

SINCE 1889



Yamato Scientific
America

Yamato Incubators

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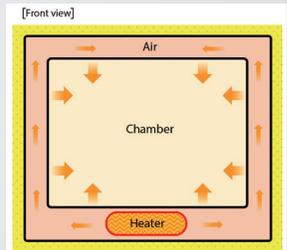
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INCUBATOR OVERVIEW

Natural Convection ensures a homogeneous temperature throughout the chamber



For representation purpose only. Actual window size may vary slightly by model.



IC Series: General Purpose Incubator

Internal Capacity: 37, 97, 159, 318, 567L

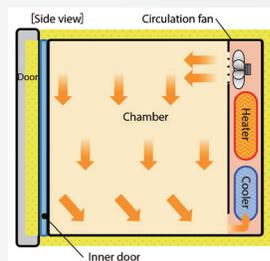
- Non-programmable
- Easy to use digital display setting and timer
- Standard equipped with various functions like self-diagnostic, calibration off-set, overheat prevention and key lock
- Inner glass door for easy and safe sample viewing (except IC-100 models)
- Option to choose from several chamber capacities from small benchtop units to floor standing models
- All models with Window [W] for improved visibility

Forced Air Convection ensures both optimal heating of materials and a high precision temperature uniformity in the chamber with minimum energy consumption



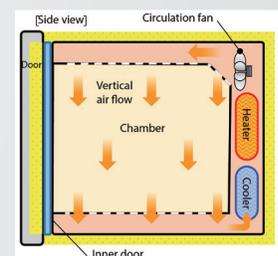
IN Series: Programmable Refrigerated Incubator

Internal Capacity: 143, 286L



INE Programmable Refrigerated Eco Incubator

Internal Capacity: 286L



- Programmable
- Large Capacity
- Manual and programmed defrosting function
- Easy to use digital display setting and timer
- Standard equipped with various functions like self-diagnostic, calibration off-set, overheat prevention and key lock
- Inner glass door minimizes temperature changes and makes far easy and safe sample viewing
- Cooling system ensures that samples are not dried while cooling
- Option for RS485 interface
- Electrical hook up for shaker inside the chamber (IN series)
- Upgraded inverter control improved refrigeration efficiency and reduced frost significantly (INE series)

Economical General Purpose Incubator

Natural Convection



IC Series with Window

Operating temp. range

Room temp. +5°C~80°C

Temp. distribution accuracy

±1.0°C (at 37°C)

Internal capacity

37L
103 models

97L
403 models

159L
603 models

318L
803 models

567L
903 models

Benchtop, compact design incubators (IC103C/IC103CW) General purpose incubators (IC403CW/413CW/603CW/613CW/803C/813CW/903CW/913CW)

- Space saving
- All models come with an observation window (W) for improved visibility (except for IC103C)
- Dual door system permits contents to be viewed easily without disrupting atmosphere of the incubator (except IC-103 series)
- Control panel of IC103CW/113CW located at a higher position for easy access
- Easy to use digital setting display and timer
- Air jacket technology ensures even and efficient heat distribution throughout the chamber
- Standard equipped with various functions such as self-diagnostic, calibration offset, overheat prevention and key lock



97L
IC403CW



159L
IC603CW

For representation purpose only. Actual window size may vary slightly by model.

Specifications

| Model | IC103C / CW IC113C / CW | IC403CW IC413CW | IC603CW IC613CW | IC803CW IC813CW | IC903CW IC913CW |
|---|---|--|--|---|---|
| System | Natural convection | | | | |
| Operating temperature range | Room temp. +5~80°C | | | | |
| Temp. control accuracy | ±0.5°C (at 37°C) | | | | |
| Temperature distribution accuracy | ±1.0°C | | | | |
| Interior material | Stainless steel | | | | |
| Exterior material | Cold rolled steel plate with melamine resin baking finish | | | | |
| Heat insulator | Glass fiber | | | | |
| Heater | Stainless steel heating pipe 0.2kW | Iron-chrome wire heater 0.3kW | 0.4kW | 0.7kW | 2.2kW |
| Temperature controller | PID control by microprocessor | | | | |
| Temperature setting system | Operation menu key and digital setting by ▲/▼ keys, digital display | | | | |
| Temperature display | Measurement temperature: Digital display by 4 digit green LED Setting temperature: Digital display by 4 digit red LED | | | | |
| Timer | 1 min. ~ 99 hrs 59 mins. and 100~999 hrs 50 mins (including timer waiting function) | | | | |
| Operation functions | Fixed temperature, Auto start, Auto stop, Quick Auto stop | | | | |
| Additional functions | Calibration off-set, Key-lock, Power outage compensation | | | | |
| Safety device | Self diagnostic functions, temp. sensor error, display error, measurement temp. error, auto overheat prevention | | | | |
| Heater control circuit | SSR drive system | | | | |
| Sensor | K-thermocouple | | | | |
| Internal dimensions (WxDxH) | 350 x 300 x 360 mm | 450 x 480 x 450 mm | 600 x 530 x 500 mm | 600 x 530 x 1000 mm | 1070 x 530 x 1000 mm |
| External dimensions (WxDxH) | 430 x 397 x 606 mm | 560 x 606 x 820 mm | 710 x 656 x 870 mm | 710 x 656 x 1619 mm | 1180 x 656 x 1619 mm |
| Internal capacity | 37L | 97L | 159L | 318L | 567L |
| Inner door | None | Reinforced glass door x 1 | | Reinforced glass door x 2 | |
| Window size | 250 x 280 | | | 250 x 700 | |
| Window thickness | t5 (5mm thick glass) | | | | |
| Shelf load capacity | ~15 kg/pc. | | | | |
| Shelf rest step number | 8 steps | 9 steps | 12 steps | 29 steps | 29 steps x 2 |
| Power supply (50/60 Hz) | AC115V 1.8A with plug AC220V 1A no plug, round terminal | AC115V 4.5A with plug AC220V 2A no plug, round terminal | AC115V 6A with plug AC220V 2.5A no plug, round terminal | AC115V 10A with plug AC220V 4.5A no plug, round terminal | AC115V 13A with plug AC220V 6.5A no plug, round terminal |
| Weight | ~17 kg | ~45 kg | ~65 kg | ~102 kg | ~166kg |
| Included accessories: Shelf / shelf brackets | Stainless steel 2 pcs. / 4pcs. | | | 4 pcs. / 8 pcs. 8 pcs. / 16 pcs. | |
| Optional accessories | Stand, Stacking kit, Additional shelf, Cable hole (25/50mm or 30/50mm), Temp. output terminal, Time-up output terminal for alarm device | | | | |



318L
IC803CW

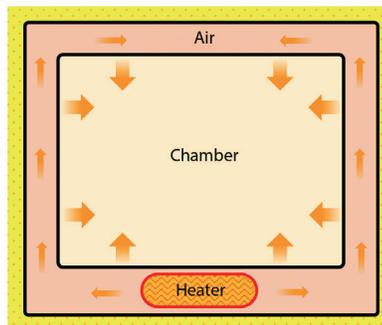


567L
IC903CW

For representation purpose only. Actual window size may vary slightly by model.

Method

[Front view]



Control Panel



Solid Door



Observation Window



37L
IC103C / IC103CW

Interior (IC613CW)



Shelf & Bracket Set



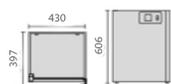
Exhaust Ports



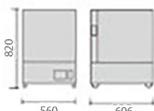
Optional items

| Description | Product code |
|--|--------------|
| Stand for up to 600 models (OA194) | 281596 |
| Shelf and bracket set for IC100 models | 42110501001 |
| Shelf and bracket set for IC400 models | 212246 |
| Shelf and bracket set for IC600 and 800 models | 212266 |
| Metal stacking kit for IC400 models (OD40) | 212822 |
| Metal stacking kit for IC600 models (OD60) | 212823 |
| Cable port ø25mm | 281121 |
| Cable port ø50mm | 281122 |
| Temperature output terminal (4~20mA) for ODK12 | 281123 |
| Time-up output terminal for ODK14 | 281124 |

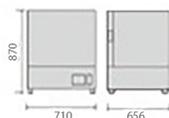
Dimensions (mm)



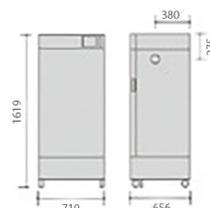
IC103C
IC103CW/113CW



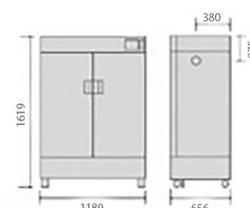
IC403CW/413CW



IC603CW/613CW



IC803CW/813CW



IC903CW/913CW

Programmable Refrigerated Incubator



Forced Air Convection

IN604-115V IN604-220V / IN604W-115V IN604W-220V
IN804-115V IN804-220V / IN804W-115V IN804W-220V

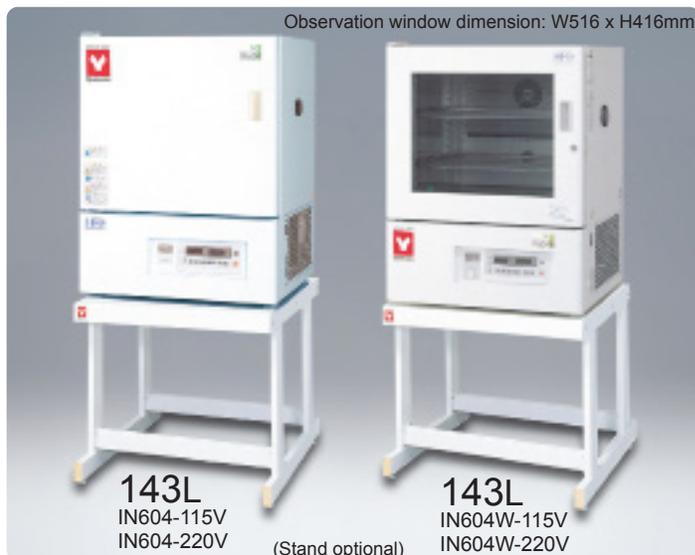
Operating temp. range -10°C~+50°C

Temp. distribution accuracy ±1.0°C (at 37°C)

Internal capacity 143L (IN604/604W) 286L (IN804/804W)

Applicable for low temperature tests and environmental tests

- High accuracy temperature control and temperature distribution
- Inner glass door keeps temperature stable during sample observation
- Designed with a large dual glass door and inner door that forms a triplex glass door for improved heat retention (IN604W/804W)
- Interior light for better sample visibility (IN604W/804W)
- Optional slide shaker table available to put in and take out sample easily (IN600 models)



Specifications

| Model | IN604-115V IN604-220V | IN604W-115V IN604W-220V | IN804-115V IN804-220V | IN804W-115V IN804W-220V |
|--|---|---|---|--|
| System | Forced air convection | | | |
| Operating temperature range | -10°C~+50°C | | | |
| Temperature adjustment accuracy | ±0.3°C (refrigerator in continuous operation) ±1.0°C (refrigerator in cycle operation) | | | |
| Temperature distribution accuracy | ±1.0°C (refrigerator in continuous operation at 37°C) | | | |
| Maximum temperature reaching time | 20~50°C ~20min | | 20~50°C ~30min | Data not available |
| Minimum temperature reaching time | 20~-10°C ~45min | 20~-10°C ~55min | 20~-10°C ~65min | Data not available |
| Interior material | Stainless steel | | | |
| Exterior material | Chrome free electronic galvanized plated steel plate chemical proof baking finish | | | |
| Observation window | -- | W516 x H416mm (with key) | -- | Data not available |
| Heat insulation material | Styrene foam | | | |
| Refrigerator | Air-cooled fully closed compressor 250W | | Air-cooled fully closed compressor 300W | |
| Refrigerator medium | R134A | | R404A | |
| Defrosting mechanism | Manual ON / Auto OFF, Timer operation, Cycle operation | | | |
| Blower fan | Axial fan | | | |
| Heater | Iron-chrome wire heater: 550W | | Iron-chrome wire heater: 750W | |
| Sensor | Platinum resistance temperature detector: Pt100Ω (temperature controller), K-thermocouple (overheat prevention device) | | | |
| Cable port (right side of main unit) | I.D. 32 mm | I.D. 50 mm | I.D. 32 mm | I.D. 32 mm |
| Room light / service outlet | -- | Fluorescent lamp: 10W/5A with grounding terminal | -- | Fluorescent lamp: 10W/5A with grounding terminal |
| Temperature control | PID control | | | |
| Temperature setting | Digital setting with ▲/▼ keys | | | |
| Temperature display | Measured temperature: 4-digit orange LED digital display + VFD fluorescent display | | | |
| Timer / timer resolution | 0 min.~999 hrs. 59 min. / 1min. | | | |
| Operation function | Fixed temperature, auto stop, auto start, program (up to 32 steps, repeat operation) | | | |
| Additional functions | Timer function (accumulated time to 49,999 hrs), calibration off-set function, clock display | | | |
| Safety device | Self diagnostic function (Temp. sensor error, Heater disconnection, SSR short-circuit, Main relay error, Automatic overheat prevention function), Key lock, Over current ELB, Overheat prevention device | | | |
| Internal dimensions (WxDxH mm) | 600 x 477 x 500 | | 600 x 477 x 1000 | |
| External dimensions (WxDxH mm) | 710 x 645 x 913 | | 710 x 645 x 1630 | |
| Internal capacity | 143L | | 286L | |
| Shelf plate load | 15 kg / pc. | | | |
| Shelf rest step number / pitch | 13 steps / 30mm | | 23 steps / 30mm | |
| Power supply (50/60Hz) | AC115V 9A with plug AC220V 5.5A no plug, round terminal | AC115V 10.5A with plug AC220V 7.5A no plug, round terminal | AC115V 10.5A with plug AC220V 6A no plug, round terminal | AC115V with plug AC220V no plug, round terminal |
| Weight | ~89 kg | | ~120 kg | |
| Included accessories: Shelf / shelf brackets | 3 pcs. / 6 pcs. (stainless steel punched metal) | | 5 pcs. / 10 pcs. (stainless steel punched metal) | |
| Door keys | -- | 2 keys | -- | 2 keys |
| Optional items | Stand, additional shelf, cable port (ø30/50mm), recorder, warning light combination (stand-by/operation/error), observation window, temperature output terminal (4-20mA), external alarm output terminal, time up output terminal | | | |

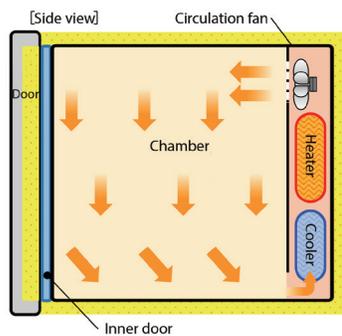


286L
IN804

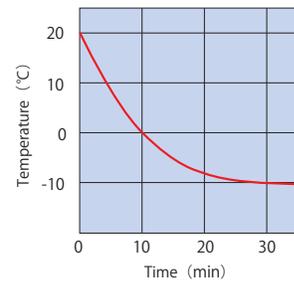
Control Panel



Method



Temperature Drop Curve (IN604)



Interior



IN604W with MK161 shaker

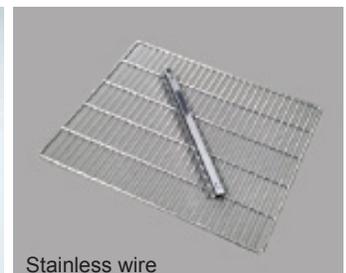


IN604

Shelf & Bracket Set



Stainless punched metal



Stainless wire

Optional items

| Description | Product code | Model | Applicable units |
|--|--------------|-------|------------------|
| Stand | 281596 | OA194 | IN604/604W |
| Metal stacking kit with cooling fan for 600 models | 212823 | OD60 | IN604/604W |
| Stainless steel punched metal shelf up to 15kg | 211221 | -- | All |
| Stainless steel wire shelf up to 20kg | 213464 | -- | All |
| Temperature output terminal* | 281168 | -- | All |
| External alarm terminal* | 281169 | -- | All |
| Time up output terminal* | 281170 | -- | All |
| Seismic mat for 600 models | 296902 | -- | IN604/604W |
| Shaker setting stage with slide rail | 211318 | -- | IN604W |

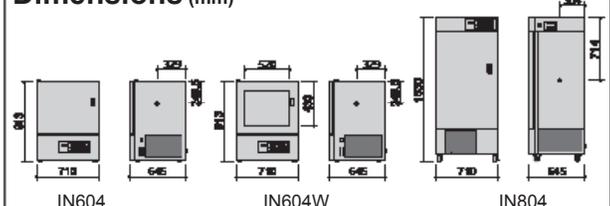
* Please specify when ordering main unit.

Interior Light



IN604W/804W

Dimensions (mm)



Programmable Refrigerated Eco Incubator

Forced Air Convection

INE800-115V / INE800-220V



Temperature range 0~+60°C

Temp. distribution accuracy ±0.5°C (at 37°C during continuous operation)

Internal capacity 286L

Inverter control Energy savings



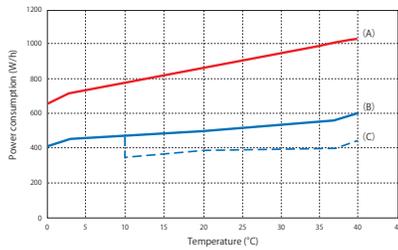
Upgraded inverter control improved refrigeration efficiency, reduced frost significantly and minimized wasted power during refrigeration.

- 44% power savings compared to previous models
- Controller upgraded for easier viewing and operability
- Temperature distribution accuracy improved for better incubation
- Standard equipped with program operation, auto-stop, auto-start, self-diagnostic, timer, calibration off-set, memory, and electricity & CO₂ emission monitor

Specifications

| Model | INE800-115V | INE800-220V |
|-----------------------------------|--|---------------------------------------|
| System | Forced air convection | |
| Operating temperature range | 0~+60°C | |
| Setting temperature range | -5~+65°C | |
| Temperature adjustment accuracy | ±0.2°C (at 37°C during continuous operation), ±0.5°C (at 37°C cycle operation) | |
| Temperature fluctuation | ±0.3°C (at 37°C during continuous operation), ±1.0°C (at 37°C cycle operation) | |
| Temperature distribution accuracy | ±0.5°C (at 37°C during continuous operation) | |
| Temperature gradient | 2.0°C (at 37°C during continuous operation) | |
| Max. temperature reaching time | 20~60°C 35min. | |
| Min. temperature reaching time | 20~0°C 50min. | |
| Cooling Mechanism | Continuous operation, Cycle operation, Cooling-stop operation | |
| Interior | Stainless steel | |
| Exterior | Chromate-free electrogalvanized steel plate Baked chemical resistant finish | |
| Heat insulator | Styrene foam (non-freon) | |
| Freezer | 200W Rotary Unit | |
| Cooling Medium | R134a 350g | |
| Operation range of freezer | Below 40°C | |
| Defrosting mechanism | Hot Gas Bypass Method, Manual (random) Defrost / Auto (time) Defrost | |
| Blower fan | DC Axial flow fan 4-Step, Equipped with Error Signal when stopped | |
| Heater | Iron-chrome wire heater : 750W | |
| Sensor | Double sensor: Platinum resistance temperature detector: Pt100Ω (temperature controller), K-thermocouple (overheat prevention device) | |
| Cable port | I.D.: 50 mm (right side of main unit) | |
| Temperature controller | PID control by microprocessor | |
| Temperature Display | Setting Temp. Display : 5-digit orange LED digital display, Actual Temp. Display : 4-digit green LED digital display | |
| Timer / timer resolution | 0~99hr. 59min. / 1min. | |
| Operation function | Fixed temperature, Auto start, Auto stop, Quick auto stop, Program (99 steps, 99 patterns) | |
| Additional function | Timer, Calibration off-set, Electricity & CO ₂ Emission Monitor, Voltage Recovery Optional, User Setting saving/readout, Calendar timer (24 hours) | |
| Safety device | Self diagnostic function (temp. sensor error, heater disconnection, SSR short-circuit, main relay error, automatic overheat prevention), Key lock, Overcurrent electric leakage breaker, Overheat prevention device, Fan malfunction detector, Cooling high-pressure detector, Inverter malfunction detector | |
| External dimensions | W710 x D645 x H1730mm | |
| Internal dimensions | W600 x D477 x H1000 (effective 800) mm | |
| Internal capacity | 286L | |
| Shelf load capacity | 15 kg/pc. | |
| Shelf rest step number / pitch | 23 steps / 30mm | |
| Power supply (50/60 Hz) | AC115V 8.7A (with plug) | AC220V 4.5A (no plug, round terminal) |
| Weight | ~135kg | |
| Included accessories | Stainless steel punched metal 5 pcs. shelf / 10pcs. brackets, 2 keys, silicon stopper for cable hole 1 pc | |

Power Consumption Comparison

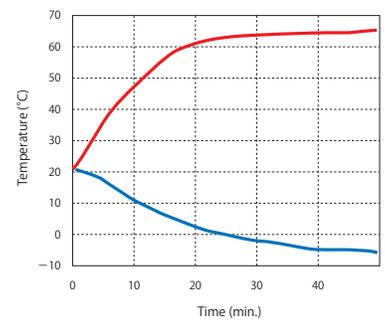


| | 0°C | 3°C | 20°C | 37°C |
|----------------|-----|-----|------|------|
| IN804 | 648 | 712 | 864 | 1007 |
| INE800 | 409 | 446 | 498 | 560 |
| Reduction Rate | 37% | 37% | 42% | 44% |

Comparison with IN804
 1. Condition : AC115V/50Hz, Room Temp 23°C, 5 shelves, no load
 2. Data was taken when each setting was stable

CO₂ emissions reduced by approx 1,269 kg
 (Calculated for 1 year operation with 37°C setting)

Falling / Rising Temp. Curve

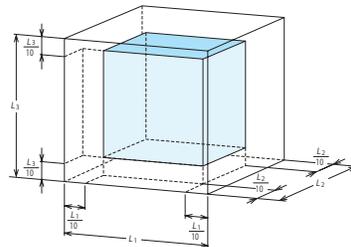


9 Point Temperature Distribution

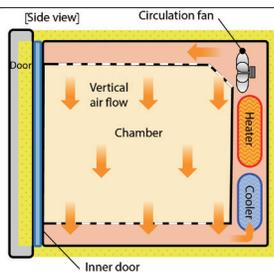
| | Upper Front Left | Upper Back Left | Upper Front Right | Upper Back Right | Lower Front Left | Lower Back Left | Lower Front Right | Lower Back Right | Center Side | (°C) |
|---------|------------------|-----------------|-------------------|------------------|------------------|-----------------|-------------------|------------------|-------------|------|
| No load | 37.1 | 36.2 | 37.2 | 36.9 | 36.8 | 36.8 | 37.1 | 36.9 | 37.0 | |
| Loaded | 37.1 | 36.3 | 37.0 | 36.9 | 36.5 | 35.9 | 36.7 | 36.1 | 37.0 | |

Condition

- Above 9 measurement points were taken from the effective internal capacity down-scale by 10% (as the image on the right)
- Room Temp. 23°C, AC115V, 50Hz, Average temperature during stable setting temp. set at 37°C
- No Load condition: 5 shelves
- Loaded condition: each of the 12 shelves were loaded with 20 Petri Dishes (Total : 240 Petri Dishes)



Method



Control Panel



Overheat Prevention Device



External Output Terminal (Top: optional Bottom: standard)



Cable Port (I.D.Φ50mm standard)



Shelf & Bracket Set



Optional items

| Description | Product code |
|--|--------------|
| (1) Stainless steel punched metal shelf up to 15kg | 211221 |
| (2) Stainless steel wire shelf up to 20kg | 212918 |
| (3) External alarm terminal* | 211881 |
| (4) Time-up output terminal* | 211882 |
| (5) Earthquake resistant fixture | 211883 |

* (3) and (4) please specify when ordering main unit

Dimensions (mm)

