

# Forced Convection Oven

**Energy Saving** Programmable Forced Convection Ovens



## DNE401/411/601/611/811/911

Operating temp. range RT +20°C~210°C (DNE401/411/601/611)  
RT +15°C~210°C (DNE811/911)

Temp. distribution accuracy ±2.0°C (at 210°C)

Operation Energy saving  
Environment friendly

**High performance environment friendly eco-oven that reduces power consumption significantly**

### Operation and functions

- High precision controller allows high performance temperature control and display of CO<sub>2</sub> and power discharge
- Heat tightness and insulation design of the chamber achieves an energy saving rate of about 40% at constant temperature compared to previous models
- Maximum temperature reaching time reduced by 15 minutes (no-load) compared to previous models.
- Program operation with a maximum of 99 steps, 99 patterns repeatable
- Standard equipped with various support functions such as calibration offset, power failure recovery mode, save and access of user setting information, as well as other operation modes
- Data acquisition from internal test device possible because of cable holes
- Easy system upgrade with various option settings

### Safety features

- Standard equipped with various self-diagnostic functions, independent overheat prevention device, overcurrent circuit breaker, and key lock function

### Specifications



| Model                                      |       | DNE401                                                                                                                                                                                                                                              | DNE411                                 | DNE601                  | DNE611                               | DNE811                                  | DNE911                                |
|--------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------------------|--------------------------------------|-----------------------------------------|---------------------------------------|
| Circulation method                         |       | Forced air circulation                                                                                                                                                                                                                              |                                        |                         |                                      |                                         |                                       |
| External temp. range                       |       | 5~35°C                                                                                                                                                                                                                                              |                                        |                         |                                      |                                         |                                       |
| Temperature control range                  |       | Room temperature +20~210°C                                                                                                                                                                                                                          |                                        |                         |                                      | Room temperature +15~210°C              |                                       |
| Temp. control accuracy *1                  |       | ±0.5°C (at 210°C)                                                                                                                                                                                                                                   |                                        |                         |                                      |                                         |                                       |
| Temp. fluctuation *1                       |       | ±0.6°C (at 210°C)                                                                                                                                                                                                                                   |                                        |                         |                                      |                                         |                                       |
| Temp. distribution accuracy *1             |       | ±2.0°C (at 210°C)                                                                                                                                                                                                                                   |                                        |                         |                                      |                                         |                                       |
| Temp. gradient*1                           |       | 6°C (at 210°C)                                                                                                                                                                                                                                      |                                        | 8°C (at 210°C)          |                                      | 8°C (at 210°C)                          | 10°C (at 210°C)                       |
| Temp. rise time *1                         |       | ~60 min.                                                                                                                                                                                                                                            |                                        | ~70 min.                |                                      | ~45 min.                                | ~60 min.                              |
| Chamber / Exterior / Insulation            |       | Stainless steel / Chrome-free electro-galvanized steel plate, chemical-proof baked-on finish / Glass wool                                                                                                                                           |                                        |                         |                                      |                                         |                                       |
| Door                                       |       | Single swing (left side)                                                                                                                                                                                                                            |                                        |                         |                                      |                                         | Double doors (from center)            |
| Insulating material                        |       | Glass wool                                                                                                                                                                                                                                          |                                        |                         |                                      |                                         |                                       |
| Heater (Stainless steel pipe)              |       | 1.1kW                                                                                                                                                                                                                                               |                                        | 1.2kW                   |                                      | 1.2kW x 2                               | 1.5kW x 2                             |
| Fan Type                                   | Fan   | Scirocco fan, capacitor motor                                                                                                                                                                                                                       |                                        |                         |                                      |                                         |                                       |
|                                            | Motor | 10W                                                                                                                                                                                                                                                 |                                        |                         |                                      | 30W                                     | 30W x 2                               |
| Cable hole (lower right side)              |       | 33mm I.D. 1pc.                                                                                                                                                                                                                                      |                                        |                         |                                      |                                         |                                       |
| Exhaust port                               |       | 33mm I.D. 2pcs (top)                                                                                                                                                                                                                                |                                        |                         |                                      | 33mm I.D. 2pcs (rear)                   |                                       |
| Caster wheels                              |       | --                                                                                                                                                                                                                                                  |                                        |                         |                                      | Free swivel caster wheels (w/o stopper) |                                       |
| Adjuster                                   |       | --                                                                                                                                                                                                                                                  |                                        |                         |                                      | Level adjusters (2 at the front)        |                                       |
| Controller                                 |       | Model V type                                                                                                                                                                                                                                        |                                        |                         |                                      |                                         |                                       |
| Temp. control / setting system             |       | PID Z control / Digital setting with ▲/▼ keys                                                                                                                                                                                                       |                                        |                         |                                      |                                         |                                       |
| Temp. display                              |       | Top screen (Chamber): Green 4 digit LED digital display (1°C resolution) / Bottom screen: Orange 5 digit LED digital display (1°C resolution)                                                                                                       |                                        |                         |                                      |                                         |                                       |
| Other indications                          |       | LED indicates temperature patterns for heating/stable/cooling                                                                                                                                                                                       |                                        |                         |                                      |                                         |                                       |
| Timer                                      |       | 1 min. and 99 Hrs. 59 mins: duration operation, 24 hour setting: time operation                                                                                                                                                                     |                                        |                         |                                      |                                         |                                       |
| Operation functions                        |       | Fixed temperature, Program operation (max.99 steps, up to 99 patterns repeat operation function), Duration/time select timer operation function (fixed temperature operation, auto-start, auto-stop, quick auto stop, program operation auto start) |                                        |                         |                                      |                                         |                                       |
| Additional functions                       |       | Power on and Integration time function (up to 65,535 hours), Calibration offset, Time display, Display of power consumption, CO <sub>2</sub> discharge and heater operation, Power failure return mode, User configuration information              |                                        |                         |                                      |                                         |                                       |
| Temperature sensor                         |       | K type Thermocouple double sensor (for temperature control and independent overheat prevention device)                                                                                                                                              |                                        |                         |                                      |                                         |                                       |
| Heater control                             |       | Triac with Zero-cross Control                                                                                                                                                                                                                       |                                        |                         |                                      |                                         |                                       |
| Control board                              |       | Self diagnostic functions (temp. sensor failure detection, TRIAC short circuil, heater line disconnection, fan failure detection, main relay abnormal, automatic overheating prevention, key lock function)                                         |                                        |                         |                                      |                                         |                                       |
| Earth leakage breaker                      |       | Leak Current/Short Circuit/Overcurrent Protection, Rated Current Sensitivity 30mA                                                                                                                                                                   |                                        |                         |                                      |                                         |                                       |
| Independent overheat prevention            |       | Set temperature range: 0~250°C                                                                                                                                                                                                                      |                                        |                         |                                      |                                         |                                       |
| Internal dimensions (W×D×H)*2              |       | 450×450×450 mm                                                                                                                                                                                                                                      |                                        | 600×500×500 mm          |                                      | 600×500×1000 mm                         | 1090×500×1000 mm                      |
| External dimensions (W×D×H)*2              |       | 580×645×860 mm                                                                                                                                                                                                                                      |                                        | 730×695×910 mm          |                                      | 730×695×1660 mm                         | 1220 ×695×1660 mm                     |
| Capacity                                   |       | 90L                                                                                                                                                                                                                                                 |                                        | 150L                    |                                      | 300L                                    | 540L                                  |
| Weight                                     |       | ~63kg                                                                                                                                                                                                                                               |                                        | ~77kg                   |                                      | ~92kg                                   | ~185kg                                |
| Included accessories: shelf plate/bracket  |       | 2 pcs. / 4 pcs.                                                                                                                                                                                                                                     |                                        |                         |                                      | 4 pcs. / 8 pcs.                         | 8 pcs. / 16 pcs.                      |
| Shelf rest step number / Shelf rest pitch  |       | 11 steps / 30mm                                                                                                                                                                                                                                     |                                        | 13 steps / 30mm         |                                      | 29 steps / 30mm                         | 29 steps / 30mm x 2                   |
| Withstand load of shelf                    |       | ~15kg / shelf                                                                                                                                                                                                                                       |                                        |                         |                                      |                                         |                                       |
| Power supply V±10%<br>50/60Hz single phase |       | AC115V 10A<br>with plug                                                                                                                                                                                                                             | AC220V 5.5A<br>no plug, round terminal | AC115V 11A<br>with plug | AC220V 6A<br>no plug, round terminal | AC220V 11.5A<br>no plug, round terminal | AC220V 14A<br>no plug, round terminal |

\*1 Temperature Accuracy / Rise time Standard: Testing Machinery Association of Japan. Temperature Fluctuation/Gradient Standard: Japanese Industrial Standard

Performance data above based on 115V or 220V AC supplied power, 23°C±5°C (room temperature), 65%RH ±20% humidity, maximum air speed (FAN setting 10), damper closed, and no process load.

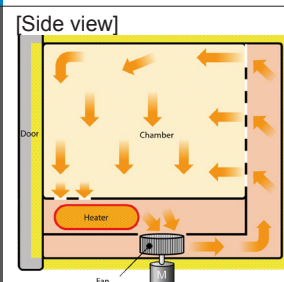
\*2 Protrusions excluded



## Control Panel



## Method



## Interior



DNE401



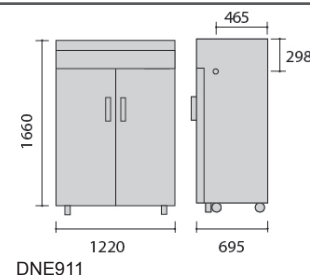
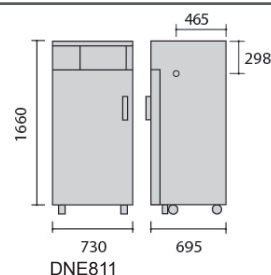
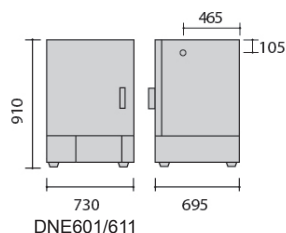
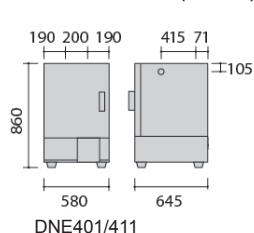
DNE911

## Optional Items

| Description                                                 | Product code | Model | Applicable units       |
|-------------------------------------------------------------|--------------|-------|------------------------|
| Stand                                                       | 281596       | OA194 | DNE401/411/601/611     |
|                                                             | 212348       | OT42  | DNE401/411             |
|                                                             | 212349       | OT62  | DNE601/611             |
| Stacking support                                            | 212806       | ODN26 | DNE401/411             |
|                                                             | 212807       | ODN28 | DNE601/611             |
| Shelf and bracket set                                       | 212246       | ODN20 | DNE401/411             |
|                                                             | 212266       | ODN22 | DNE601/611/811         |
|                                                             | 212490       | --    | DNE911                 |
|                                                             | 212946       | ODT48 | All models             |
| Seath sensor (K type Thermocouple)                          | 212947       | ODT52 | All models             |
| Silicon plug (with one hole)                                | 281454       | ODM36 | All models             |
| *Cable port, 25mm diameter                                  | 281455       | ODM38 | All models             |
| 50mm diameter                                               | 281456       | ODM40 | DNE401/411             |
| *Observation window for DNE401/411                          | 281457       | ODM42 | DNE601/611             |
| *Observation window for DNE601/611                          | 211880       | OIN90 | All models             |
| *External communication adapter set                         | 281446       | ODM20 | DNE401/411/601/611/811 |
| *External alarm output terminal                             | 281447       | ODM22 | DNE911                 |
| *Time-up output terminal / Operation signal output terminal | 281448       | ODM24 | DNE401/411/601/611/811 |
|                                                             | 281449       | ODM26 | DNE911                 |
| *Event output terminal / Time-up output terminal            | 281450       | ODM28 | DNE401/411/601/611/811 |
|                                                             | 281451       | ODM30 | DNE911                 |
| *Operation signal output terminal                           | 281452       | ODM32 | DNE401/411/601/611/811 |
|                                                             | 281453       | ODM34 | DNE911                 |

\* Please specify when ordering main unit.

## Dimensions (Unit:mm)



## Attention

- Never use in flammable or explosive gas atmosphere
- Never use explosive or flammable material
- Caution: High temperature components