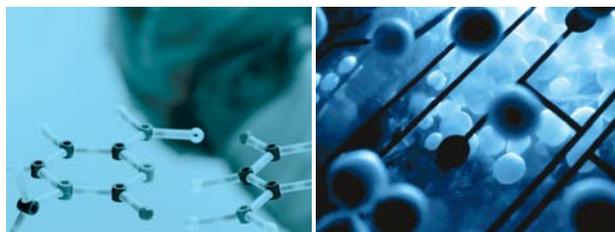


Features of DAIHAN Incubators



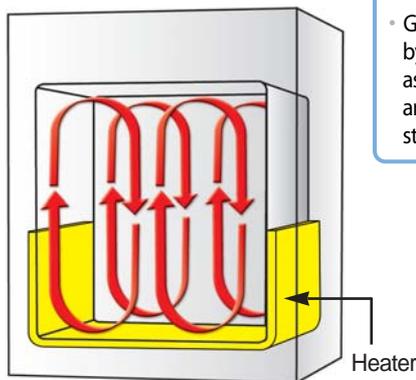
High Performance Heating Mechanism of DAIHAN accomplishing world's best temperature accuracy and uniformity

The new types of Incubator of DAIHAN are outfitted with high performance heating mechanism that is optimized respectively for capacity of chamber, power of heating element and air circulation type (Gravity Convection or Forced Convection).

The temperature displayed on the controller is accurately consistent with the actual temperature in the very center of the chamber or the average temperature in the entire area of the chamber, which maintains precisely within fluctuation specification. In addition, the temperature in the entire area of the chamber shows a very high stability keeping within a very slight variation specification in terms of temperature uniformity. Simultaneously, through the optimization of Fuzzy-PID controller, the 'heat-up time' to reach the Set Temperature after operating and the 'recovery time' to get back to the set temperature after opening and closing of the door are very short.

The newly developed high performance heating mechanism has achieved high degree of temperature accuracy and uniformity in the chamber. This is achieved by the heating elements installed on three sides - that is, the left, right and bottom parts of a chamber - which directly heat the stainless-steel chamber. This either enhances its material thermal conductivity to maximum (in case of the Incubator) or the heated air from the pre-heating zone in air-jacket type that is built in the three sides outside a chamber circulates first (in case of the Oven).

» Incubators

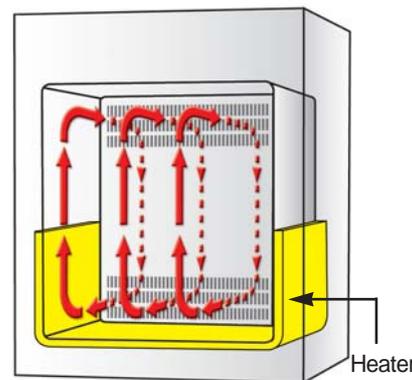


Gravity Convection

- Gravity convection is to be supplemented and maximized by way of forming radiant and conductive heat on the bottom as well as both sides of the chamber, while heating elements are fitted closely to the three sides outside the chamber by the steel structure of 1.5mm in thickness.

Forced Convection

- The same heating structure as Gravity Air-Flow model.
- Installs an air-flow room with a fan built in the back side of the chamber to achieve effective forced convection.
- Achieves high temperature uniformity and minimizes mutual contamination between samples by maintaining air flow in forced convection to top.



■ High Performance Heating Mechanism

The world's best performance and quality coming true via innovative heating mechanism !!

» Minimum

Fluctuation !

Minimization of Fluctuation in Temperature

Variation !

Minimization of spatial variation in temperature inside the chamber

Heat-up Time !

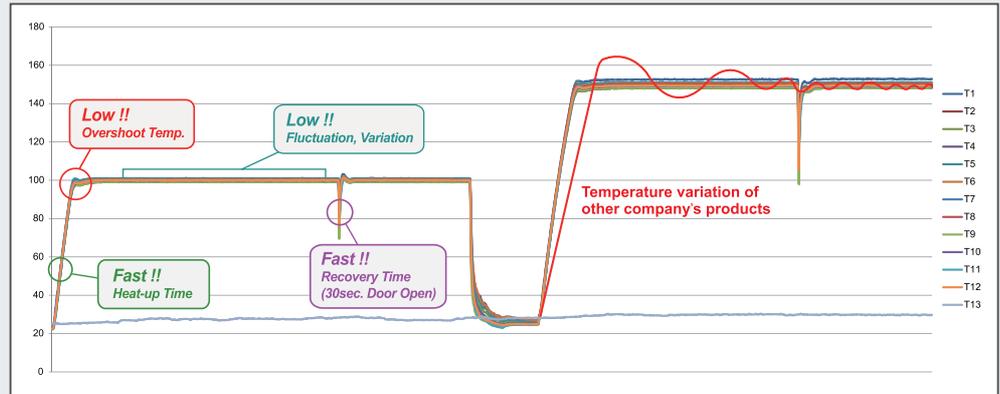
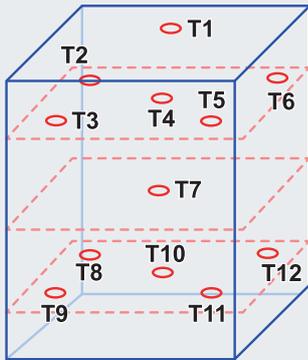
Minimization of reaching the set temperature

Overshoot !

Minimization of overshooting at the time of reaching the set temperature

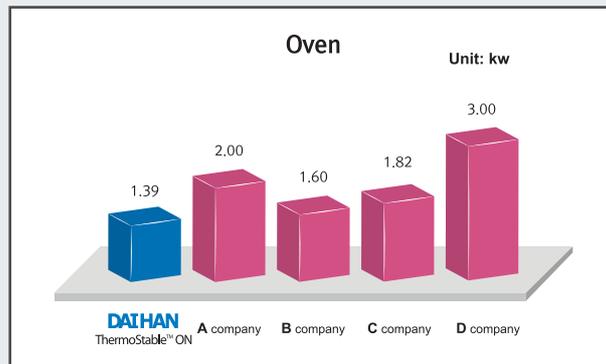
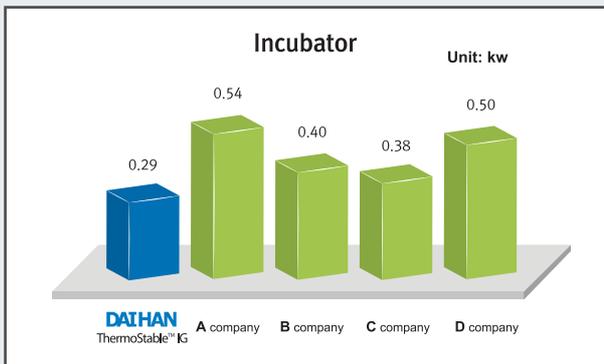
» Temperature Uniformity Completely Tested by ASTM Standards

All the units supplied by DAIHAN Scientific are thoroughly tested, using 12 temperature sensors and the latest instruments to obtain validation, which corresponds to international standards. That is, Fluctuation and Variation (Uniformity) standards described in catalogues are actually guaranteed as the same.

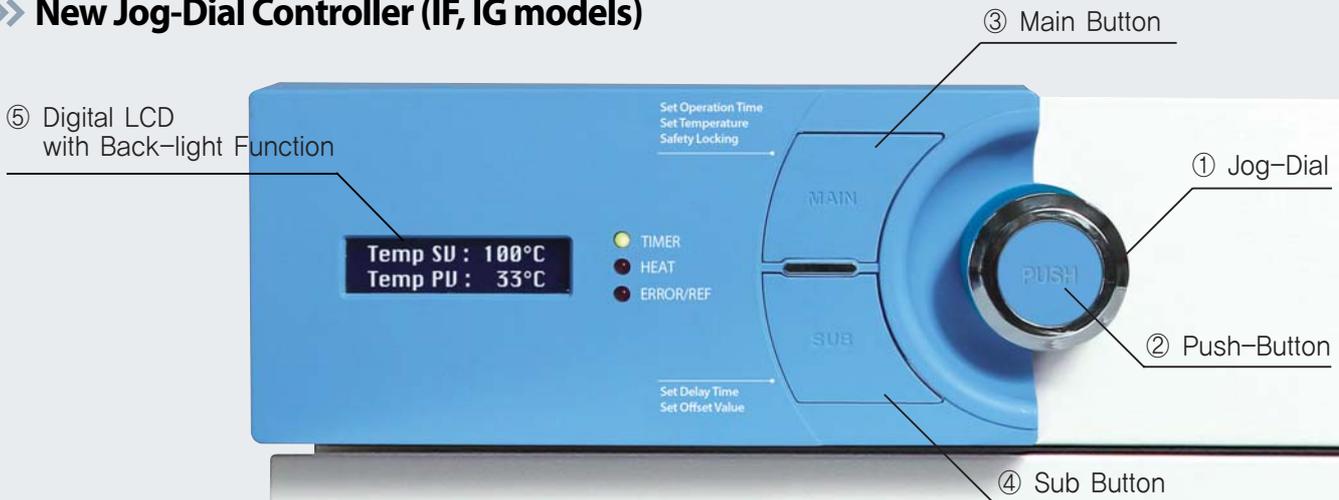


» Green Product

This is an environment-friendly product that achieves minimum power consumption by using heating element consuming minimum power for the capacity and temperature of the chamber, high-quality insulator and insulation structure, and complete door structure that guarantees shielding.



» New Jog-Dial Controller (IF, IG models)



- Provides the user interface with an ergonomic design for users to operate in an easy and convenient way.
- A new 2-way Jog-Dial Knob (Jog Dial + Push Button) and presents excellent durability and mobility.
- High-quality LCD with Back-light function.
- A durable Main Button and a Sub Button that features superb and user-friendly operation.

DAIHAN ThermoStable™ IF Incubators, Forced Convection-type, 50-/105-/155 Lit., with Certi. & Traceability NEW
 With 2 × Wire Shelves, Digital Fuzzy Control, Jog-Dial with Push Button, Digital LCD with Backlight, up to 70°C, ±0.2°C



Incubator, Forced Convection-type
 "ThermoStable IF-105"

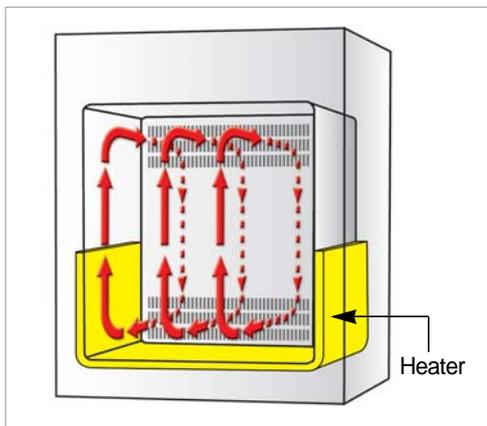
- with Certificate & Traceability : Controlled by Serial Number, Certificate, Delivery-information, and Traceable Data Base System
- Optimized Air Flow by Forced Convection Mechanism
- Patented Jog-Dial Control System
- UL / CUL Certified
- CE Certified
- GD(Good Design)-mark
- PL(Product Liability) Insurance

- * Various Application : Microorganism Culture, Animal & Plant Cell Culture, Constant Temp., Germination, and so on
- * The Best Temp. Uniformity & Accuracy by High Performance Heating Mechanism : 3-Side Heating
- * Optimized Air Flow by Forced Convection Mechanism
- * Digital Fuzzy Control System Implementing Superior Temperature Accuracy
- * New Jog-Dial with Push Button
- * Compact New Body Design
- * 2 ea of Teflon-coated steel Wire Shelves Included
- * Alarm Function : Error status and Timer-end
- * RS232C Interface for Monitoring and Controlling with PC
- * Ambient to 70°C of Temp. Range, Fluctuation of ±0.2°C at 37°C, ±0.3°C at 50°C
- * Storage Function of Temperature and Timer setting values
- * Locking Mode Supported for Experimental Safety (Input to Jog-Dial can be disabled)
- * Corrosion Resistant 304 Stainless steel Chamber
- * Incubator Temperature & Incubator Current Protection, Sensor Error Detection

Specification

Models		ThermoStable IF-50	ThermoStable IF-105	ThermoStable IF-155
Capacity		50 Lit.	105 Lit.	155 Lit.
Dimension (w × d × h)	Interior (mm)	370 × 350 × 419	485 × 410 × 533	550 × 475 × 600
	Exterior (mm)	518 × 637 × 700	635 × 695 × 841	700 × 760 × 906
Heater Power		200W	300W	400W
Temp.	Range	Ambient Temperature +5°C to 70°C		
	Fluctuation	± 0.2°C at 37°C, ± 0.3°C at 50°C		
	Variation	± 0.5°C at 37°C, ± 0.9°C at 50°C	± 0.4°C at 37°C, ± 0.7°C at 50°C	
	Sensor	PT 100		
Control Resolution		±0.1°C		
Heat-up Time		17 min. to 37°C, 28 min. to 50°C	17 min. to 37°C, 30 min. to 50°C	
Recovery Time (Door open 30sec)		3 min. to 37°C, 4 min. to 50°C		
Controller		Digital Fuzzy Control by Advanced Microprocessor Jog-Dial with Push Button		
RS232 Port		Available to connect with PC		
Display		Digital LCD with Back Light		
Timer		99hr 59 min (delay/continuous function)		
Material	Internal	Stainless steel (#304)		
	External	Powder Coated steel		
	Inner Door	Inner Tempered Glass Door		
Shelves		2ea of Teflon-coated steel Wire Shelves included, Load per Shelf : 16 kg		
Ventilation		1ea of Ventilation hole with Stainless steel Cap, Hole Diameter 40mm		
Circulation		Forced Air Type		
Safety device		Over Temp. and Over Current Protector, Sensor Error Detector		
Others		UL/CUL Certified, CE Certified, GD-mark Storage Function(Temp. and Time) Locking Mode(Jog-Dial Input Disabled) Alarm (Error Status and Timer-end)		
Net Weight (kg)		46	66	81
Packing Size (w × d × h) (mm)		628 × 752 × 775	710 × 731 × 1,018	731 × 810 × 1,018
Shipping Weight (kg)		58	74	92
Power Consumption		216.3 W	302.9 W	438.1 W
Energy Consumption, at 37°C, at 50°C		28 Wh	43 Wh	58 Wh
		84 Wh	129 Wh	145 Wh
Power Supply		1Phase 120V, 60Hz or 230V, 50/60Hz		

* Other Specifications are available upon Customer's Request.



The Best Temp. Uniformity & Accuracy by High Performance Heating Mechanism

<Continued on next page>

Cat. No	Description	Articles
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<Continued from... **DAIHAN ThermoStable™ IF** Incubators, Forced Convection-type >

Ordering Information

- DH.WIF03050 Incubator, Forced, 230V, 50 Lit., "ThermoStable IF-50"
- DH.WIF03105 , 105 Lit., "ThermoStable IF-105"
- DH.WIF03155 , 155 Lit., "ThermoStable IF-155"
- DH.WIF04050 Incubator, Forced, 120V, 50 Lit., "ThermoStable IF-50"
- DH.WIF04105 , 105 Lit., "ThermoStable IF-105"
- DH.WIF04155 , 155 Lit., "ThermoStable IF-155"

Spare Wire Shelves, Teflon Coated steel

- DH.WIG11050 Wire Shelf, Teflon Coated steel, with 2 Brackets, for 50 Lit., "IGS050", w340 × d310mm
- DH.WIG11105 Wire Shelf, Teflon Coated steel, with 2 Brackets, for 105 Lit., "IGS105", w455 × d375mm
- DH.WIG11105 Wire Shelf, Teflon Coated steel, with 2 Brackets, for 155 Lit., "IGS155", w520 × d440mm

Optional Wire Shelves, Stainless steel

- DH.WON11050 Wire Shelf, Stainless steel, with 2 Brackets, for 50 Lit., "ONS050", w340 × d310mm
- DH.WON11105 Wire Shelf, Stainless steel, with 2 Brackets, for 105 Lit., "ONS105", w455 × d375mm
- DH.WON11155 Wire Shelf, Stainless steel, with 2 Brackets, for 155 Lit./305Lit., "ONS155", w520 × d440mm

Validation (IQ, OQ) Service

- DH.WIF31050 Validation Service(IQ, OQ), "IFV050", for "ThermoStable IF-50"
- DH.WIF31105 , "IFV105", for "ThermoStable IF-105"
- DH.WIF31155 , "IFV155", for "ThermoStable IF-155"



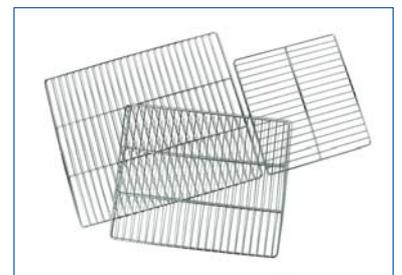
2-Year Warranty

Wisd 2.2

Incubator, Forced Convection-type
"ThermoStable IF-105"



Wire Shelves, Teflon Coated steel
(Included)



Wire Shelves, Stainless steel
(Optional)

WiseRemote® Remote Control Software

Connection of **Wisd 2.2** Temperature Devices with Interface RS232C to a PC Export Recorded Data (Excel Spreadsheet)



Main Screen



RS232C Cable & Software