COFFEE LABORATORY

LOW TEMPERATURE LABORATORY RESISTIVE ELECTRIC OVEN

SNOL 58/350
SNOL 67/350

INSTRUCTION MANUAL

,

The product conforms to the requirements of the European Union Low Voltage Directive 2006/95/EC, Electromagnetic Compatibility Directive 2004/108/EC, and Machinery Safety Directive 2006/42/EC.

SNOL

Customized for your hot innovations

Coffee Laboratory 589 Rappahannock Drive White Stone Va 22578 TEL (804) 318-3686

1. PURPOSE

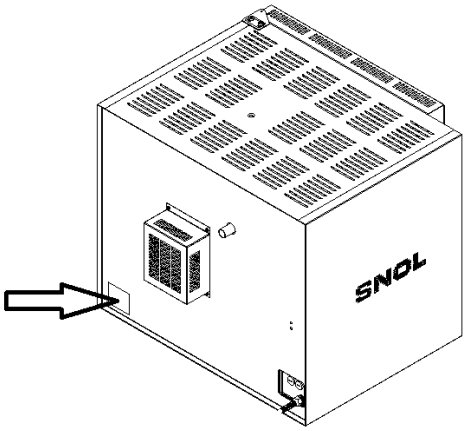
Low temperature laboratory electric oven **SNOL XX/350** (hereinafter referred to as "oven") is designed for heating or drying materials in the ambient air temperatures from 50°C to 350°C in static conditions.

2. SYMBOLS AND MARKINGS

Markings

	alternating current
	earth/grounding contact
	danger of electrical shock

Location of the product label containing manufacturer and other information and explanation



EXAMPLE:

SNOL

Model: SNOL 58/350
IP20 No 00000
230 V ~ 50 Hz 2,0 kW
40 kg 2014 03
AB "Umega" SNOL dpt.
Narkūnai LT-28104 Utena
PAGAMINTA LIETUVOJE MADE IN LITHUANIA СДЕЛАНО И ЛИТВЕ

Identification on the label	Meaning
Model : SNOL 58/350	Type of oven, 58 – total chamber volume (58 dm^3); 350 – nominal temperature (350°C).
IP 20	Degrees of protection provided by enclosures EN60529
No 0000	Product serial number
230V	Voltage of power supply 230 V
~50 Hz	Frequency of electrical current, Hz
2,0 kW	Nominal power, kW
40kg	Weight of the product, kg
2014 03	Date of manufacture (year, month)
CE	Mark of conformity with EU requirements
PG	Mark of conformity with Russia requirements

Warning symbols

	This symbol precedes any important safety instructions. Personal and property safety could be put at risk if these instructions are not followed. Before switching on the low temperature oven, it is very important to read and follow all the instructions of this manual.
	This symbol precedes manual requirements which must be followed with great care in order to ensure the oven's correct operation, to prevent damage and to protect the safety operators.
	This symbol precedes important information.

3. PACKAGE CONTAINS

The user is supplied with**:**

Name	Quantity pcs.
Electrical oven **SNOL XX/350**, pc.	1
Feet, pc.	4
Fuse 12A, pc.	1
Instruction manual	1
Temperature controller user manual	1
Shelves, pc.	3

4. SAFETY REGULATIONS

The furnace must be used in accordance with the requirements of the user's technical safety operation rules for electric equipment and local legislation.

The operator working with the electric furnace must be informed about the operational guidelines for electric equipment up to 1000V, acquainted with safety regulations for the operation of an electric furnace, and knowledgeable about the product's operating principles and proper use.

The furnace must be earthed and should only be connected to a mains electrical supply that has an earth/grounding contact. The furnace must be connected to a mains electrical supply of the correct rating, check the label on the rear of the furnace for voltage, frequency and power usage.

	**It is prohibited to operate the electric furnace if the earth/grounding is insecure.**
	**It is prohibited to operate the electric oven if any of external protective shields are removed.**
	**If the electric oven is operated for a longer period of time, the external surfaces and the door may get hot. Wear heat-resistant gloves when opening the door of the hot electric oven, loading or unloading it, or touching the hot external surfaces.**
	**Combustible or explosive materials or materials that can become combustible or cause explosion during thermal treatment must not be loaded into the low temperature oven.**

	**Do not load unknown materials into the oven.**

	**The gas emitted during thermal treatment has to be directed outside through a ventiduct (required by existing regulations).**

	**The room where the oven is operated must have appropriate ventilation.**

	**It is forbidden to operate the oven in a closed, unventilated room.**

	**A room in which several ovens are in operation must have a dedicated means of ventilation.**

	**In the event of obvious malfunctions, the oven must be immediately turned off. Maintenance can be performed by SNOL service operators, an authorized specialist or a user who strictly follows SNOL written maintenance instructions.**

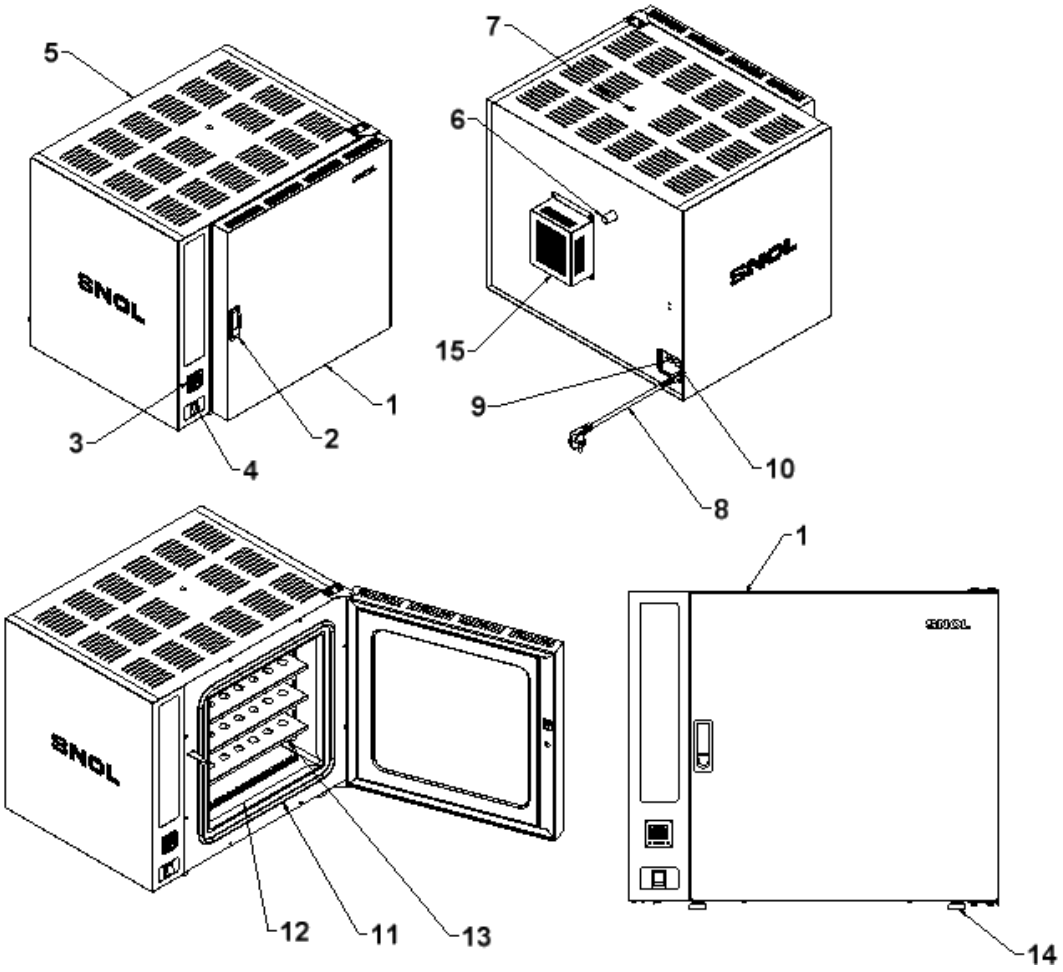
	In the event the oven ceases normal operations, disconnect it from the power supply (the mains) and take measures to resolve the problem. The manufacturer is not responsible for damages arising from the use of the oven for purposes for which it was not intended; the user bears all responsibility. Any operations that put at risk the oven's safety are forbidden. General safety and accident prevention rules should be applied. Only ovens that are technically sound should be used.

	**Failure to comply with instructions could result in negative consequences for the user.**

The manufacturer's advice cannot cover all issues. Therefore, the user assumes responsibility for the reaction and the impact that heat has on materials and the risks related to conducting tests. Our advice will help to reduce the dangers faced by users as well as protect the oven and the tested materials from damages.

5. PARTS AND TECHNICAL SPECIFICATIONS OF THE LABORATORY ELECTRIC OVEN

5.1. Parts of the low temperature laboratory electric oven



1	Door.	9	Fuse.
2	Handle.	10	Fuse.
3	Temperature controller.	11	Seal profile.
4	Switch.	12	Chamber.
5	Frame.	13	Shelf.
6	Chamber Air Vent*.	14	Feet.
7	Chamber Air Vent*.	15	Fan Motor Ventilation*.
8	Power supply cord.		

The oven is composed of housing, chamber, door, control panel.

The oven's housing made of sheet steel. The working chamber (stainless or mild steel) is installed on the housing's right side. Shelves can be placed in the chamber. Evenly distribute samples on the shelves. A tape heating element is used for heating.

Thermal insulation material is located between the housing and the working chamber and in the door.

The control panel is located on left side.

*There are holes for ventilation in the housing. In oven model 58/350, a circulating fan is located in the chamber.

The oven has a 230 V power supply, 50 Hz frequency. A digital temperature controller and a thermocouple temperature sensor mounted in the chamber work together to control and adjust the temperature. The controller shows the set and present temperature.

Electric diagramme is attached.

5.2. Technical specifications

		Measure	SNOL 58/350	SNOL 67/350
Nominal power		kW	2,0	2,0
Voltage		V	230	230
Frequency		Hz	50	50
Ingress Protection class (EN60529)		IP20	IP20	IP20
Nominal chamber temperature		°C	350	350
Number of phases			1	1
Atmosphere in the chamber			Air	Air
Temperature fluctuations**		°C	±1	±2
Limits of automatic temperature control		°C	50 ÷350	50 ÷350
Temperature distribution ***		°C	±2,5	±14
Heating time ****		min	40	40
Dimensions of the chamber:	width	mm	390	390
	depth	mm	380	445
	height	mm	360	390
Number of shelves (standard/max)		pcs.	3/7	3/7
Non-concentrated load of one shelf		kg	15	15
Total limiting load		kg	30	30
Overall dimensions of the oven	width	mm	675	675
	depth	mm	630	625
	height	mm	585	600
Weight		kg	40	37

**Temperature fluctuations at steady mode without load. The value of the parameter is given after the temperature controller has been auto-tuned with a typical (see temperature controller instruction manual).

***Temperature distribution in the working space without load and shelves when the low temperature laboratory electric oven is heated to the nominal temperature

****Heating time for reaching the nominal temperature without load.

6. REQUIREMENTS FOR SAFE USAGE

The electric oven should be placed in a closed, ventilated room that meets the following requirements:

- the electric oven should be placed on a base that is horizontal (an allowed unevenness for a 1m base is ± 1mm.), hard, made of incombustible material;
- height above sea level – up to 2000 m;
- ambient temperature from +5 to +35°C;
- ambient relative air humidity should not exceed 80% at the temperature of +25°C,
- the environment should not pose an explosion risk; it also should not contain a large amount of electrically conductive dust, water vapor, aggressive gas;
- it is recommended that the oven be placed under an exhaust ventilation hood;
- the electric oven should not be subjected to vibration and shocks;
- it is prohibited to exceed the maximum rated temperature, otherwise the service life of heating elements will be shortened and the thermocouple could be damaged.

7. ASSEMBLY

Unpack the electric oven and place it in the location prepared for its operation. Adjust the feet in order to stabilize the oven. Put in the shelves. Connect the power supply's plug to the mains (power supply) socket with the grounding contact connected to the grounding circuit. The voltage indicated in the technical specifications table should be in conformity with nominal voltage of the mains (power supply).

8. PREPARATION FOR USE

The oven should be dried before using it for the first time or if it has been out of operation for a long period of time and stored in humid conditions. It should be dried as follows:

- without load, heat the oven until it reaches a temperature ranging from 100-150°C and maintain this temperature range for 2-3 hours;
- heat up to the nominal temperature. Maintain for 1-2 hours.

The dried oven can now be operated.

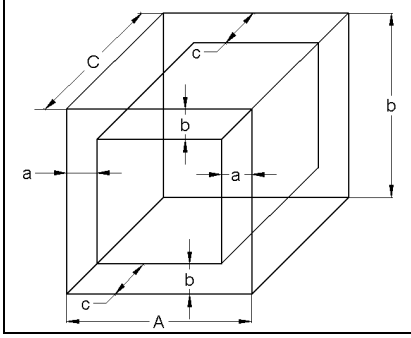
	While drying, some 'smoke' may appear but it has no effect on further operation of the electric oven.

9. OPERATION

Open the door of the electric oven.

Put the load on the shelves at least 1/10 of the space away from the side walls to ensure a better circulation of air.

	The data indicated in technical specifications gives to the working space.



A,B,C – dimensions of the chamber;
a, b, c – spaces between the walls and the load;

a= A x 0,1
b= B x 0,1
c= C x 0,1

Working volume (space)
V = (A-2a) x (B-2b) x (C-2c)

Close the electric oven's door.

Turn on the switch; a pilot lamp will light up, indicating that the power is on.

Not leaving the furnace at high temperatures for longer than necessary will prolong its life.

After the work is completed, switch off the oven. The pilot lamp will fade out, indicating that the power is off.

10. STORAGE

Store the electric oven in its packing in a location that meets the following requirements:

- heated and naturally ventilated room with an ambient temperature ranging from +5 to +35°C;
- atmosphere with sulphurous gas concentration not exceeding 0,13 mg/m^3 and chlorine salts concentration not exceeding 0,3 mg/m^2 per 24 hours;
- the ambient relative air humidity should not exceed 80% at the temperature of 25°C.

During loading and unloading of the oven, protect it from any shocks.

11. TRANSPORTATION

The electric oven should be transported only in closed means of transport in which the temperature ranges from - 50 to + 50°C; at the temperature of +25°C, the ambient relative air humidity must not exceed 80%.

You can transport the electric oven by any means of closed transport, but protect it from any rough, jarring movements. The packaging does not protect the electric oven from the effects of improper handling.

12. WARRANTY

The manufacturer guarantees that the electric oven meets company standards.

The oven is guaranteed for 12 months from the date of purchase provided that the user follows the instructions regarding the oven's storage, transportation and usage. However, the guarantee does not extend more than 24 months beyond the oven's manufacture date.

Manufacture defects that appear during the warranty period shall be repaired at the manufacturer's expense. The manufacturer's address:

AB „Umega", SNOL Dpt.,
Narkûnai LT-28104 Utena, Lithuania;
Tel +370 389 54586; Fax +370 389 61223;
E-mail: info@snol.com ;
www.snol.com .

13. ASSESSMENT TECHNIQUE OF THE LABORATORY ELECTRIC OVEN'S PARAMETERS

TESTED PARAMETERS:

1. Testing of the nominal temperature and temperature stability without load and shelves when the low temperature laboratory electric oven is heated to the nominal temperature.

2. Temperature distribution in the working space without load and shelves when the low temperature laboratory electric oven is heated to the nominal temperature.

TESTING METHODS

All tests are performed when the low temperature laboratory electric oven is heated to the nominal temperature and has stabilised, i.e. when the temperature of the oven corresponds to the nominal temperature and temperature fluctuations reach minimal values (e.g. 350±1^{0}C).

1. The testing of the nominal temperature and temperature stability without load and shelves when the low temperature laboratory electric oven is heated to the nominal temperature is performed as following:

In a cold oven, the pilot thermocouple is placed as closely as possible to the working thermocouple. The nominal temperature and temperature stability is tested for a 1 hour period. The readings of the control device are registered every 10 minutes.

The estimation of the nominal temperature: the sum of all registered temperature values is divided by the number of readings. The result must be between 349 ^{0}C and 351 ^{0}C. The temperature stability is estimated at the same time. If the result is positive during the temperature testing, the temperature stability conforms to the requirement 350±1^{0}C.

2. The testing of the temperature distribution in the working space without load and shelves when the low temperature laboratory electric oven is heated to the nominal temperature is performed with the help of pilot thermocouples and the device showing the temperature. No fewer than five thermocouples should be used. Thermocouples have to be arranged at the distance of 1/10 from the wall (for example, if the length of the wall is 390 mm, the thermocouple should not be closer than 39 mm from the wall) and one thermocouple has to be put in the centre of the chamber. For attaching the thermocouples, we recommend making a welded frame. The results are estimated according to the following formula.

The estimation of the temperature distribution in the working space: maximum testing temperature from one point minus minimal temperature from another point divided by two.

The temperature distribution must be not higher than that specified in the technical specifications (page 27).

All instruments and thermocouples used for testing must be assessed, undergo metrological testing and have a level of accuracy no lower than the first class.

14. MAINTENANCE

 Attention !	**The electric oven should be disconnected from the mains (power supply) and cooled.**

Once a year	Once a year measure the insulation resistance between the frame and heating elements. Dry the electric oven. Connect the megohmmeter to the leads of the heating element and frame. The reading of the megohmmeter should not be less than 0,5 MΩ.
Once every six months	Once every six months visually examine the power lead and inside of the chamber for damage.
Cleaning	When an operation is completed, clean the external surfaces of the electric oven, except for the markings, with a water-dampened piece of cloth. Clean out the scale from the heating chamber with a water-dampened piece of cloth.
Cleaning of the fan openings	Clean the vents with a vacuum cleaner.

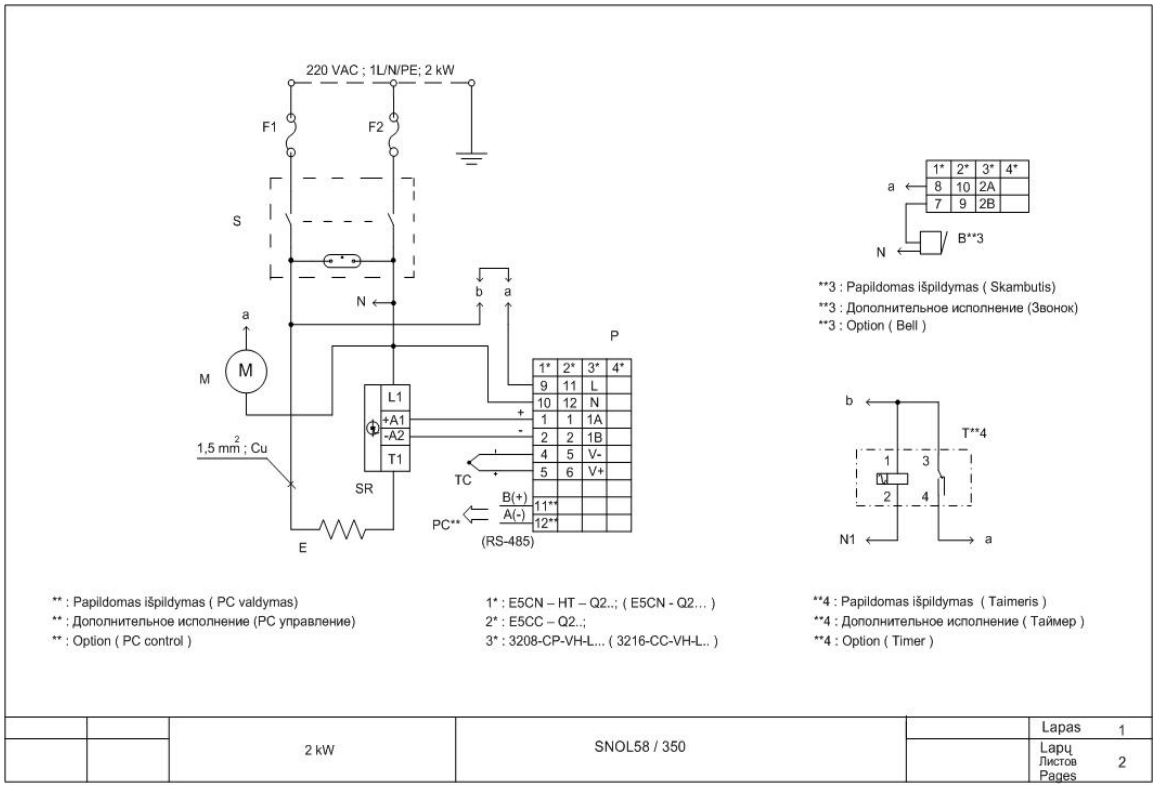
15. TROUBLESHOOTING

Problem	Possible Cause	Solution
The oven doesn't turn on.	There is no rated power supply voltage; The fuse is burnt out.	To check the power supply; Change the fuse.
The oven doesn't heat up.	The temperature controller is not switched on; Damaged heating element; Damaged solid-state relay.	Switch on temperature controller; Change heating element; Change solid-state relay
Heating time is longer than expected.	Low voltage of the power supply; Door does not maintain a hermetic seal.	Check the power supply's voltage; Tighten the door's closure.
Temperature fluctuation or large over-shoot of the set temperature.	Temperature Controller requires control terms tuning.	Perform an Auto-tune (AT) on the temperature controller (look at temperature controller instructions).

In order to continually improve our products and their usage, supplements to this publication may be introduced without notice.

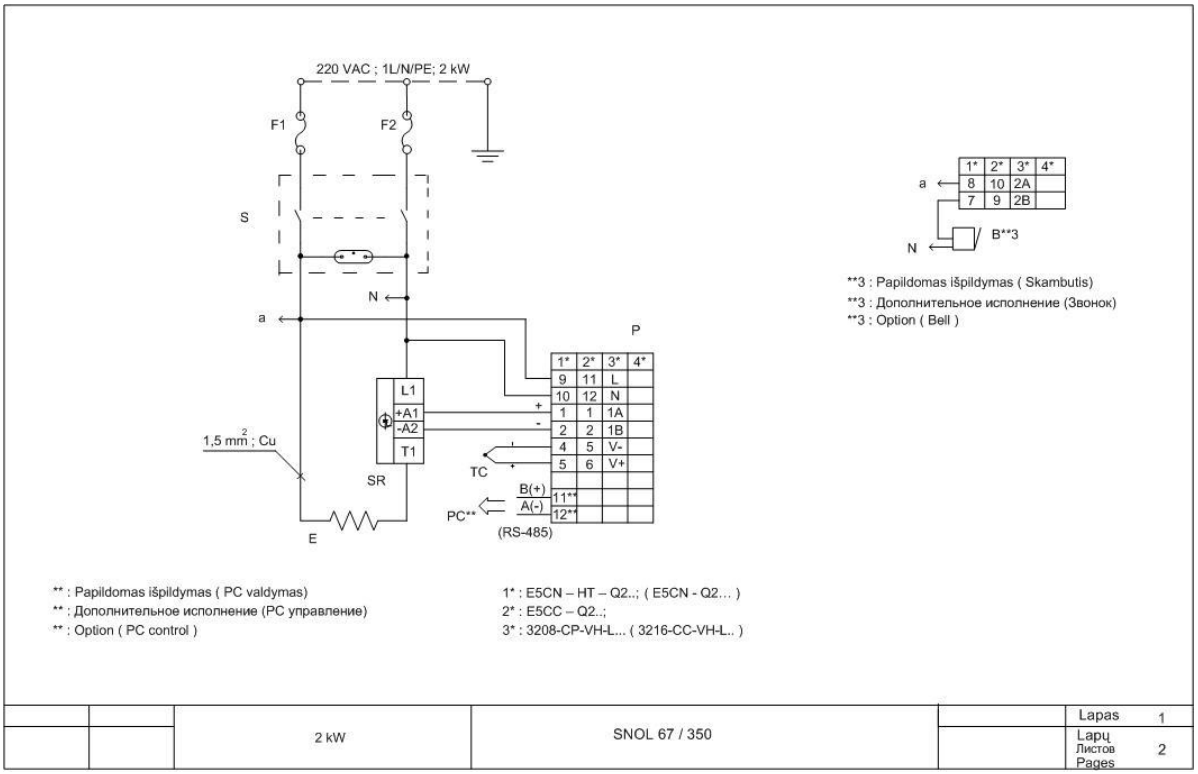
16. ELEKTRINĖ PRINCIPINĖ SCHEMA
16. СХЕМА ЭЛЕКТРИЧЕСКАЯ ПРИНЦИПИАЛЬНАЯ
16. ELECTRICAL DIAGRAM

SNOL 58/350



Žymėjimas Обозначение Name of component	Kiekis Кол. Qty	Pavadinimas Название Article identification	Tipas Тип Type	Gamintojas Производитель Manufacturer	Pastabos Примечания Remark
F1, F2	2	Saugiklis / Предохранитель Fuse, 12 A, M;			
S	1	Jungiklis / Выключатель /Switch	R595KMET2F		
P	1	Temperatūros reguliatorius/ Регулятор температуры/ Temperature controller	E5CN-HT (E5CC; 3208; 3216)	Omron, Eurotherm	
SR	1	Tiristorinė rėlė/ Реле тиристорное/ Solid-state relay 25A, 240V	G3PB225BVD122 4DC (GTS-25/230-0-U07)	Omron (Gefran)	
M	1	Ventiliatorius / Вентилятор/ Fan	AWP-01	ASPA	
TC	1	Termopora / Термопара / Thermocouple, "J"	SV2x0,5 (J)		
E	1	Kaitintuvas / Нагреватель / Heating element	ENGLU-400-10; 2/220B		
B**3	1	Skambutis / Звонок / Buzzer			
T**4	1	Taimeris/ Таймер/ Timer	Tactic 371 plus		

SNOL 67/350



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F1, F2	2	Saugiklis / Предохранитель Fuse, 12A, M;			
S	1	Jungiklis / Выключатель /Switch	R595KMET2F		
P	1	Temperatūros reguliatorius/ Регулятор температуры/ Temperature controller	E5CN-HT (E5CC; 3208; 3216,)	Omron, Eurotherm	
SR	1	Tiristorinė rėlė/ Тиристорное реле/ Solid –state relay	G3PB225BVD 1224DC (GTS-25/230-0-U07)	Omron (Gefran)	
TC	1	Termopora / Термопара / Thermocouple, “J”	SV2x0,5 (J)		
E	1	Kaitintuvas / Нагреватель / Heating element	ENGLU-400-10; 2/220B		
B**3	1	Skambutis / Звонок / Buzzer			

17. PAŽYMA APIE PRIĖMIMĄ
17. СВИДЕТЕЛЬСТВО О ПРИЁМКЕ
17. OVEN CONFORMITY CERTIFICATION

Žemos temperatūros laboratorinė elektros krosnis atitinka įmonės standarto reikalavimus ir pripažinta tinkama naudojimui.

Электропечь низкотемпературная лабораторная соответствует требованиям стандарта предприятия и признана годной для эксплуатации.

Low temperature laboratory oven model was tested and meets the company standards.

Elektros krosnis /Gamyklinis Nr.
Электропечь /Заводской номер
Oven /Serial No.

Pagaminimo data/Gaminio kodas
Дата выпуска/ Код изделия
Produced/ Product code

Kontrolės atžyma
Контроль мастера
Control department seal and signature

UMEGA

CE

ATITIKTIES DEKLARACIJA
ДЕКЛАРАЦИЯ СООТВЕТСТВИЯ
DECLARATION OF CONFORMITY
KONFORMITÄTSERKLÄRUNG

AB "Umega"

Metalo 5, LT-28216 Utena, Lietuva (Литва, Lithuania, Litauen)

Žemos temperatūros laboratorinės varžinės elektros krosnys SNOL 1÷5000/30÷600 naudojamos analytinių ir terminių darbų atlikimui laboratorijose.

Электропечи сопротивления низкотемпературные лабораторные SNO 1÷5000/30÷600 применяется для аналитических работ и термообработки в лабораториях

Low temperature resistive electric oven SNOL 1÷5000/30÷600 are used for laboratory analytical and thermal treatment processes for different materials.

Die Niedertemperatur-Labor-Widerstands-Elektroöfen SNOL 1÷5000/30÷600 werden für analytische Arbeiten und thermische Bearbeitung von verschiedenen Materialien in Labors verwendet.

Žemos temperatūros laboratorinės varžinės elektros krosnys SNOL1÷5000/30÷600 atitinka Europos Sąjungos Žemų įtampų direktyvos 2006/95/EC reikalavimams - standartams LST EN 61010-1, LST EN 61010-2-010, Europos Sąjungos Mašinų saugos direktyvos 2006/42/EC reikalavimams - standartams LST EN ISO 12100-1, LST EN ISO 12100-2, Europos Sąjungos Elektromagnetinio suderinamumo direktyvos 2004/108/EC reikalavimams - standartui LST EN 55011.

Электропечи сопротивления низкотемпературные лабораторные SNOL1÷5000/30÷600 соответствует требованиям Низковольтной директивы Евро Союза 2006/95/EC - стандартам LST EN 61010-1, LST EN 61010-2-010, директивы Безопасность машин Евро Союза 2006/42/EC - стандартам LST EN ISO 12100-1, LST EN ISO 12100-2, директивы Электромагнитной совместимости Евро Союза 2004/108/EC - стандарту LST EN 55011.

Low temperature resistive electric oven SNOL 1÷5000/30÷600 are conforming to the requirements of EU Low Voltage Directive 2006/95/EC and the standards LST EN 61010-1, LST EN 61010-2-010, EU Machinery Directive 2006/42/EC and the standards LST EN ISO 12100-1, LST EN ISO 12100-2 , EU Electromagnetic Compatibility Directive 2004/108/EC – standard LST EN 55011.

Die Niedertemperatur-Labor-Widerstands-Elektroöfen SNOL 1÷5000/30÷600 erfüllen die Vorschriften der Niederspannungsrichtlinie 2006/95/EG – der Normen LST EN 61010-1, LST EN 61010-2-010; der Maschinenrichtlinie 2006/42/EG – der Normen LST EN ISO 12100-1, LST EN ISO 12100-2 und der EMV-Richtlinie 2004/108/EG – der Norm LST EN 55011.

SNOL departamento direktorius	V. Nemura
Директор департамента SNOL	В. Немура
SNOL department Director	V. Nemura
Direktor des Departements SNOL	V. Nemura

Data Дата Date Datum 2014-08-27

LIETUVOS RESPUBLIKA AB „Umega" DOKUMENTAMS UTENA

SNOL

Customized for your hot innovations

01

Gamintojas / Изготовитель / Manufacturer

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UMEGA