ETAC

WINTECH® NEO

TEMPERATURE CYCLE / THERMAL SHOCK CHAMBER

AIR & LIQUID

TEMPERATURE CYCLE/THERMAL SHOCK CHAMBER

Kusumoto Chemicals LTD.

WINTECH NEO, fully satisfying “Confidence”, “Comfort” and “Convenience” with improved basic specification, environmental performance and user-friendly operation, launched on market.

WINTECH® NEO

TEMPERATURE CYCLE / THERMAL SHOCK CHAMBER

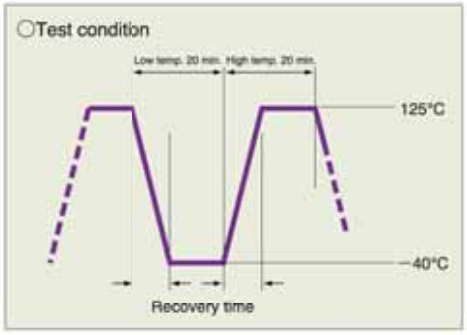
Superior temperature recovery performance and uniform temperature distribution.

■Shortest recovery time

WINTECH NEO achieved the shortest recovery time by featuring cooling/heating circuit system having excellent thermal refrigeration efficiency and optimized cold/heat storage materials at low and high temperature preparation rooms.

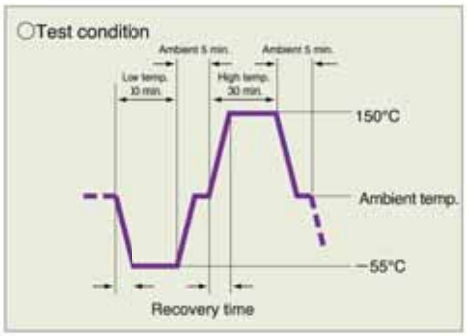
● 2 zone test (up-wind sensor)
(−40°C ⇔ +125°C)
○ Specimen: Plastic mold IC

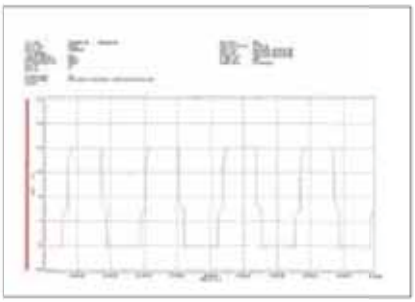
	Recovery time		
	Low. Temp.	High Temp.	Weight
NT550A	8 min.	3 min.	2.5kg
N1250W	4 min.	5 min.	5.0kg



● 3 zone test (up-wind sensor)
(−55°C ⇔ ambient. temp.⇔ +150°C)
○ Specimen: Plastic mold IC

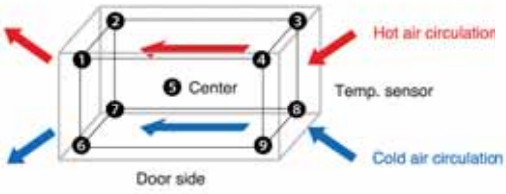
	Recovery time		
	Low. Temp.	High Temp.	Weight
NT550A	2 min.	3 min.	2.5kg
N1250W	3 min.	4 min.	5.0kg





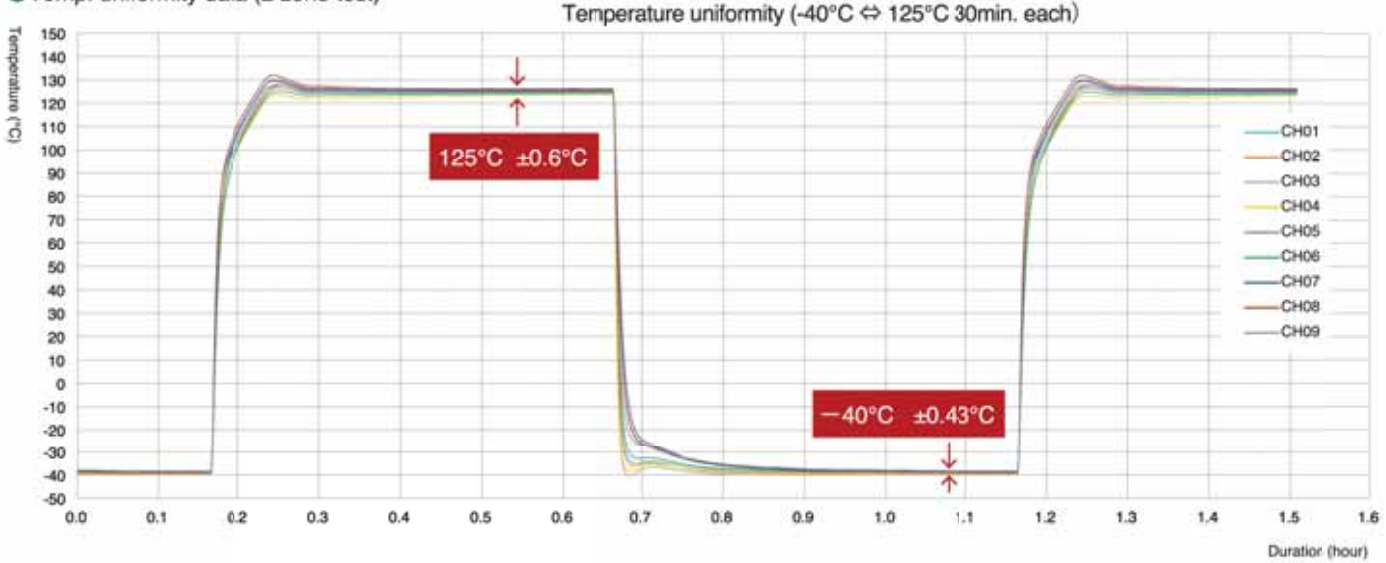
■Superior temperature uniformity

Sufficient air circulation volume by sirocco fan maintains superior temperature uniformity.



[Test condition]
High temp. exposure : 125°C 30 min.
Low temp. exposure : −40°C 30 min.

●Temp. uniformity data (2 zone test)



※The temp. distribution data is actual value for example and not guaranteed one.

Controller is more comfortable and easy-to-use by wide-color LCD touch panel

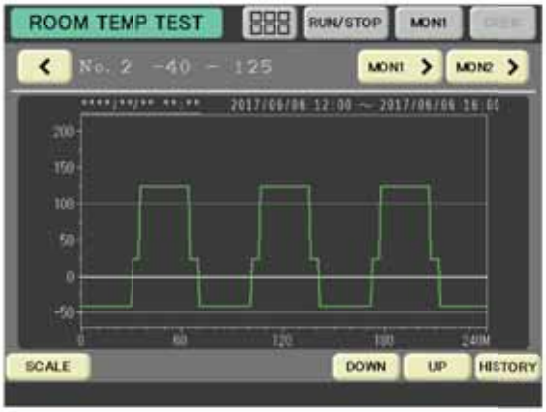
Controller is reborn with enhanced user-friendly and comfortable operation because of newly equipped 7.5 inch wide-color LCD touch panel for improved operability and visibility
Moreover, operation data is automatically recorded in memory and reviewed occasionally.

POINT 1 Large LED and color LCD with touch panel.

LED visually shows run status/error situation. 7.5 inch wide-color LCD touch panel achieves sophisticated program function as well as user-friendly operation.

POINT 2 Automatic recording function

Operation data automatically recorded even during pause situation.
Recorded data is reviewed on monitor display.
Operation data is downloaded into USB.



POINT 3 Various display function

Operation status, detailed explanation etc. is confirmed by various graphics.

● Menu screen

● Monitor screen 1

● Monitor screen 2

POINT 4

Setting function supporting sophisticated performance and user-friendly operation

Easier input/edit of testing condition including temp., exposure time, cycle quantity etc.
Particular setting function for resettable cycle counter is also adopted

● Program edit screen

User-friendly operation easily to be understand

● Program selectable window

● Resettable counter

4 sets of resettable cycle counters are available as standard.

POINT 5

State-of-art maintenance capability

Operation status of refrigerator is always monitored by temperature sensor close to refrigerator.
When an error occurs, operation status at the error is automatically served, which contributes prompt recovery through error condition.

● Alarm screen

Error situation and time

● Thinkable countermeasure screen

Trouble-shooting suggestion

● Current value status

Status of refrigerating circuit etc., which is helpful to ordinally inspection

Main function

- Plenty program quantity Max. 30 programs (Program No.1 ～ No. 30)
- Under/lower temp. limit warning function
- Wait function
- Auto-start (run, pause)
- Calendar timer with test-end time
- Data download function at test room temp.
- Maintenance monitoring function
- High/low temp. exposure time Max.120 min. Ambient temp. exposure time Max. 99 min.
- Error data saving function
- Trouble-shooting suggestion
- Time signal output (Contact point AC250V 3A/3 channels)
- Interlock contact point (AC220V 10A,)
- Test end output (contact AC250V 3A)
- External alarm output (contact AC250V 3A)
- Communication program (RS485 option)

Newly developed hot-gas function

■Long-term defrost free operation 1 month (approx. 750 hours) on NT2050W

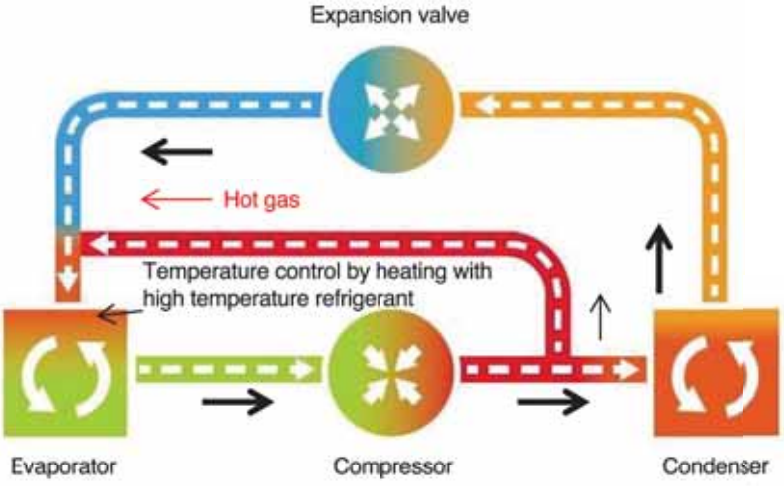
Newly developed hot-gas function

+

Drastic improvement of basic structure
- Rigidity of main body
- Newly designed packing
- Penetration parts (door, damper shaft)

↓

Achievement of defrost-free operation more than 1 month (approx. 750 hours)

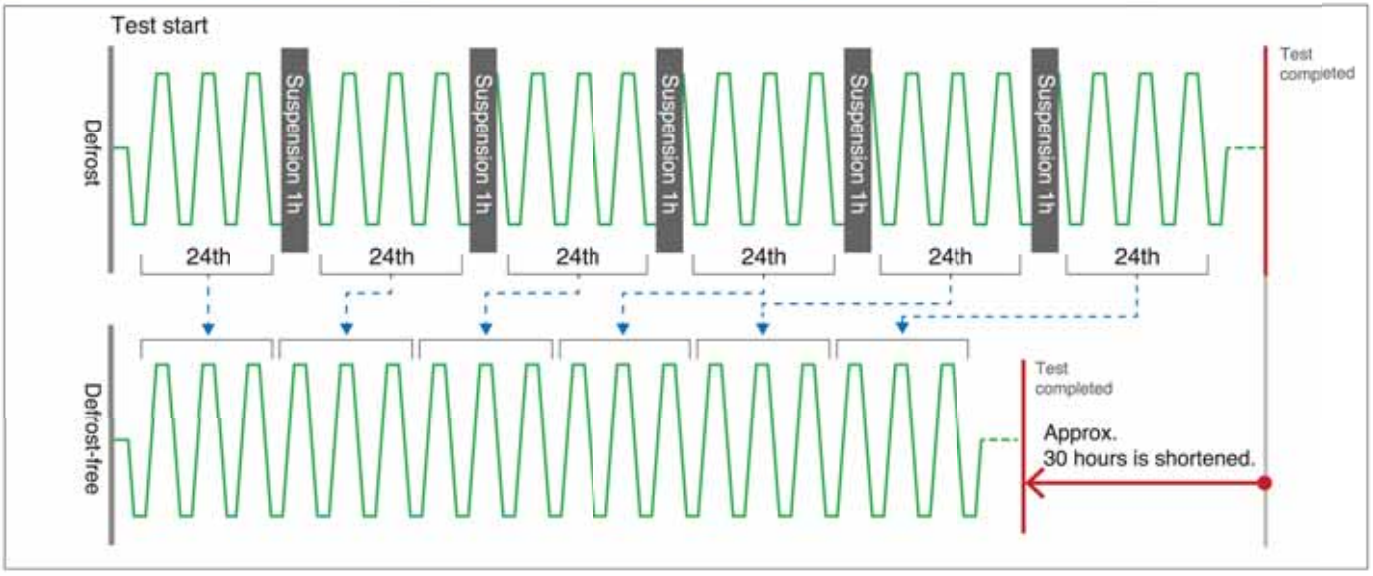


Conceptual diagram of hot gas control

Hot-gas function contributes reduction of frost on refrigerating circuit.
Testing time can be shortened.
(Our comparison: -40°C/30 min. ~ +125°C/30 min. 2 zone)

Model		NT2050W
Test condition	High temp. exposure	+125°C 30 min.
	Low temp. exposure	−40°C 30 min.
	Ambient temp.	Less than +23°C 60%Rh
	Cooling water temp.	+25°C
	Power supply	AC200V 3φ 50/60Hz ±10%
	Sensor position	Down-wind
	Specimen	Plastic mold IC: 7.0kg Specimen shelf: 3.0kg
Temp. recovery time		Within 5 min.

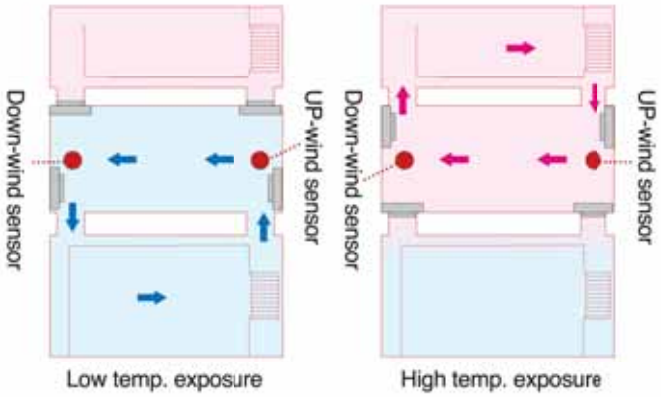
Comparison test time during 1 month (approx. 750 hours) (NT2050W)



Auxiliary function created by plenty feedback from end-users.

Down-wind temp. sensor

In addition to up-wind sensor, down-wind sensor is adopted as standard.



Roof-centralized air exhaust mechanism (only air-cooling type)

Heat generated from refrigerator is exhausted from roof forcedly which contributes negative influence to surrounding equipment and space-saving.

Dustproof filter (only for air-cooling type)

Dustproof filter located at rear side prevents penetration of dust from outside.

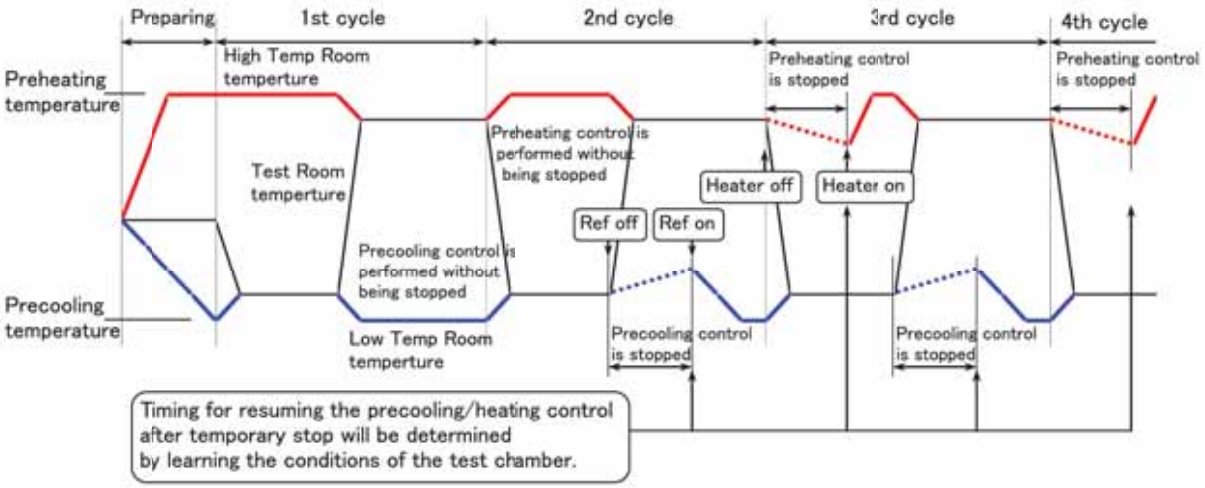
Operation data download function

Varicus data not only during operation and pause but also at error is automatically saved. Such data is downloaded by USB memory with CSV format

	A	B	C	D	E
1	Date	Time	PV	SV	Run/Indicate
2	2016/12/1	22:52:33	125	125	1
3	2016/12/1	22:52:48	125	-40	2
4	2016/12/1	22:53:03	89	-40	2
5	2016/12/1	22:53:18	34	-40	2
6	2016/12/1	22:53:33	0	-40	2
7	2016/12/1	22:53:48	-18	-40	2
8	2016/12/1	22:54:03	-28	-40	2

ECO Specification

Unique "self-learning" function selects optimized timing of pre-cool and pre-heat temperatures by cycle.



■Specifications Table (Air-cooling System)

Model No.					NT550A	NT1050A	NT1250A
Temperature switching method					Hot and cold air switching system by dampers (stationary specimen method)		
Type of test					2-zone and 3-zone temperature cycle tests		
Performance	Test room	Temperature recovery performance	Temperature range of low temperature test		−65℃～0℃		
			Temperature range of high temperature test		+60℃～+200℃		
			Temperature recovery time		Within 4 minutes		
			Test conditions	Lower soak temperature/time	−55℃/30 minutes		
				Room temperature soak time	5 minutes		
				Upper soak temperature/time	+150℃/30 minutes		
				Specimen	Plastic mold IC: 2.5kg		
				Control sensor position	Upwind		
	Lo-temp room	Precooling temperature range			−75℃ to 0℃		
	Hi-temp room	Preheating temperature range			+60℃ to +225℃		
	Performance-guaranteed ambient temperature				+23℃±5℃		
	Operable ambient temperature range				+10℃～+35℃	+10℃～+32℃	
Main body	Zone structure				3-zone system (test room, high temperature room, low temperature room)		
	Internal dimensions (W×H×Dmm)				370x330x400mm	370x500x400mm	650x500x400mm
	External dimensions (W×H×Dmm)				1150x1800x1315mm	1150x1940x1720mm	1430x1940x1720mm
					(protruding parts are not included)		
	Weight (kg)				About 730kg	About 1050kg	About 1230kg
	Withstand load of the test room				30 kg		100 kg
					(uniformly distributed load)		
	Maximum number of specimen shelf boards				6 pieces	7 pieces	
	Allowable load of specimen shelf boards				5.0kg/piece		
	Door open / close mechanism				Single hinged door		
	Cable port				Φ50mm cable port (one on the left side of the main body)		
Main unit	Temperature controller			Control system	PID control method		
				Power saving method	ECO operation (learning function included−stops precooling/preheating control)		
				Setting method	By keying in to the MENU screen		
				Display type	LCD graphic color display with touch panel (7.5")		
				Display resolution	1℃		
				Number of registrable programs	Up to 30 programs (program No.1 to No.30)		
				Number of temperature cycles	Up to 9,999 cycles		
				Additional functions	Automatic start (start, standby), automatic defrost, wait, self monitor, test end time display, number of completed cycles display, troubleshooting display, precooling/preheating temperature automatic setting, warning log display, test end condition selection (cycle stop, complete stop after defrosting, prepare for another test after completion of a cycle), cycle counter with the reset function (4 conditions), test end output, time signal output (3 points), upper and lower temperature limits warning, specimen's temperature recovery control, error message display, pause, Graphic display USB port, etc.		
	Temperature sensor				Pt100(JISC1604)		
	Refrigeration circuit			Refrigeration method	Dual refrigeration system with hot gas control		
				Refrigerator	Air-cooling hermetically-sealed reciprocating compressor		
				Refrigerant	R-404A and HFC-23		
	Heating circuit				Strip wire heater		
	Circulation fan				Sirocco fan		
	Damper driving mechanism				Air cylinder		
Protective device					Earth leakage breaker, fan thermal relay, circulation fan negative phase preventive relay, overheat protector for high temperature room, overheat protector for test room, overheat protector for low temperature room, upper/lower temperature limits warning device for test room, refrigerator 1 & 3 overload relay, refrigerator 1 & 3 high and low pressure switch, proximity switch for damper, door lock mechanism, sensor disconnection detection function, abnormal ambient temperature detection function, external alarm output, interlock terminal, etc.		
Primary side facilities	Power supply			Power supply	AC200V, 3-phase, 50/60Hz, power supply fluctuation range: ±10%		
				Maximum electric power consumption	19KVA	30KVA	32KVA
				Operating current	26A	49A	50A
				Rated current	55A	87A	93A
	Refrigerator exhaust heat energy				7.0kW	11kW	
	Air (for air cylinder actuation)				Dry air: 0.4 to 0.7 MPa To be connected at the back of the main body with an air hose with external diameter of 6mm (external dimension)		
	Drainage (for discharging defrosted water, etc.)				The hose tip to be exposed to air (1 side), φ8mm (internal diameter) × φ11mm, silicon hose		
Accessories	Specimen shelf boards and shelf bracket				2 sets		
	Silicon plugs for cable port				2 piece		
	Operation manual				1 copy		
	Test certificate				1 copy		

【Note 1】 Performances are guaranteed when ambient temperature is +23℃、the specification value at rated voltage (200 V), Off setting of ECO and hot gas control.
【Note 2】 When temperature at the installation site is below +5 or over +35℃, the operation may be stopped for protection of the equipment.
【Note 3】 If temperature at the installation site exceeds 30℃, minimum temperature may not be maintained.
【Note 4】 Operating current (A) is the maximum current value that can be reached during a normal operation..
【Note 5】 Maximum load current (A) is the maximum current that flows when all apparatuses are concurrently turned on, and this is used to determine the specifications of primary side equipment.
【Note 6】 When the optional items that provide changes in the main body structure, such as floor load carrying capacity, additional measuring hole are installed additionally, the performance specifications may change.

■Specifications Table (Water-cooling System)

Model No.					NT1050W	NT1250W	NT2050W
Temperature switching method					Hot and cold air switching system by dampers (stationary specimen method)		
Type of test					2-zone and 3-zone temperature cycle tests		
Performance	Test room	Temperature recovery performance	Temperature range of low temperature test		−65℃～0℃		
			Temperature range of high temperature test		+60℃～+200℃		
			Temperature recovery time		Within 4 minutes		Within 10 minutes
			Test conditions	Lower soak temperature/time	−65℃/30 minutes		
				Room temperature soak time	5 minutes		
				Upper soak temperature/time	+150℃/30 minutes		
				Specimen	Plastic mold IC: 2.5kg	Plastic mold IC: 5.0kg	
				Control sensor position	Upwind		
	Lo-temp room	Precooling temperature range			−80℃ to 0℃		
	Hi-temp room	Preheating temperature range			+60℃ to +225℃		
	Performance-guaranteed ambient temperature				+23℃±5℃		
	Operable ambient temperature range				+5℃～+35℃		
Main body	Zone structure				3-zone system (test room, high temperature room, low temperature room)		
	Internal dimensions (W×H×Dmm)				370x500x400mm	650x500x400mm	700x500x600mm
	External dimensions (W×H×Dmm)				1150x1940x1620mm	1430x1940x1470mm	1480x1940x1670mm
					(protruding parts are not included)		
	Weight (kg)				About 1000kg	About 1180kg	About 1280kg
	Withstand load of the test room				30 kg	100 kg	
					(uniformly distributed load)		
	Maximum number of specimen shelf boards				7 pieces		
	Allowable load of specimen shelf boards				5.0kg/piece		7.5kg/piece
	Door open / close mechanism				Single hinged door		
	Cable port				Φ50mm cable port (one on the left side of the main body)		
Main unit	Temperature controller			Control system	PID control method		
				Power saving method	ECO operation (learning function included−stops precooling/preheating control)		
				Setting method	By keying in to the MENU screen		
				Display type	LCD graphic color display with touch panel (7.5")		
				Display resolution	1℃		
				Number of registrable programs	Up to 30 programs (program No.1 to No.30)		
				Number of temperature cycles	Up to 9,999 cycles		
				Additional functions	Automatic start (start, standby), automatic defrost, wait, self monitor, test end time display, number of completed cycles display, troubleshooting display, precooling/preheating temperature automatic setting, warning log display, test end condition selection (cycle stop, complete stop after defrosting, prepare for another test after completion of a cycle), cycle counter with the reset function (4 conditions), test end output, time signal output (3 points), upper and lower temperature limits warning, specimen's temperature recovery control, error message display, pause, Graphic display, USB port, etc.		
	Temperature sensor				Pt100(JISC1604)		
	Refrigeration circuit			Refrigeration method	Dual refrigeration system with hot gas control		
				Refrigerator	Water-cooling hermetically-sealed scroll compressor		
				Refrigerant	R-404A and HFC-23		
	Heating circuit				Strip wire heater		
	Circulation fan				Sirocco fan		
	Damper driving mechanism				Air cylinder		
Protective device					Earth leakage breaker, fan thermal relay, circulation fan negative phase preventive relay, overheat protector for high temp room, overheat protector for test room, overheat protector for low temp room, upper/lower temp limits warning device for test room, refrigerator 1 & 3 overload relay, refrigerator 1 & 3 high and low pressure switch, proximity switch for damper, door lock mechanism, sensor disconnection detection function, abnormal cooling water temp detection function, external alarm output, interlock terminal, etc.		
Primary side facilities	Power supply			Power supply	AC200V, 3-phase, 50/60Hz, power supply fluctuation range: ±10%		
				Maximum electric power consumption	35KVA	44KVA	48KVA
				Operating current	56A	63A	65A
				Rated current	100A	125A	138A
	Refrigerator exhaust heat energy (cooling tower)			Cooling water flow rate (liter/min)	38 (water temperature: +25℃)/ 55 (water temperature: +32℃), connection bore diameter: 1'1/4B	47 (water temperature: +25℃)/ 82 (water temperature: +32℃), connection bore diameter: 1'1/4B	
				Cooling water inlet pressure (MPa)	0.2～0.5		
	Air (for air cylinder actuation)				Dry air: 0.4 to 0.7 MPa To be connected at the back of the main body with an air hose with external diameter of 6mm (external dimension)		
	Drainage (for discharging defrosted water, etc.)				The hose tip to be exposed to air (1 side), φ8mm (internal diameter) × φ11mm, silicon hose		
Accessories	Specimen shelf boards and shelf bracket				2 sets		
	Silicon plugs for cable port				2 piece		
	Operation manual				1 copy		
	Test certificate				1 copy		

【Note 1】 Performances are guaranteed when ambient temperature is +23°C、the specification value at rated voltage (200 V), Off setting of ECO and hot gas control.
【Note 2】 When temperature at the installation site is below +5℃ or over +35℃, the operation may be stopped for protection of the equipment.
【Note 3】 If temperature at the installation site exceeds 30℃, minimum temperature may not be maintained.
【Note 4】 Operating current (A) is the maximum current value that can be reached during a normal operation..
【Note 5】 Maximum load current (A) is the maximum current that flows when all apparatuses are concurrently turned on, and this is used to determine the specifications of primary side equipment.
【Note 6】 When the optional items that provide changes in the main body structure, such as floor load carrying capacity, additional measuring hole are installed additionally, the performance specifications may change.

About cooling water and heat generation systems on primary side

Selection of air-cooling or water-cooling system

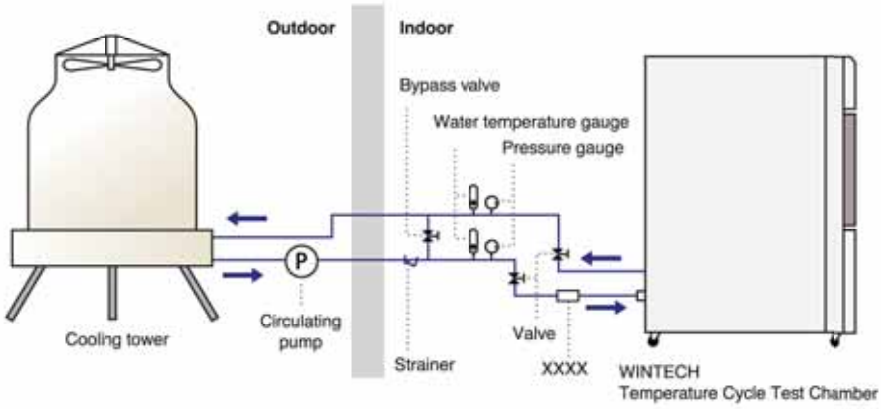
There are water-cooling specification and air-cooling specification for WINTECH series. Please study the features of each specification carefully and select the specification most suited to the required conditions of the installation site, etc.

Water-cooling specification	Air-cooling specification
○ A water-cooling specification which can constantly maintain the water temperature at less than 32°C and secure a certain flow rate (see below). Because the chamber operation stops whenever the water-cooling system stops. daily inspecion of the water-cooling system is necessary for the stable operation of the chamber. ○ Because there is no heat release from the chamber, it has no adverse effects on the surrounding environment. ○ Steady performance can be obtained throughout the year by regular maintenance of the water-cooling system. ○ Routine cleaning of the water-cooling piper is necessary in order to avoid accmulation of scale on the internal surface of the water-cooling piper and the condenser.	○ A heat release systems is necessary to exhaust heat from the chamber such as a ventiiation facility and air conditioner. If the chamber is operated in a small room where the air conditioning system is insufficient, the chamber may be forcibly stopped by the protection function when the room temperature becomes too high due to heat released from the chamber. It is advisableto operate the chamber in a room where the ambient temperrature is main-tained at less than 30C (maximum operable temperature is 35C) ○ The performance can be greatly affected by the ambeint temperature. ○ Maintenance including regular cleaning of the condenser filter is realatively easy. ○ As compared to the water-cooling specification, the operation noise can be a little louder. ○ It can be easily moved to another location.

Piping work for water-cooling system (to be done by customer)

For details about piping work on the primary side for NT1050W, NT1250W, NT2050W please refer to the following.

Required cooling capacity of the cooling tower
- 4.2 cool-ton : NT1050W
- 6.3 cool-ton : NT1250W,NT2050W



<Note>
- In order to prevent erosion of pipes, please adjust the flow rate inside the piper to 3m / sec or less.
- Make sure to use the cooling tower fan with a thermostal control.
- Please clean up scale inside the pipes regularly (at least once or twice a year).
- Regarding the water standard of cooling water and makeup water, please refer to the Japan Refrigeration and Air Conditioning Industry's standard No.JRA-GL-02-1994.
  However, the above isfor your reference only. For more detailed advice. please contact your vender.

Heat release system for air-cooling system (to be done by customer)

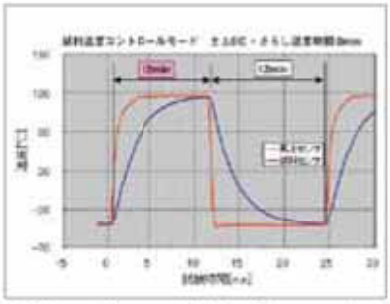
For the air-cooling system (NT550A, NT1050A and NT1250A), installation of additional air conditioners or construction of an outdoor heat release system is necessary depending on the amount of heat generation (see specifications table).

OPTION

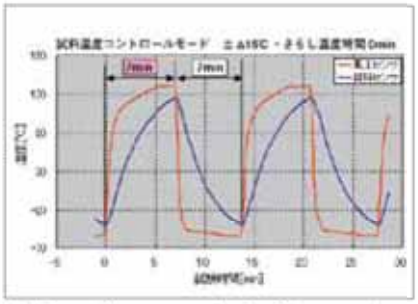
Specimen temperature control mode

The total test time can be shortened by adding heating / cooling temperature (Δt) on top of the initial atmospheric exposure temperature.

● Operation example for specimen temperature control mod



● Operation example 2 of temperature control mode by specimen temperature



● Operation example 3 of temperature control mode by specimen temperature

Paperless recorder

The data can be saved in an external media (SD card) and transferred to the PC using the provided software.

RS485 interface

Complies with the RS485 standard. Excellent for remote control or data management with the PC. Easily connected with a modular jack type connecter.

Square cable port

By model, square cable port can be added.

Model	Standard	Left side	Right side	
NT550A	N/A	1 or 2	1	
NT1050A / W NT1250A / W NT2050W	N/A	1 or 2	w/o recorder	1 or 2
			with recorder	N/A

Power supply volume monitor

It can be utilized for management for power supply etc.

Air compressor

This is a dry air compressor in order to actuate dampers and door open / close mechanisms. (It can not be built in the chamber.)

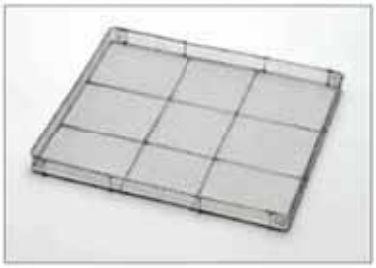
Round cable port

One cable port is available at left side as standard.

Model	Standard	Left side	Right side	
NT550A	1	1	N/A	
NT1050A / W NT1250A / W NT2050W	1	1	w/o recorder	1 or 2
			with recorder	N/A

Shelf board / shelf bracket

Can be ordered if additional standard shelf boards / shelf brackets are required. (Withstand load: 5.0kg / shelf, only for NT2050W, it is 7.5kg / shelf)



Different voltage specification

An optional feature for overseas users. Please inform us your required voltage, current, frequency, and other conditions.

Cycle counter

This counter maintains and accumulates the number of cycles even though the power is turned off. By resetting, the number of cycles will go back to "0".

AC 100V plug socket

Rated current is 3A.

ETAC helps our customers produce "High quality product"

ETAC®

*By making the best use of our own expetise and by providing quality service,we aim to help our customers to develop hight-quality,reliable products.

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ISO9001 Certified
JQA-QM8943

Notice for safe use

When using,please read attached manual carefully. Avoid installing in places where water,moisture,dust, or soot may gather.These may cause fire,accident,or electric shock.

0703-RC-3000(G)