode" on the running mode screen.

#### Sample program 2

##### Timer mode

2 steps, cycle: Continuous repeat

This is one cycle consisting of 2 steps, which is repeated continuously in this program. (Max is 99 cycles or continuous repeat) At program start, select "Timer mode" on the running mode screen.



### Control panel



## High-precision Temperature Environment

### Wide Temperature Control Range from -10°C to +60°C

With a wide temperature range from -10°C to +60°C, PHCbi Cooled Incubators allow a full range of precise experiments including environmental tests to microorganism cultures and plant germination tests.

### Precise Microprocessor Temperature Control

PHCbi Cooled Incubators incorporate a high precision microprocessor temperature control combined with a heater PID and compressor ON-OFF system.

### Intuitive Operation with New LCD Display

- Easy operability with LCD display and pop up menu
- 24-hour Clock mode and Timer mode are selectable.
- Combination of multiple programs in Join function
- Programmable function start date and hour
- Operation data can be auto-recorded and graphically displayed.
- Data can be sent to PC using optional communication interface board [MTR-480]
- Chamber Light ON-OFF control

### Condensation Prevention

A humidity reduction mode helps reduce inner chamber condensation that may occur during high temperature operation.

## Alarm and Security System to Protect Sample Safety

### Automatic Setting Temperature Alarm

When the chamber temperature deviates more than  $\pm 1^{\circ}\text{C}$  to  $\pm 5^{\circ}\text{C}$ , all digits of the digital indicator flash. 15 minutes (default) later a buzzer will sound. This system also automatically allows programmed function or setting value changes.

### Independent Over-Temperature Protection Device

This incubator incorporates an excessive temperature prevention circuit that protects experimentation materials in the rare event that a temperature abnormality does occur. This system turns off the heater and chamber fan motor when too high a temperature is detected, and turns off the compressor when too low a temperature is detected.

### Programmed Memory Backup Mechanism

Should the power source be interrupted due to power failure or other event, programmed data remains stored in memory. When the power source is restored, operation can be continued according to the predetermined program.

### Automatic Return Buzzer Switch

After an abnormality occurs, the alarm automatically switches to the ON mode, even if the operator forgets to return the alarm buzzer to the ON mode, thus ensuring safe and secure operation.

### Tamper Proof

A key lock function is provided so that settings may not be changed unintentionally.

### Self Diagnostic Function

Should a malfunction occur, the location of the malfunction can be digitally indicated, allowing quick operator response.

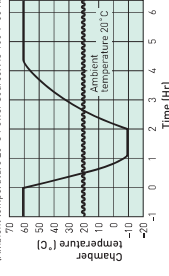
### Data acquisition system

Data acquisition software enables remote monitoring of cooled incubators.

## Performance Data

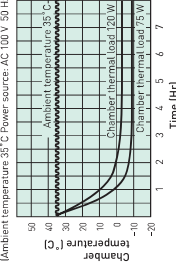
### MIR-154

Chamber pull-down/pull-up characteristics  
(Ambient temperature 20°C Power source: AC 100 V 50 Hz)



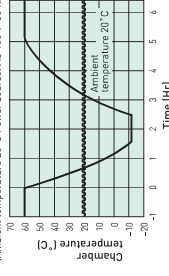
### Pull-down characteristics for thermal load in chamber

(Ambient temperature 35°C Power source: AC 100 V 50 Hz)



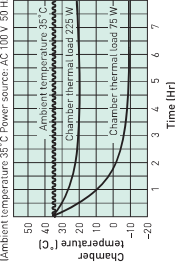
### MIR-254

Chamber pull-down/pull-up characteristics  
(Ambient temperature 20°C Power source: AC 100 V 50 Hz)



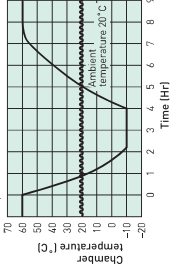
### Temperature pull-down characteristics for thermal load in chamber

(Ambient temperature 35°C Power source: AC 100 V 50 Hz)



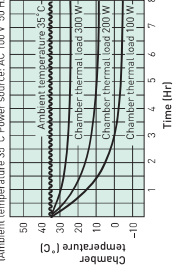
### MIR-554

Chamber pull-down/pull-up characteristics  
(Ambient temperature 20°C Power source: AC 100 V 50 Hz)



### Temperature pull-down characteristics for thermal load in chamber

(Ambient temperature 35°C Power source: AC 100 V 50 Hz)



\*The data shown above are taken with the fluorescent lamp off.  
\*Characteristics may vary depending on the product or operating conditions.