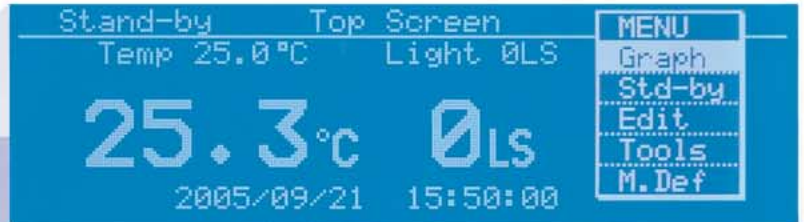


## Plant Growth Chambers

- Graphic LCD provides easier operation
- Programmable temperature, lighting and humidity function (MLR-351H)
- Microprocessor PID control and Refrigeration Capacity Control
- Data logging function

## MLR-351/351H



MLR-351H



MLR-351

- Temperature range:
  - 0 to +50°C** (MLR-351) (Lamp OFF)
  - +10 to +50°C** (Lamp ON)
- Lighting range:
  - 0 to 20,000 lx** (Adjustable)
- Humidity range (MLR-351H only):
  - 60 to 90% RH** (Light OFF)
  - 55 to 85% RH** (Light ON)

**Culture of plant cells, tissues and organs**

**Acclimation and rearing of plants**

**Incubation and rearing of insects**

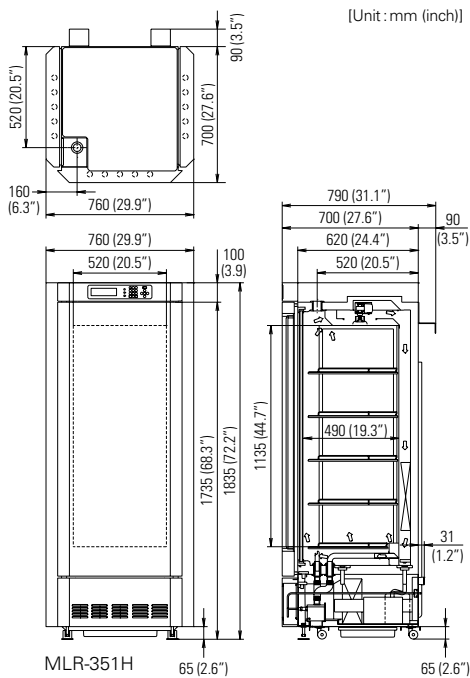
# MLR-351/351H

The wide variety of temperatures and lighting patterns that are essential in plant research can now be accurately reproduced and controlled. And you get humidity control\* too! (\*MLR-351H only)

## Features

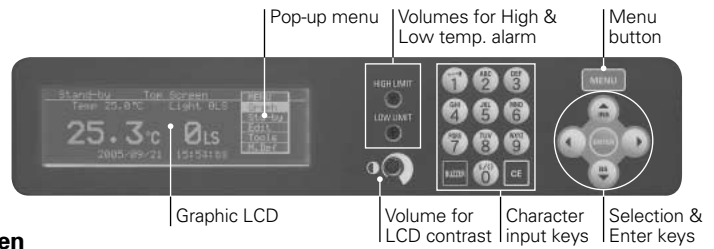
- Microprocessor PID and Refrigeration Capacity control eliminate temperature fluctuations and thereby improve temperature control. This allows superior precision experiments plus energy and electricity savings.
- Programmable temperature function is perfect for temperature cycle and vernalization treatment research.
  - 12-step programmes x 10 patterns can be memorized.
  - Selectable clock mode or timer mode
  - Multiple programmes can be "connected" (Join mode).
  - Starting day and time of operation can be programmed.
  - Operation data of approximately last 2 weeks (6-minute intervals) can be automatically recorded.
  - The data can be retrieved on the control panel.
  - The data can be transmitted to a PC (CSV data via RS-232C, interface board MTR-480 required).
  - Easy calibration: temperature and humidity can be calibrated easily through the control panel.
- Small and lightweight, high-molecular membrane-type humidity sensor also boasts a high degree of accuracy and reproducibility. Of the newest high-molecular membrane type, the humidity sensor accurately measures chamber humidity (MLR-351H only).

## Dimensions



## Control Panel

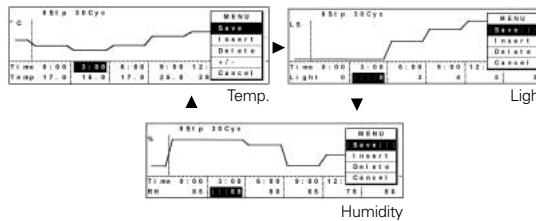
Graphic LCD panel with pop-up menu function on control panel provides more visual display and allows intuitive operation.



## Programme Setting Screen

### 1. Selection of menu

Temp. light and humidity pages scroll by down key



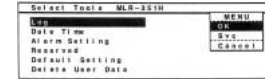
### 2. Various ways of starting programmes

Selection from Subtraction & Time mode, Join mode and start time mode



### 3. Data logging function

Operation data can be recorded



## Specifications

Model No.	MLR-351	MLR-351H
<b>Exterior dimensions (W x D x H)</b>	760 x 700 x 1,835mm (29.9" x 27.6" x 72.2")	
<b>Interior dimensions (W x D x H)</b>	520 x 490 x 1,135mm (20.5" x 19.3" x 44.7")	
<b>Effective capacity</b>	294 litres (10.4 cu.ft.)	
<b>Exterior finish</b>	Painted steel	
<b>Interior finish</b>	Stainless steel, paired glass window on right and left sides (370 x 1,110mm) (14.6" x 43.7")	
<b>Door</b>	Painted steel	
<b>Shelves</b>	Hard steel wire on polyester coating, 4 pcs. Inner dimensions: W465 x D450mm (18.3" x 17.7"), Maximum load: 25kg/shelf Hard steel wire on polyester coating with stainless steel cover, 1 pc. (bottom) Inner dimensions: W355 x D395mm (14.0" x 15.6"), Maximum load: 25kg/shelf	
<b>Access hole</b>	40mm diameter x 1 (chamber top position)	
<b>Casters</b>	4	
<b>Air circulation</b>	Forced air circulation	
<b>Heater</b>	340W	
<b>Defrost</b>	Automatic defrost (3 patterns), Manual defrost	
<b>Option</b>	MTR-480, MLR-5144 (Recorder bracket)*	
<b>Net weight (Approx.)</b>	220 kg (485 lbs.)	230 kg (507 lbs.)
<b>Control related specifications</b>		
<b>Temperature control range</b>	0°C to +50°C (Lamps off) +10°C to +50°C (Lamps on)	+5°C to +50°C (Lamps off) +10°C to +50°C (Lamps on)
<b>Temperature distribution (AT 20°C, set temp. 25°C, no load)</b>	±1.0°C (Lamps off), ±2.5°C (Lamps on)	
<b>Temperature fluctuation (AT 20°C, set temp. 25°C, no load)</b>	±0.3°C	
<b>Temperature control</b>	Microcomputer PID and Refrigeration capacity control	
<b>Lighting range</b>	0 to 20,000lx Fluorescent lamp 40w x 15, 6 increments (0, 1, 2, 3, 4, 5)	
<b>Humidity</b>	N/A Ultrasonic humidifier PID control	
<b>Humidity control range</b>	N/A	60 to 90%RH (+15°C to +45°C and light OFF) 55 to 85%RH (+15°C to +45°C and light ON)
<b>Programme function</b>	Temperature and light 12 steps (10 patterns), 98 cycle or limitless Clock mode: 00:00 - 23:59 Timer mode: 00:01 - 99:59	
<b>Data logging function</b>	Up to approx. 14 days with 6-minute intervals (record cannot be logged during a blackout), The daily information can be shown in graph display. (Older data will be deleted automatically when memory becomes full.)	
<b>Real time clock</b>	Battery backup for clock function	
<b>Analog output for recording</b>	0 to 100mV / Temperature: 0 to +50°C / Light: 0 to 5 / Humidity: 0 to 100RH	
<b>Alarms and safety</b>	Temperature alarm, High and low temperature limit, Humidity alarm	

\* Appearance and specifications are subject to change without notice.

\* Recorder is not produced by SANYO.

Distributed by:



SANYO Electric Co., Ltd.

SANYO Sales & Marketing Corporation

5-15, Hiyoshi-cho 2-chome, Moriguchi City, Osaka, 570-8634, Japan

Telephone: +81-6-6992-0322 Fax: +81-6-6992-9291

URL <http://www.sanyo.co.jp/cmg/biomedical>

©2005 SANYO Printed in Japan 2005.11. MA. SHR100