NOR-LAKE SCIENTIFIC

HUMIDITY AND TEMPERATURE STABILITY TEST CHAMBERS

Designed to meet the demanding requirements of pharmaceutical (ICH), biological (BOD), scientific and laboratory applications. Industrial quality cabinet with a heavy duty refrigeration system.

Cabinet and Control Features:

- Programmable logic microprocessor controller with LCD Control Panel with message center
- 4 x 20 character LCD display
- Humidity control
- Continuous product temperature display
- Air probe with air temperature Hi/Lo alarms audible & visual
- Programmable ramp soak feature
- 2 levels of user password protection (set points and parameters)
- 100 event alarm logging including Date/Time Stamp and product temperatures. Stored in nonvolatile Flash memory
- Integrated Hi/Lo alarm tests
- Door ajar alarm with adjustable delay time period
- Power failure alarm
- Remote alarm contacts
- Stainless steel interior
- Coated evaporator
- Key lock door and casters
- Interior drain with plug
- Exterior finish of heavy gauge steel painted with white scratch resistant baked enamel
- All models include 3 epoxy coated wire shelves per door
- Thermostatically controlled door frame heater
- Industrial quality refrigeration system
- Streamlined refrigeration design optimizes air flow and temperature uniformity
- Complete cabinet is foamed-in-place with CFC Free high density polyurethane foam insulation
- Operating range temperature 4°C to 70°C; Operating range with humidity control 5°C to 60°C
- Warranties: 18 months parts and labor, 5 year compressor (US and Canada) 18 months parts (International)
- UL, C-UL, CE Mark

Optional Features:

- Electrical duplex
- Recorder (two pen)
- Chart paper
- Access port 2" sleeve with cover
- Extra Shelves
- Stainless steel exterior
- RS485 communication
- 4-20 MA Output

NSRI241WSW/ NSRI331WSW/ NSRI522WSW/ NSRI803WSW/

NORLAKE® SCIENTIFIC

Nor-Lake, Inc.
Registered to ISO 9001:2000
File No. A3204

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CONTROL SYSTEM: A fully programmable logic microprocessor with non-volatile memory provides a user interface through a liquid crystal alphanumeric display. All set points are adjustable by one multi-function interface key pad. The standard control includes: Fully programmable ramp soak functions, product and air temperature Centigrade scale, alarm / temperature logging, system mode indicator heating / cooling, high / low audible / visual alarms, real time clock, power failure alarm, sensor failure alarms, service prompts and user password entry system. The modular system includes expansion slots on the control board for the ability to add at a later date, the option of RS485 serial communication interface.

CONDITIONING SYSTEM: Precision control provided by the uniform distribution of air through a ceiling plenum. The plenum delivers conditioned air evenly through out the chamber providing maximum uniformity and efficiency. A heavy duty refrigeration system provides rapid removal of heat caused by door openings or product load. The system accurately delivers cooling based on demand and modulates the system to provide precision control. The system utilizes environmentally safe non-toxic CFC free refrigerant, with air-cooled, hermetically sealed compressor backed by a 5 year warranty. The system includes an expansion valve system to optimize capacity and efficiency. Heating is provided by a incoloy tube heater. The complete cabinet is UL and C-UL listed.

CONSTRUCTION: Heavy duty double wall construction. Interior and exterior finish of heavy gauge steel painted with scratch resistant baked enamel. Complete cabinet and door are insulated and sealed with 100% UL Class 1 rigid polyurethane foam insulation. The foamed-in-place insulation provides low heat transfer, improved cabinet performance and prohibits moisture from migrating into the cabinet walls. Hardware includes: Heavy duty self closing door hinges, full length stainless steel pull handle, full peripheral high temperature door gasket providing a tight seal. Key lock door and 4" casters for ease of rolling. Complete perimeter anti-condensate door heater wire thermostatically controlled for energy savings.

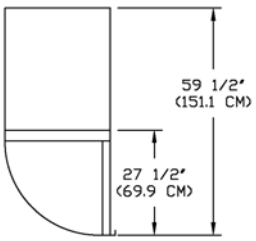
**C-UL is Underwriters Laboratories Safety Certification Mark which indicates that UL has tested the equipment to applicable CSA Standards.

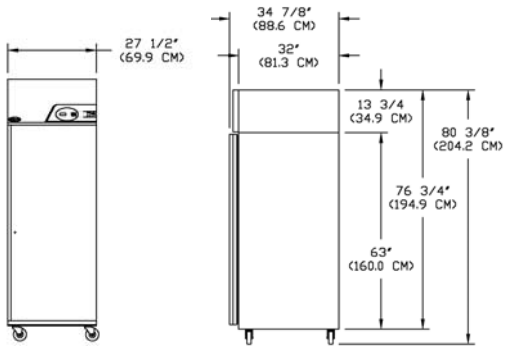
SPECIFICATIONS

Model	***NSRI241WSW/8H***	***NSRI331WSW/8H***	***NSRI522WSW/8H***	***NSRI803WSW/8H***
Model	***NSRI241WSW/5H***	***NSRI331WSW/5H***		
Crated Height (in) (cm)	*83 (211)*	*92 (234)*	*83 (211)*	*83 (211)*
Crated Width (in) (cm)	*37 (94)*	*34 (86.3)*	*59 (150)*	*85 (216)*
Crated Depth (in) (cm)	*41 (104)*	*39 (99.1)*	*41 (104)*	*38 (96.5)*
Crated Weight (lbs) (kg)	*382 (174)*	*439 (200)*	*584 (256.8)*	*832 (378)*
Interior Height (in) (cm)	*59 (149.9)*	*67 (170.2)*	*59 (149.9)*	*59 (149.9)*
Interior Width (in) (cm)	*23-1/2 (59.7)*	*27-3/4 (70.5)*	*51 (129.5)*	*78-1/2 (199.4)*
Interior Depth (in) (cm)	*30 (76.2)*	*31 (78.2)*	*30 (76.2)*	*30 (76.2)*
Overall Height (in) (cm)	*80-3/8 (204)*	*88-3/8 (224.5)*	*80-3/8 (204)*	*80-3/8 (204.2)*
Overall Width (in) (cm)	*27-1/2 (69.9)*	*31-3/4 (80.6)*	*55 (139.7)*	*82-1/2 (88.6)*
Overall Depth (in) (cm)	*34-7/8 (88.6)*	*35-7/8 (91.1)*	*34-7/8 (88.6)*	*34-7/8(88.6)*
Gross Cubage ($ft.^3$) (m^3)	*24 (0.68)*	*33.1 (0.94)*	*52 (1.47)*	*80 (2.27)*
Shelf Area (sq. ft.) (m^2)	*12.83 (1.19)*	*15.85 (1.47)*	*28.58 (2.66)*	*42.88 (3.98)*
Number of Shelves	*3*	*3*	*6*	*9*
Number of Casters	*4*	*4*	*4*	*6*
Condensing Unit Size	*1/3HP*	*1/3HP*	*1/2HP*	*3/4HP*
Refrigerant	*R134A*	*R134A*	*R134A*	*R134A*
Maximum Fuse Size	*15*	*15*	*20*	*30*
Total Amp Draw /8	*11.7*	*11.7*	*13.4*	*18.79**
Total Amp Draw /5	*11.3*	*11.3*	*N/A*	*N/A*

Voltage Model Suffix Code	Voltage Description	NEMA Plug	NEMA Receptacle
/5	230V, 1PH, 50HZ	Power Inlet (IEC 60320) Module	Cord Supplied Locally
/8	115/208-230V/1PH60HZ	L-14-20P	L-14-20R
*/8	115/208-230V1PH60HZ	L-14-30P	L-14-30R

NSRI241WSW/_H





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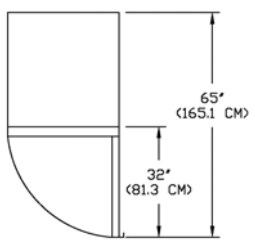

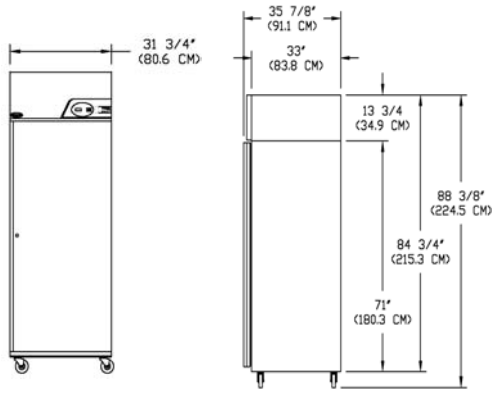

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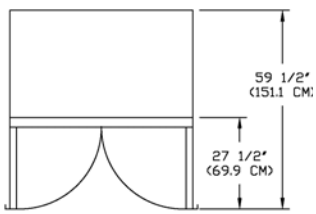

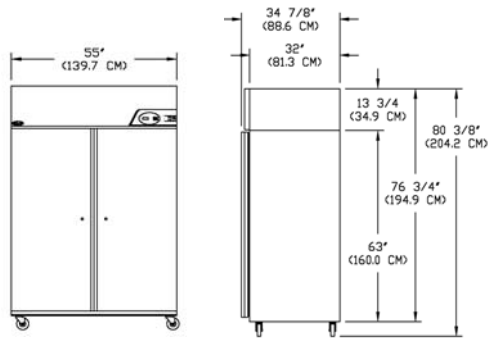

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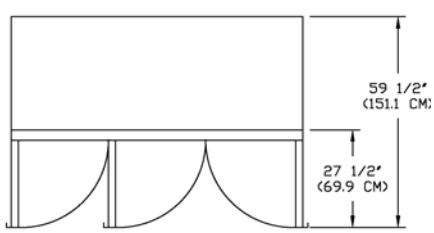
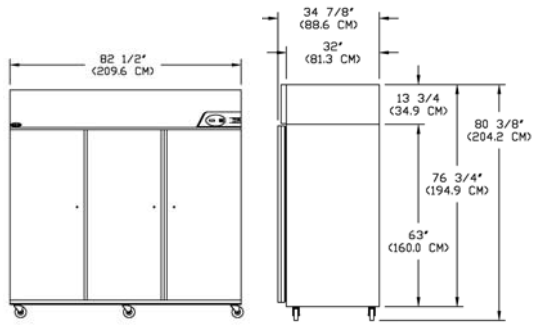
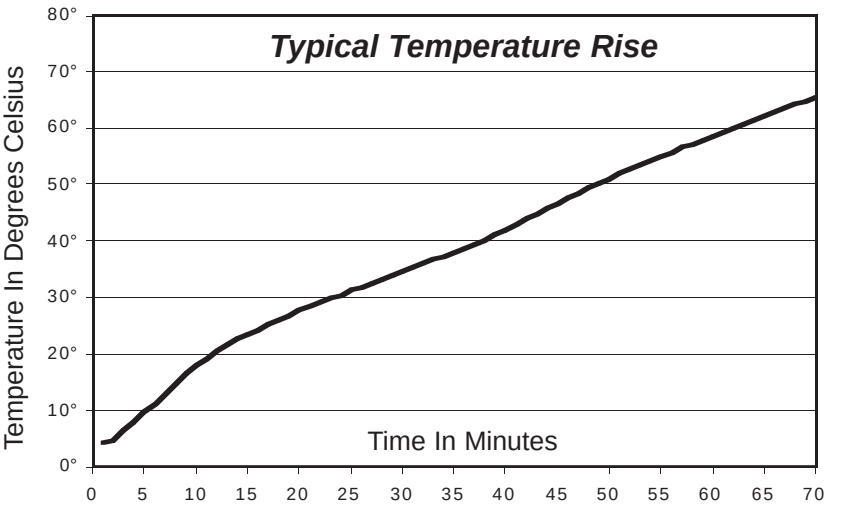


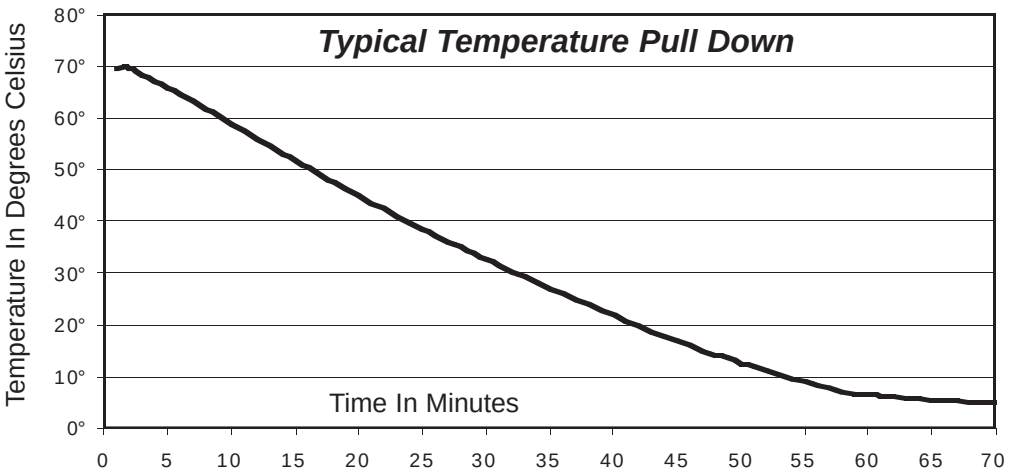


Performance:
Temperature Variation: +/-0.5°C @ 4°C to 70°C. The published temperature variation is derived from the maximum deviation of the thermocouple located nearest the chamber geometric center during the entire test period. (i.e. 25.0°C min and 26.0°C max divided by two would be a variation of +/-0.5°C).

Temperature Uniformity:
+/-1°C @ 4°C to 70°C. The published temperature uniformity is derived from the maximum deviation of 9 thermocouples are placed on 3 horizontal planes, each plane having the thermocouples evenly spaced diagonally across the shelf from the left and right inner wall, and the middle sensor placed in the approximate geometric center of the shelf.

Humidity Variation:
+/-5% @ 5°C to 60°C and RH within performance graph. Humidity variation is derived from the maximum deviation of the humidity sensor during the test period.

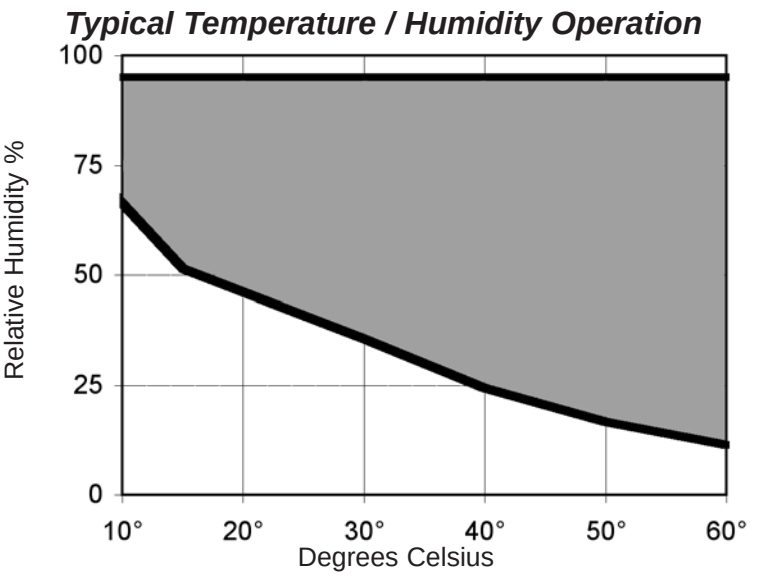




Performance data is based on 23°C, 50%RH ambient conditions, type T-24 Ga. thermocouples with 1.0oz. brass slugs attached and no product in the chamber. Data may vary if; ambient conditions change, product load is added, or other changes cause interference to chamber airflow.

Humidification / Dehumidification:
Relative humidity is induced by a highly efficient centrifugal atomizer with a sealed motor and low maintenance reservoir. Dehumidification is achieved by the use of a separate dehumidification latent coil. Both systems are precisely controlled by the programmable logic microprocessor. The humidity controller utilizes a dry capacitance type sensor for rapid response to humidity changes with exceptional accuracy. The humidifier requires a water source with low mineral content; i.e., resistance of 0.5 - 1.0 megohm and a pressure of 10 - 100 psi. Reverse osmosis treated water is recommended. The water supply connection requires 1/4" plastic or copper tubing.

Specifications subject to change without notice.



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Nor-Lake, Inc.
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Standex Food Service Equipment Group

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