

Operating Manual

APT.line™ FED

Multifunctional heating/drying ovens
with forced convection

with R3.1 Controller

BINDER GmbH

Address

Post office box 102

D-78502 Tuttlingen

Tel.

+49 7462 2005 0

Fax

+49 7462 2005 100

Internet

<http://www.binder-world.com>

E-mail

info@binder-world.com

Service Hotline

+49 7462 2005 555

Service Fax

+49 7462 2005 93 555

Service E-Mail

service@binder-world.com

Service Hotline USA

+1 866 816 8191

Service Hotline Asia Pacific

+603 6204 2855



**EG - KONFORMITÄTSERKLÄRUNG
EC - DECLARATION OF CONFORMITY
CE - DECLARATION DE CONFORMITE**

Anbieter / Supplier / Fournisseur: BINDER GmbH
Anschrift / Address / Adresse: Im Mittleren Ösch 5, D-78532 Tuttlingen
Produkt / Product / Produit: Multifunktionale Wärme-/Trockenschränke mit forcierter Umluft
Multifunctional heating/drying ovens with forced convection
Étuves/armoires séchantes multifonctions à circulation d'air forcée
Typenbezeichnung / Type / Type: FED 53, FED 115, FED 240, FED 400, FED 720

**Die oben beschriebenen Produkte sind konform mit folgenden harmonisierten Normen:
The products described above are in conformity with the following harmonized standards:
Les produits décrits ci-dessus sont conformes aux normes harmonisées suivantes:**

Sicherheit / safety / sécurité:

IEC/CEI 61010-1:2001 Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte – Teil 1: Allgemeine Anforderungen
Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements
Règles de sécurité pour appareils électriques de mesure, de régulation et de laboratoire – Partie 1 : Prescriptions générales

IEC/CEI 61010-2-010:2003 Sicherheitsbestimmungen für elektrische Meß-, Steuer-, Regel- und Laborgeräte – Teil 2-010: Besondere Anforderungen an Laborgeräte für das Erhitzen von Stoffen
Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-010: Particular requirements for laboratory equipment for the heating of materials
Règles de sécurité pour appareils électriques de mesure, de régulation et de laboratoire. Partie 2-010 : Prescriptions particulières pour appareils de laboratoire utilisés pour l'échauffement des matières

EMV / EMC / CEM:

IEC/CEI 61326:1997 + A1:1998 + A2:2000 Elektrische Betriebsmittel für Leittechnik und Laboreinsatz – EMV-Anforderungen
Electrical equipment for measurement, control and laboratory use – EMC requirements
Matériels électriques de mesure, de commande et de laboratoire – Prescriptions relatives à la CEM

**Die oben beschriebenen Produkte sind konform mit folgenden EG-Richtlinien:
The products described above are in conformity with the following EC guidelines:
Les produits décrits ci-dessus sont conformes aux directives CE suivantes:**

Niederspannungsrichtlinie
73/23/EWG, Änderung 93/68/EWG
Low voltage directive
73/23/EEC, amended 93/68/EEC
Directive basse tension
73/23/CEE, modifiée 93/68/CEE

Richtlinie 73/23/EWG des Rates vom 19. Februar 1973 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen

Council Directive of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (73/23/EEC)

Directive 73/23/CEE du Conseil, du 19 février 1973, concernant le rapprochement des législations des États membres relatives au matériel électrique destiné à être employé dans certaines limites de tension

EMV-Richtlinie
89/336/EWG, Änderung 93/68/EWG
EMC Directive
89/336/EEC, amended 93/68/EEC
Directive CEM
89/336/CEE, modifiée 93/68/CEE

Richtlinie 89/336/EWG des Rates vom 3. Mai 1989 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit

Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility

Directive 89/336/CEE du Conseil du 3 mai 1989 concernant le rapprochement des législations des États membres relatives à la compatibilité électromagnétique

**Die oben beschriebenen Produkte tragen entsprechend die Kennzeichnung CE.
The products described above, corresponding to this, bear the CE-mark
Les produits décrits ci-dessus, en correspondance, portent l'indication CE.**

D-78532 Tuttlingen, 10.01.2006

BINDER GmbH



P. M. Binder
Geschäftsführender Gesellschafter
Managing Director
Directeur général



Dr.-Ing. V. Kek
Leiter F & E
Head of R & D
Chef de service R&D

Content

1. SAFETY	6
1.1 Legal considerations	6
1.2 Structure of the safety instructions	6
1.3 Localization / position of safety labels at the unit	8
1.4 Type plate	9
1.5 General safety instructions on installing and operating the multifunctional heating/drying oven FED	10
1.6 Intended use	11
2. UNIT DESCRIPTION	12
2.1 Equipment overview FED	12
3. SCOPE OF DELIVERY, TRANSPORTATION, STORAGE, AND INSTALLATION	13
3.1 Unpacking, and checking equipment and scope of delivery	13
3.2 Advice for safe lifting and transportation	13
3.3 Storage	14
3.4 Location of installation and ambient conditions	14
4. INSTALLATION	15
4.1 Electrical connection	15
4.2 Connection to a suction plant (optional)	16
5. START UP	16
5.1 Switching on the unit	16
5.2 Heating operation display	17
5.3 Air change	17
6. CONTROLLER SETTING	17
6.1 Display / entry of temperature and ventilation set-points (without ramp function)	17
6.2 Display / entry of temperature and ventilation set-points (with selected temperature ramp)	18
6.3 Time functions: Continuous operation and Timer operation	19
6.3.1 Switching between Continuous operation and Timer operation	20
6.3.2 Continuous operation	20
6.3.3 Setting the timer values	21
6.4 User level settings	22
6.4.1 Temperature unit change between degrees Celsius °C and degrees Fahrenheit °F	23
6.4.2 Enter a temperature ramp	23
6.4.3 Chamber addressing	24
6.4.4 Selecting the timer function	25
6.4.5 Setting the interface mode and, if appropriate, the printer interval	26
6.5 Temperature programming example	27
6.6 General notes	27
7. SAFETY DEVICES	28
7.1 Temperature safety device class 2 (DIN 12880)	28
7.2 Temperature safety device class 3.1 (DIN 12880) (option)	29
7.3 Disconnectable acoustic over-temperature alarm (option)	30
8. OPTIONS	31
8.1 Communication software APT-COM™ 3 DataControlSystem (option)	31
8.2 Analog output for temperature (option)	31
8.3 Protocol printer (option)	32

9.	MAINTENANCE, CLEANING, AND SERVICE	33
9.1	Maintenance intervals, service.....	33
9.2	Cleaning and decontamination	33
9.3	Sending back the unit to the BINDER GmbH	34
10.	DISPOSAL.....	35
10.1	Disposal of the transport packing	35
10.2	Decommissioning.....	35
10.3	Disposal of the unit in the Federal Republic of Germany	35
10.4	Disposal of the unit in the member states of the EC except for the Federal Republic of Germany	36
10.5	Disposal of the unit in non-member states of the EC	38
11.	TECHNICAL DESCRIPTION.....	38
11.1	Factory calibration and adjustment.....	38
11.2	Definition of usable space.....	38
11.3	Over current protection	39
11.4	Technical data series FED.....	39
11.5	Equipment and Options	40
11.6	Spare parts.....	42
12.	CONTAMINATION CLEARANCE CERTIFICATE	43

Dear customer,

For the proper operation of the multifunctional heating/drying ovens with forced convection FED, it is necessary to read this operating manual completely and carefully and to observe the given instructions.

1. Safety

This operating manual is part of the scope of delivery. Always keep it at hand.

To avoid injuries and damage observe the safety instructions of the operating manual.

	 WARNING
	<p>Failure to observe the safety instructions. Serious injuries and unit damage.</p> <ul style="list-style-type: none"> ➤ Observe the safety instructions in this operating manual ➤ Carefully read the complete operating instructions of the multifunctional heating/drying ovens FED

1.1 Legal considerations

This operating manual contains information necessary for the intended use, correct installation, start-up and operation, and for the maintenance of the unit.

Understanding and observing the instructions in this operating manual are prerequisites for hazard-free use and safety during operation and maintenance.

This operating manual cannot cover all conceivable applications. If you would like additional information, or if special problems arise that you feel are not sufficiently addressed in this manual, please ask your dealer or contact us directly.

Furthermore, we note that the contents of this operating manual are not part of an earlier or existing agreement, promise, or legal relationship, nor do they modify such a relationship. All obligations on the part of BINDER derive from the respective purchase contract, which also contains the entire and exclusively valid statement of warranty administration. The statements in this manual neither augment nor restrict the contractual warranty provisions.

1.2 Structure of the safety instructions

In this operating manual, the following harmonized denominations and symbols indicate dangerous situations following the harmonization of ISO 3864-2 and ANSI Z535.4.

Signal word panel

Depending on seriousness and probability of the consequences, dangers are identified with a signal word, the corresponding safety color, and if appropriate, the safety alert symbol.

 DANGER
<p>Indicates an imminently hazardous situation that, if not avoided, will result in death or serious (irreversible) injury.</p>

 WARNING
<p>Indicates a potentially hazardous situation which, if not avoided, could result in death or serious (irreversible) injury</p>

 **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor (reversible) injury

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in damage of the product and/or its functions or of a property in its ambience.

Safety alert symbol



Use of the safety alert symbol indicates **risk of injury**.

Observe all measures that are marked with the safety alert symbol in order to avoid death or injury.

Pictograms

Warning signs			
 Electrical hazard	 Hot surface	 Explosive substances	 Tipover hazard
 Pollution Hazard	 Harmful substances	 Biohazard	
Mandatory action signs			
 Mandatory regulation	 Read operating instructions	 Pull the power plug	 Lift with several persons
 Lift with mechanical assistance	 Environment protection		
Prohibition signs			
 Do NOT touch	 Do NOT spray with water		

	Information to be observed in order to ensure optimum function of the product.
-----------------------------------------------------------------------------------	---------------------------------------------------------------------------------------

Word message panel structure

<p>Type / cause of hazard.</p> <p>Possible consequences.</p> <ul style="list-style-type: none"> ⊘ Instruction how to avoid the hazard: prohibition ➤ Instruction how to avoid the hazard: mandatory action

Observe the other notes and information not specially emphasized in the same way, in order to avoid disturbances which could result in direct or indirect injuries or property damage.

1.3 Localization / position of safety labels at the unit

Following labels are located on the unit:

Pictograms (Warning signs)	Service label
 <p style="margin-left: 20px;">Hot surface</p>	

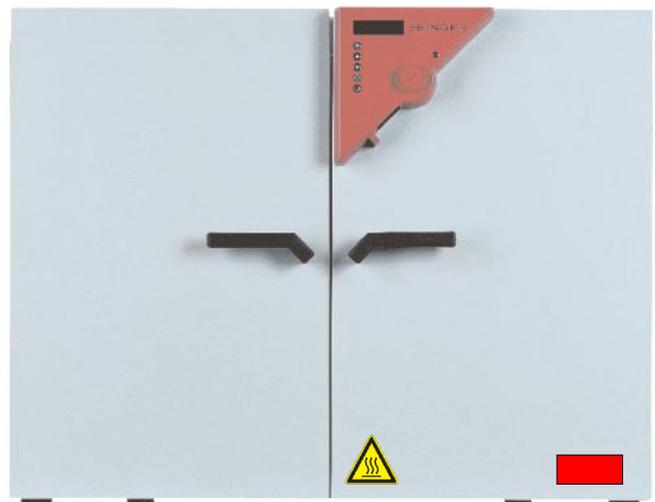
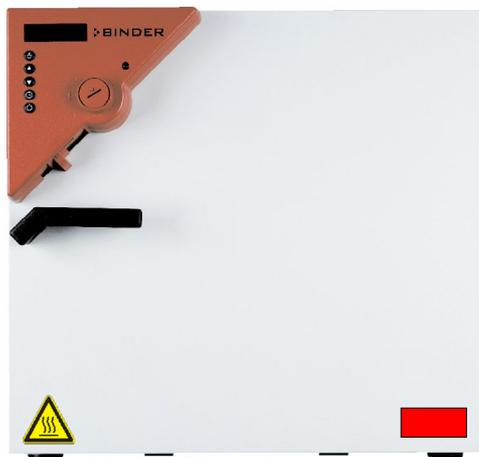


Figure 1: Position of labels at the unit

	Keep safety labels complete and legible.
-------------------------------------------------------------------------------------	------------------------------------------

Replace safety labels that are no more legible. Contact the BINDER service.

1.4 Type plate



Figure 2: Position of type plate

Nominal temperature	300°C 572°F	1,60 kW 230 V 1 N ~	 
Enclosure protection	IP 20	7,0 A	
Temp. safety device	DIN 12880	50/60 Hz	
Class	2.0		
Art. No.	9010-0212	US PATS 4585923 / 5222612 / 5309981	
Project No.	---	5405194 / 5601143 / 5773287 / 6079403	

BINDER D 78532 Tuttlingen / Germany
Tel. + 49 (0) 7462/ 2005-0
Internet: www.binder-world.com

FED 115 Serial No. 00-00000
Made in Germany

Figure 3: Type plate (example: FED 115 regular unit)

Indications of the type plate		Information
Nominal temperature	300°C 572°F	Nominal temperature
Enclosure protection	IP 20	IP type of protection 20 acc. to EN 60529
Temp. safety device	DIN 12880	Temperature safety device acc. to standard DIN 12880
Class	2.0	Temperature safety device, class 2
Art. No.	9010-0212	Art. No. 9010-0212
Project No.	---	(Special application acc. to project no.)
	1,60 kW	Nominal power 1.60 kW
	230 V 1 N ~	Nominal voltage 230 V ± 10%, single-phase unit
	7,0 A	Nominal current 7.0 A
	50/60 Hz	Mains frequency 50/60 Hz
FED 115		Model FED 115
Serial No. 00-00000		Serial No. 00-00000

Symbol on the type plate	Information
	CE conformity marking
	Electrical and electronic equipment manufactured / placed on the market in the EC after 13 August 2005 and be disposed of in separate collection according to the directive 2002/96/EC on waste electrical and electronic equipment (WEEE).
	The equipment is certified in the GOST R certification system of GOSTSTANDARD Russia.
 (FED-UL only)	The equipment is certified by Underwriters Laboratories Inc. [®] according to standards UL 61010A-1, UL 61010A-2-10, CSA C22.2 No. 1010.1-92, and CSA C22.2 No. 1010.2.010-94.

1.5 General safety instructions on installing and operating the multifunctional heating/drying oven FED

With regard to operating the multifunctional heating/drying oven FED and to the installation location, please observe the regulations BGR 120 of the German professional association of the chemical industry (formerly ZH 1/119 laboratory guidelines of the employers' liability insurance association) (for Germany).

The BINDER GmbH is responsible for safety-related unit properties only if skilled electricians or qualified personnel authorized by BINDER perform all maintenance and repair, and if components relating to chamber safety are replaced in case of failure with original spare parts.

To operate the unit, use only original BINDER accessories or accessories of third-party suppliers authorized by BINDER. The user is responsible for any risk when using unauthorized accessories.

	CAUTION
	<p>Danger of overheating. Damage of the unit.</p> <ul style="list-style-type: none"> ⊘ Do NOT install the unit in unventilated recesses. ➤ Ensure sufficient ventilation for carrying-off the heat.

The multifunctional heating/drying oven FED must NOT be operated in hazardous locations.

	 DANGER
	<p>Explosion hazard. Danger of life.</p> <ul style="list-style-type: none"> ⊘ Do NOT operate the unit in potentially explosive areas. ⊘ NO explosive dust or air-solvent mixture in the ambiance.

The multifunctional heating/drying oven FED does not dispose of any measures of explosion protection.

	 DANGER
	<p>Explosion hazard. Danger of life.</p> <ul style="list-style-type: none"> ⊘ Do NOT introduce any substance combustible or explosive at working temperature into the heating/drying oven. ⊘ NO explosive dust or air-solvent mixture in the inner chamber.

Any solvent contained in the charging material must not be explosive or inflammable. I.e., irrespective of the solvent concentration in the steam room, NO explosive mixture with air will form. The temperature inside the chamber must lie below the flash point or below the sublimation point of the charging material. Keep informed about the physical and chemical properties of the charging material, as well as the contained moisture constituent and its behavior under addition of heat energy.

Keep informed about any potential health risks caused by the charging material, the contained moisture constituent or by reaction products that may arise during the temperature process. Take adequate measures to exclude such risks prior to putting the multifunctional heating/drying oven into operation.

	 DANGER
	<p>Electrical hazard. Danger of life.</p> <p>∅ The unit must NOT become wet during operation or maintenance.</p>

The multifunctional heating/drying ovens have been produced in accordance to the VDE regulations and were routinely tested in accordance to VDE 0411.

	 CAUTION
	<p>The inner chamber, the outgoing air pipe, the door window (option) and the access ports will become hot during operation.</p> <p>Danger of burning.</p> <p>∅ Do NOT touch the inner surfaces, the outgoing air pipe, the door window, the access ports, and the charging material during operation.</p>

1.6 Intended use

The multifunctional heating/drying ovens FED are suitable for drying and heat treatment of solid or pulverized charging material, as well as bulk material, using the supply of heat. The solvent content must not be explosive or flammable. A mixture of any component of the charging material with air must NOT be explosive. The operating temperature must lie below the flash point or below the sublimation point of the charging material.

Other applications are not approved.

Do NOT use the unit for drying purpose, especially if greater quantities of steam leading to condensation will be set free.

	<p>Due to the special demands of the Medical Device Directive (MDD), these ovens are not qualified for sterilization of medical devices as defined by the directive 93/42/EWG.</p>
-------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>Respecting the instructions in this operating manual and conducting regular maintenance work (chap. 9) is part of the intended use.</p>
-------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------

2. Unit description

BINDER multifunctional heating/drying ovens FED are equipped with an electronic PID-controller with digital display. The temperature is indicated with an accuracy of one degree.

BINDER multifunctional heating/drying ovens with forced convection FED are heated electrically and are ventilated by fan-assisted, forced-air circulation. They FED are equipped with a temperature safety device according to DIN12880 (chap. 7).

The inner chamber, the pre-heating chamber and the inside of the doors are all made of stainless steel (material no. 1.4301 in Germany). When operating the unit at temperatures above 150°C, influence of the oxygen in the air might cause coloration of the metallic surfaces (yellowish-brown or blue) by natural oxidation processes. These colorations are harmless and will in no way impair the function or quality of the unit. The housing is RAL 7035 powder-coated. All corners and edges are completely coated.

BINDER multifunctional heating/drying ovens FED are equipped with a serial interface RS 422 for computer communication, e.g. via the communication software APT-COM™ 3 DataControlSystem (option, chap. 8.1). For further options, see chap. 11.5.

The models FED 720 are equipped with four castors. Both front castors can be locked by brakes.

The unit can be operated in a temperature range of 5°C above ambient temperature up to +300°C.



If you want to frequently operate the unit at low set-points up to 70°C, the controller parameters can be optimized accordingly. Please contact the BINDER Service to obtain detailed instructions how to change the parameters.

2.1 Equipment overview FED

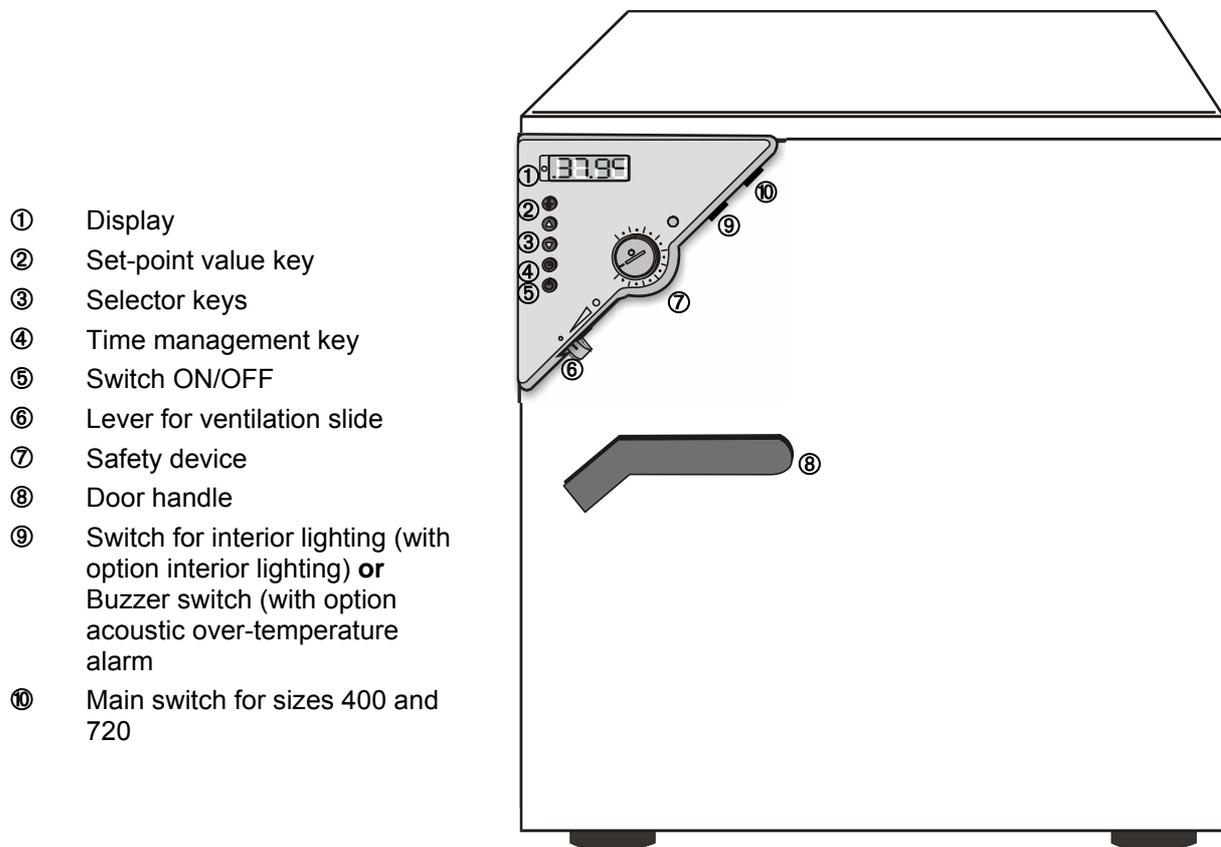


Figure 4: Multifunctional heating/drying oven FED with R3.1 controller

3. Scope of delivery, transportation, storage, and installation

3.1 Unpacking, and checking equipment and scope of delivery

After having unpacked, please check the unit and its optional accessories, if any, based on the delivery note for completeness and for transportation damage. If transportation damage has occurred, immediately inform the carrier.

The final tests of the manufacturer might cause traces of the racks at the inner surfaces. This has no impact on the function and performance of the unit.

Please remove any transportation protection devices and adhesives in / on the unit and at the doors and take out the operating manuals and accessory equipment.

  	CAUTION
	<p>Sliding or tilting of the unit.</p> <p>Damage of the unit.</p> <ul style="list-style-type: none"> ∅ Do NOT lift or transport the unit using either the door handle or the door. ∅ Do NOT lift units size 400 and 720 by hand ➤ Lift units size 53, 115, and 240 near the 4 unit feet from the pallet by aid of 4 persons. ➤ Lift units size 400 and 720 using technical devices (fork lifter) from the pallet. Set the fork lifter only from the rear in the middle of the unit. Make sure to place all the lateral supports of the unit on the forks.

If necessary to send back the unit, please use the original packing and respect the advice for safe lifting and transportation (chap. 3.2).

For disposal of the transport packing, see chap. 10.1.

Note on second-hand units (Ex-Demo-Units):

Second-hand units are units that have been used during a short time for tests or exhibitions. They are scrupulously tested before resale. BINDER guarantees the technically flawless state of the chamber.

Second-hand units are marked as such with a sticker on the unit door. Please remove the sticker before commissioning the unit.

3.2 Advice for safe lifting and transportation

The front castors of units size 720 can be blocked by brakes. Respect the advice for temporal decommissioning (chap. 10.2).

	CAUTION
	Sliding or tilting of the unit.
	Damage of the unit.
	<ul style="list-style-type: none"> ➤ Transport the unit only in its original packaging. ➤ Secure the unit with transport straps for transport. ⊘ Do NOT lift or transport the unit using either the door handle or the door. ⊘ Do NOT lift units size 400 and 720 by hand. ➤ Lift units size 53, 115, and 240 near the 4 unit feet by aid of 4 persons and place it on a transport pallet with wheels. Push the pallet to the desired site and then lift the unit near the 4 unit feet from the pallet. ➤ Place units size 400 and 720 using technical devices (fork lifter) on the transport pallet. Set the fork lifter only from the rear in the middle of the unit. Make sure to place all the lateral supports of the unit on the forks. ➤ Transport units size 400 and 720 ONLY with the original transport pallet. Set the fork lifter only to the pallet. Without the pallet the unit is in imminent danger of overturning.

- Permissible ambient temperature range: -10°C to +60°C.
- You can order transport packing and pallets for transport purpose at the BINDER Service.

3.3 Storage

Intermediate storage of the unit is possible in a closed and dry room. Respect the advice for temporal decommissioning (chap. 10.2).

- Permissible ambient temperature range: -10°C to +60°C.
- Permissible ambient humidity: max. 70 % r.H., non-condensing

If following storage in a cold location the unit is transferred to the installation site for start-up, condensation is possible. Wait at least one hour until the oven has attained ambient temperature and is completely dry.

3.4 Location of installation and ambient conditions

Set up the multifunctional heating/drying oven FED on a plane and non-flammable surface, free from vibration at a well-ventilated, dry location and align it using a spirit level. The site of installation must be capable of supporting the unit's weight (see technical data, chap. 11.4).

	CAUTION
	Danger of overheating.
	Damage of the unit.
	<ul style="list-style-type: none"> ⊘ Do NOT set up units in non-ventilated recesses. ➤ Ensure sufficient ventilation for carrying-off the heat.

- Permissible ambient temperature range: +18°C up to +40°C. At elevated ambient temperature values, fluctuations in temperature can occur.

	<p>The ambient temperature should not be substantially higher than the indicated ambient temperature of +25°C to which the specified technical data relate. In the case of different ambient conditions, deviations from the indicated data are possible.</p>
-------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

- Permissible ambient humidity: 70 % r.H. max., non-condensing.
- Installation height: max. 2000 m above sea level.

When placing several units of the same size side by side, maintain a minimum distance of 250 mm between each unit. Wall distances: rear 100 mm, sides 160 mm. Spacing above the unit of at least 100 mm must also be accounted for.

Two devices up to size 115l can be piled on top of each other. For this purpose, place rubber pads under all four feet of the upper unit to prevent the device from slipping.

	CAUTION
	<p>Sliding or tilting of the upper unit.</p> <p>Damage of the units.</p> <p>➤ When stacking, place rubber pads under all four feet of the upper unit.</p>

The multifunctional heating/drying oven FED must NOT be installed and operated in hazardous locations.

	 DANGER
	<p>Explosion hazard.</p> <p>Danger of life.</p> <p>Ø Do NOT operate the unit in potentially explosive areas.</p> <p>Ø NO explosive dust or air-solvent mixture in the ambience.</p>

4. Installation

4.1 Electrical connection

- **FED 53, FED 115, FED 240:**
Shockproof plug, mains voltage 230 V (1N~) +/- 10 %, 50/60 Hz
Fixed mains connection cable of 1800 mm in length
- **FED 400, FED 720:**
CEE plug 5 poles, mains voltage 400 V (3N~) +/- 10 %, 50/60 Hz
Fixed mains connection cable of 2700 mm in length
- **FED 53-UL, FED 115-UL:**
NEMA plug 5-20P, mains voltage 115 V (1N~) +/- 10 %, 60 Hz
Fixed mains connection cable of 1800 mm in length
- **FED 240-UL, FED 400-UL, FED 720-UL:**
NEMA plug L21-20P, mains voltage 208 V (3N~) +/- 10 %, 60 Hz
Fixed mains connection cable of 2700 mm in length
- Prior to connection and start-up, check the mains voltage. Compare the values to the data specified on the type plate of the unit (unit front behind the door, bottom left-hand, chap. 1.4).
- When connecting, please observe the regulations specified by the local electricity supply company and as well as the VDE directives (for Germany)
- Pollution degree (acc. to IEC 1010-1): 2
- Over-voltage category (acc. to IEC 1010-1): II

	CAUTION
	<p>Danger of incorrect mains voltage.</p> <p>Damage of the equipment.</p> <ul style="list-style-type: none"> ➤ Check the mains voltage before connection and start-up. ➤ Compare the mains voltage to the data indicated on the type plate.

See also electrical data (chap.11.4).

4.2 Connection to a suction plant (optional)

When directly connecting a suction plant the spatial temperature exactitude, the heating-up and the recovering times and the maximum temperature will be negatively influenced. So no suction plant should be directly connected to the outgoing air pipe.

	<p>Active suction from the oven must only be effected together with extraneous air. Perforate the connecting piece to the suction device or place an exhaust funnel at some distance to the outgoing air pipe.</p>
-----------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	 CAUTION
	<p>The exhaust duct will become hot during operation.</p> <p>Danger of burning.</p> <p>∅ Do NOT touch the exhaust duct during operation.</p>

5. Start up

5.1 Switching on the unit

1. Insert plug into socket (chap. 4.1).
2. Switch on units of sizes 400 and 720 at the main switch (10)

The green "Standby" LED illuminates.



3. Press  until the display lights up.

The controller is now in normal display (actual value display).

If the oven is operating (time functions "Continuous operation", or "Timer operation" with the set time just running down chap. 6.3), the **actual temperature value** (example: 22°C) is displayed



If the oven is in time function "Timer operation" with no time programmed or the set time run-off (chap. 6.3), the unit is inactive (no heating). The display alternately shows the **actual temperature value** (example: 22°C) and "tOff":



5.2 Heating operation display

The heating is active as soon as the red heating control light in the bottom right corner of the display slowly begins to flash depending on the heat requirement (example: 70°C):



5.3 Air change

Opening the air flap in the outgoing air pipe serves to adjust the air change.

Without connecting a suction plant:

- If the air flap is open and the fan is operating, fresh air comes in via aeration gaps.
- If the air flap is completely open, the spatial temperature accuracy can be negatively influenced.

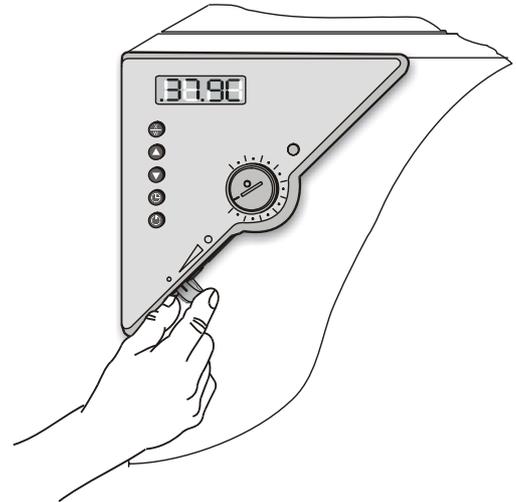


Figure 5: Adjusting the air flap

6. Controller setting

6.1 Display / entry of temperature and ventilation set-points (without ramp function)

The unit is operating, the controller is in normal display (actual value display). The actual temperature value (example: 22°C) is displayed:



1. Press button

The display shows alternately "SP" and in the entry level the previous **temperature set-point** (example: 60°C):



2. With the buttons enter a set-point value between 0 and 300.



The desired temperature set-point can be selected in a temperature range from 5°C above room temperature up to 300°C.

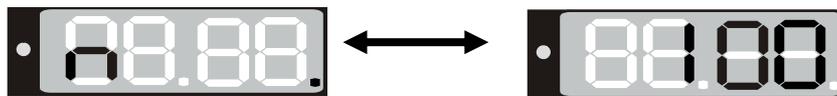


If you want to frequently operate the unit at low set-points up to 70°C, the controller parameters can be optimized accordingly. Please contact the BINDER Service to obtain detailed instructions how to change the parameters.

3. Wait 2 seconds until the entered temperature value is taken over (display flashing once).

- Press  button to proceed to the fan speed entry.

The display shows alternately "n" and in the entry level the previous **fan speed set-point** (example: 100%):



- Set the desired fan speed with the   buttons.

	The fan speed can be set to a value between 0% and 100%.
-----------------------------------------------------------------------------------	----------------------------------------------------------

- Wait 2 seconds until the entered value is taken over (display flashing once).
- Press  button to return to normal display (actual value display) (automatically after 60 seconds).

6.2 Display / entry of temperature and ventilation set-points (with selected temperature ramp)

If previously a temperature ramp value has been selected (chap. 6.4.2):

Press button  in normal display / actual value display during ramp operation to have displayed the actual temperature set-point changing according to the selected gradient in addition to the entered set-points for temperature and fan speed.

The oven is operating, the controller is in normal display (actual value display). The **actual temperature value** (example: 22°C) is displayed:



- Press  button

The display shows alternately "SPr" and in the entry level the **actual temperature set-point** changing according to the selected gradient (example: 42°C):



This ramp set-point is only displayed, not adjustable.

- Press  button

The display shows alternately "SP" and in the entry level the previous **temperature set-point** (example: 60°C):



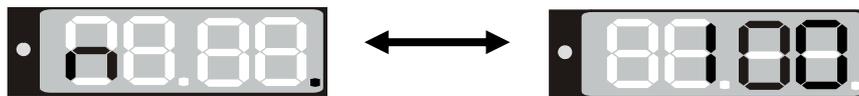
- With the   buttons enter a set-point value between 0 and 300.

	The desired temperature set-point can be selected in a temperature range from 5°C above room temperature up to 300°C.
-------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------

- Wait 2 seconds until the entered temperature value is taken over (display flashing once).

5. Press button to proceed to the fan speed entry.

The display shows alternately “n” and in the entry level the previous **fan speed set-point** (example: 100%):



6. Set the desired fan speed with the buttons

The fan speed can be set to a value between 0% and 100%.

7. Wait 2 seconds until the entered value is taken over (display flashing once).

8. Press button to return to normal display / actual value display (automatically after 60 seconds).

6.3 Time functions: Continuous operation and Timer operation

Press the time management button .

The timer indicates its current time function. There are two possible time functions:

Continuous operation

The display shows alternately “t1” (time function) and the time function “Continuous operation” “t inf”:



The heating is permanently active, independent of the timer setting.

Timer operation

The display shows alternately “t1” (time function) and the running-down time or “tOff”:



Remaining time (example: 28 Min.) – **Timer running down**

Heating activity depending on the entered time value and the timer function selected in the user menu (chap.6.4.4)

or



Timer not programmed or run-down “t off”

If the timer has run-down, the unit’s behavior depends on the pre-selected timer function (chap. 6.4.4).

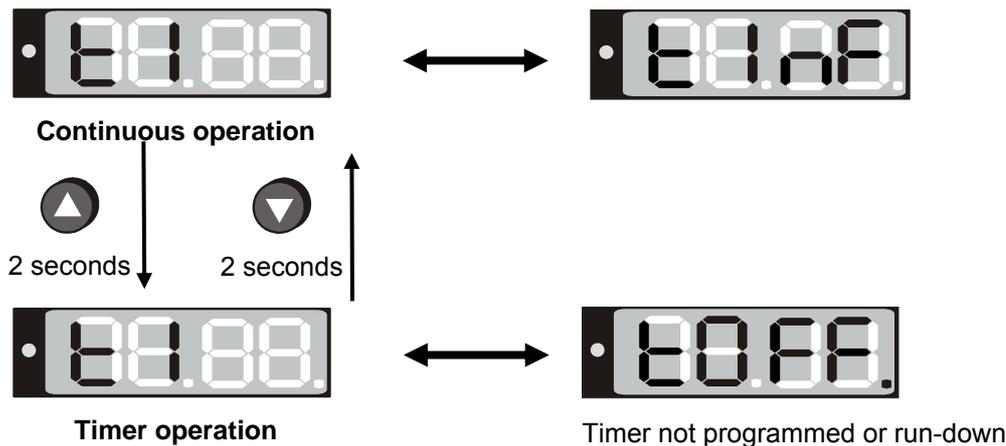
- Press button to return to normal display (actual value display) (automatically after 60 seconds).

6.3.1 Switching between Continuous operation and Timer operation

Press the time management button .

The controller displays the actual time function. In time function "Continuous operation", "t1" and "t inf" are displayed alternately. In time function "Timer operation", "t1" is displayed alternately with the running-down time or "tOff".

If in time function "Timer operation" the Timer is just running off ("t1" displayed alternately with the running-down time) the timer must at first be set to Zero (chap. 6.3.3). Now "t1" is displayed alternately with "tOff", and the controller can be changed to time function "Continuous operation".



Press  button to return to normal display / actual value display (automatically after 60 sec).

6.3.2 Continuous operation

1. Press the time management button . The timer indicates its current time function.

2. If necessary, switch to Continuous operation by button .

The display shows alternately "t1" and the time function "Continuous operation" "t inf":



3. Press  button to return to normal display (actual value display) (automatically after 60 seconds).

The **actual temperature value** (example: 22°C) is displayed:



Now the controller operates with the entered set-points (chap. 6.1) in continuous operation. The heating is permanently active, independent of the timer setting.

To cancel Continuous operation, proceed accordingly:

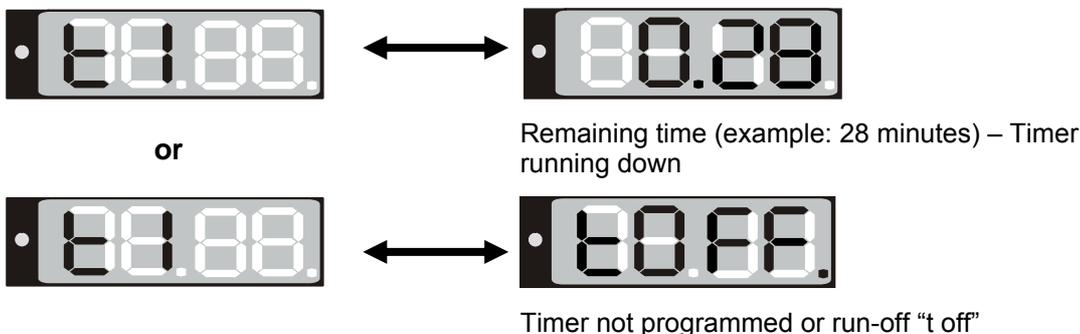
1. Press the time management button .

2. Switch to Timer operation by pressing down button  for 2 seconds (chap. 6.3.1).

6.3.3 Setting the timer values

1. Press the time management button . The controller indicates its current time function.
2. If necessary, switch to timer operation by button .

The display alternately shows "t1" and in the entry level the running-down **time** or "tOff":



3. Set the desired time [hh.mm] with buttons   in the entry level.
4. Wait 2 seconds until the entered temperature value is taken over (display flashing once).

The display alternately shows "t1" and the set time now running down.



The time directly begins to run off after taking-over of the entered value. The use of this time depends on the timer function selected in the user menu (chap. 6.4.4).

5. Press button  to return to normal display (actual value display) (automatically after 60 seconds).

The **actual temperature value** is displayed (example: 22°C):



The controller operates with the entered set-points (chap. 6.1) until run-down of the set time. Heating activity depending on the entered time value and the timer function selected in the user menu (chap.6.4.4)

To know the remaining timer time or, if appropriate, to modify it, press the time management button  in normal display (actual value display).

The display alternately shows "t1" and in the entry level running-down **time**:



After the set time has run down the display alternately shows the **actual temperature value** (example: 22°C) and "tOff":



Now the heating is inactive. The fan continues operating.

6.4 User level settings

By pressing down button  in normal display (actual value display) for 5 sec, you enter the user menu. Settings in this menu affect controller operation.

User level overview:

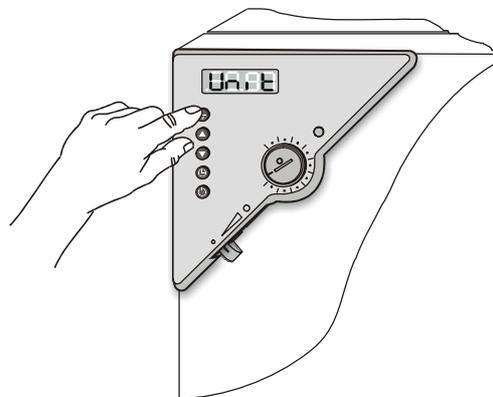
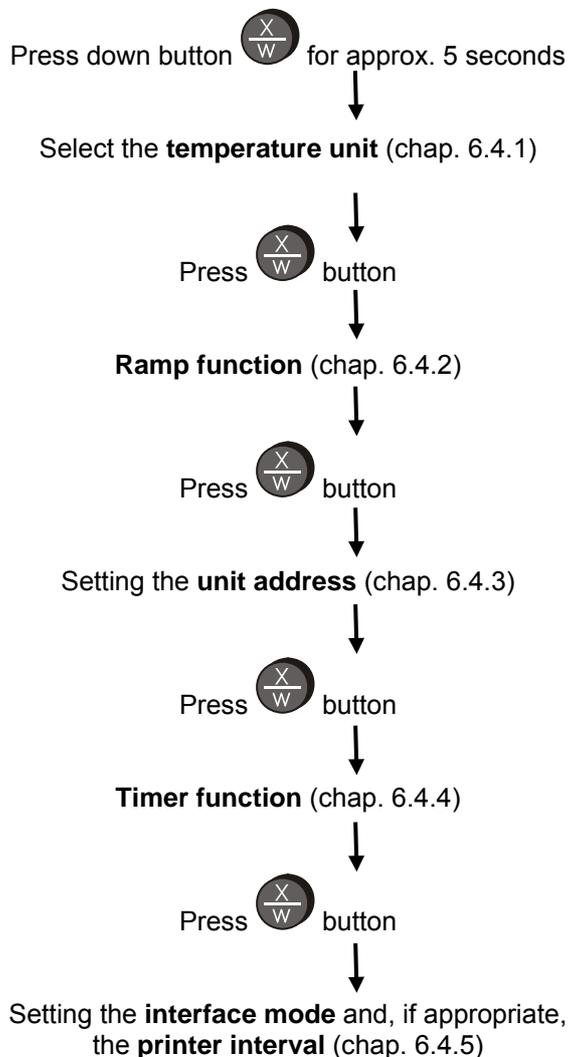


Figure 6: Press down  button for approx. 5 seconds

Press button  to return to normal display with display of the temperature set-point. **Or:**

After 60 seconds the controller automatically returns to normal display / actual value display.

All settings can be carried out independently (as described in the individual sections) or one after the other during one single process.



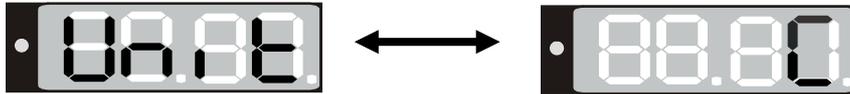
The defined parameters are not deleted when the main switch is switched off or in case of power failure.

6.4.1 Temperature unit change between degrees Celsius °C and degrees Fahrenheit °F

If required, the temperature display can be changed as follows:

1. Press down  button for approx. 5 seconds.

The display alternately shows "unit" and in the entry level the actual setting of the **temperature unit**:



2. Use the   buttons to set the required unit.
3. The set unit is automatically adopted after 2 seconds.

	C = degrees Celsius	0°C = 31°F	Conversion:
	F = degrees Fahrenheit	100°C = 212°F	[Value in °F] = [Value in °C] * 1,8 + 32

When specifying the set point ramp (see chap. 6.4.2) this setting is accordingly taken as the basis.

	If the unit is changed, the temperature set-point and limits are converted accordingly.
-----------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------

6.4.2 Enter a temperature ramp

Temperature ramps can be programmed in order to extend heating up times. This may be necessary in some cases, in order to prevent temperature stresses in the material during the heating up phase. Temperature ramps should only be used if required. The use of temperature ramps may result in the heating up times being considerably slowed down.

The entry in °C/min or in °F/min meaning the nominal value gradient and limits the maximum temperature increase to this value. Due to the heat and evaporation energy assumed by the drying material, smaller temperature gradients may also result.

A temperature ramp proceeds from the previously entered to a new set-point. The temperature must have adjusted to the start set-point. Enter settings in 3 steps:

1. Enter set-point of ramp start temperature. Let temperature adjust to this set-point temperature.
2. Set the ramp to the desired gradient in °C/min or in °F/min.

You can enter a gradient value from 0 up to 10.

Setting the gradient to 0 means ramp function off = maximum heating power.

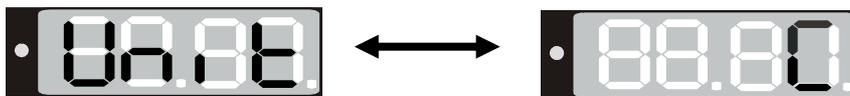
Setting the gradient to another value, e.g., 3, means the unit will try to heat up with a speed of 3°C/min.

3. A heat-up rate of 4°C/minute can be regarded as a realistic maximum.
4. Enter set-point (final ramp temperature).

The ramp should only be set if required. The setting "0" means ramp function switched off. The unit is being heated at maximum heat output.

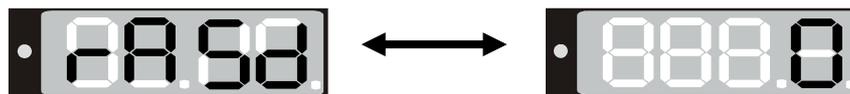
1. Press down  button for approx. 5 seconds.

The display alternately shows "unit" and in the entry level the temperature unit:



2. Press again button .

The display alternately shows "rASd" and in the entry level the actual setting of the **set-point gradient**:



3. Set the desired ramp gradient with buttons   (set-point gradient in °F or °C acc. to setting in chap. 6.4.1).
4. The set value is automatically adopted after 2 seconds.

During ramp operation the actual set-point (SPr) continually rises in accordance to the entered gradient from the previously entered set-point to the new one (SP). The actual value follows the set-point value.

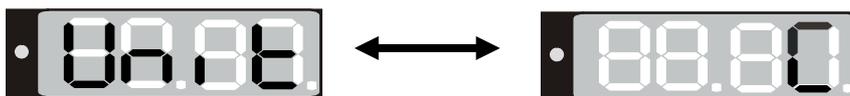
About set-point display during ramp operation see chap. 6.2.

6.4.3 Chamber addressing

If several multifunctional heating/drying ovens FED are networked with a PC via the APT-COM™ communication software (option, chap. 8.1), each unit must be allocated a unique address. Addressing takes place on the R 3.1-controller as follows:

1. Press down  button for approx. 5 seconds.

The display alternately shows "unit" and in the entry level the temperature unit:



2. Press again button .

The display alternately shows "rASd" and in the entry level the set-point gradient:



3. Press again button .

The display alternately shows "Adr" and in the entry level the actual setting of the **unit address**:



4. Set the required address with buttons  .



You can enter address values between 1 and 30.

5. The set value is automatically adopted after 2 seconds.

6.4.4 Selecting the timer function

The unit provides three different timer functions:

- **Delayed off** (setting “0”)

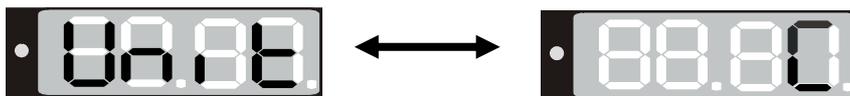
After the defined time has elapsed, the heating is switched off.
- **Temperature-controlled delayed off** (setting “1”)

The defined time only begins to run when the current value is 1°C below the set point. After the defined time has expired, the heating is switched off.
- **Delayed on** (setting “2”)

After the time set has passed, the heating is switched on and remain in continuous operation.

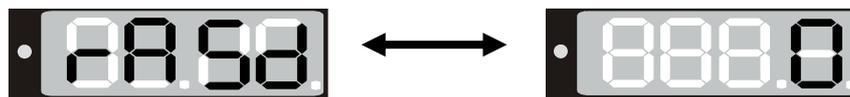
1. Press down  button for approx. 5 seconds.

The display alternately shows “unit” and in the entry level the temperature unit:



2. Press again button .

The display alternately shows “rASd” and in the entry level the set-point gradient:



3. Press again button .

The display alternately shows “Adr” and in the entry level the unit address:



4. Press again button .

The display alternately shows “tFCt” and in the entry level the actual setting of the **timer function**:

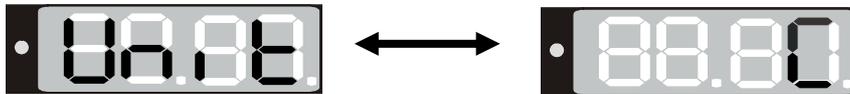


5. Set the desired timer function 0, 1 or 2 with buttons  .
6. The set value is automatically adopted after 2 seconds.

6.4.5 Setting the interface mode and, if appropriate, the printer interval

1. Press down  button for approx. 5 seconds.

The display alternately shows "unit" and in the entry level the temperature unit:



2. Press again button .

The display alternately shows "rASd" and in the entry level the set-point gradient:



3. Press again button .

The display alternately shows "Adr" and in the entry level the unit address:



4. Press again button .

The display alternately shows "tFCt" and in the entry level the timer function:



5. Press again button .

The display alternately shows "PFct" and in the entry level the actual setting of the **interface mode**:



6. Set the desired interface mode with buttons  .

Settings: Modbus = "0" printer = "1"



In case of temperature data acquisition by the communication software APT-COM™ (option, chap. 8.1) interface mode "0" (Modbus) must be selected.

7. The setting is automatically adopted after 2 seconds.

If interface mode "1" (printer) has been selected, the printer interval for the automatic output can be set in an additional menu step:

8. Press again button .

The display alternately shows "Prt" and in the entry level the actual setting of the **printer interval**:



9. Set the desired value from 0 to 255 with buttons  .

The printer intervals via the RS 422 interface can be set between 1 and 255 min. Setting “0” signifies the printer interval set to off.

A protocol printer (option, chap. 8.3) records the temperature data in the set interval.

10. The set value is automatically adopted after 2 seconds.

6.5 Temperature programming example

The unit shall heat up to a temperature of 50°C, maintain this temperature for three hours and then switch off.

1. In normal display press down button  for 5 sec and then several times until “tFCt” is displayed
 - Select timer function “1” = “temperature-dependent delayed off” (chap. 6.4.4)
2. In normal display press the time management button . The controller displays the actual time function.
 - If necessary select the time function “Timer operation” (chap. 6.3.1)
 - In the entry level enter the desired time “3.00” (chap. 6.3.3)
3. In normal display press button .
 - Enter the set point “50” (chap. 6.1)

6.6 General notes

	60 sec. after the last entry the controller returns to normal display (actual value display).
	The functions set-point entry (chap. 6.1), time functions (chap. 6.3), and calling up the user menu (chap. 6.4) can only be selected from normal display (actual value display).
	When selecting the functions set-point entry and time functions, and when selecting the user menu functions, the respective button  or  must be pressed down for a about 1 sec. Shorter pressing will be ignored by the controller.
	After a power failure, the timer returns to the previous status. A remaining time, if any, will continue running down.

7. Safety devices

7.1 Temperature safety device class 2 (DIN 12880)

The temperature safety device class 2 protects the unit, its environment and the charging material against impermissible excess temperatures.

Please also observe the regulations BGR 120 of the German professional association of the chemical industry (formerly ZH 1/119 laboratory guidelines of the employers' liability insurance association) (for Germany).

In the event of a fault in the temperature controller, the safety device (7) **permanently** switches off the unit. This status is reported visually by the indicator lamp (7a) and, in case of the option acoustic alarm with activated buzzer (chap. 7.3), by the buzzer sounding.

The operation of the safety device (7) is checked by moving it slowly anti-clockwise until it is switched off. The safety device cut-off is reported visually by the indicator lamp (7a) and, in case of the option acoustic alarm with activated buzzer (chap. 7.3), by the buzzer sounding.

The safety device is then released again by pressing the reset button (7b) and the unit is switched on as described.

Function:

The safety thermostat class 2 is functionally and electrically independent of the temperature control device and switches off **permanently** at all poles.

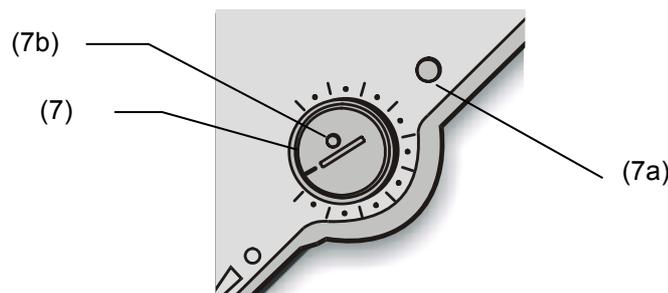


Figure 7: Safety thermostat class 2

When the control knob (7) is set to the end stop, the safety thermostat class 2 acts as a unit protection device. If it is set somewhat higher than the nominal temperature selected on the controller, it acts as a material protection device.

When the safety device has switched off the unit, which can be seen from the illumination of the red alarm lamp (7a) and, in case of the option acoustic alarm with activated buzzer (chap. 7.3), by the buzzer sounding, perform the following steps:

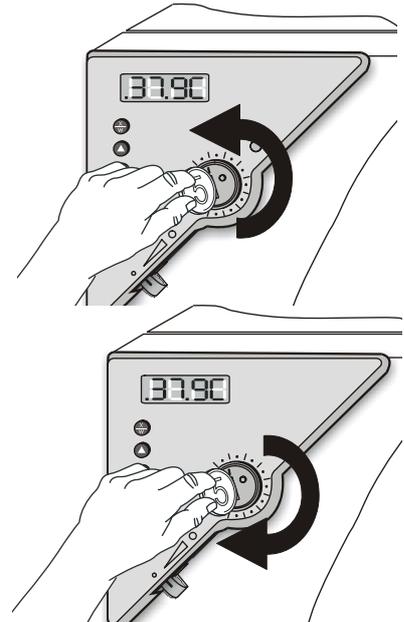
- Disconnect the unit from the mains.
- Have the cause of the fault examined and rectified by a technician.
- Release safety thermostat class 2 by pressing reset button (7b).
- Restart the unit (see chap. 5).

Setting:

In order to check at which temperature the safety device class 2 responds, switch on the unit and set the required set-point on the temperature controller.

The scale division from 1 to 10 corresponds to the temperature range from 30°C up to 320°C and serves as a setting aid.

1. Turn the control knob (7) of the safety device using a coin to its end-stop (position 10) (unit protection).
2. When the set point is reached, turn back the control knob (7) until its trip point (turn it anti-clockwise).
3. The trip point is identifiable by the red alarm lamp (7a) lighting up; the reset button (7b) jumps forward.



With the option acoustic alarm and the buzzer activated (chap. 7.3), the buzzer sounds as an additional signal. It can be switched off by switch (11).

4. The optimum setting of the safety device is obtained by turning the knob clockwise by around one graduation mark on the scale.
5. Push the reset button (7b) in again.



The unit is only active with the reset button (7b) pushed in.

When the safety thermostat class 2 kicks in, the red alarm lamp (7a) illuminates, the reset button (7b) jumps out and the unit switches off permanently at all poles.



Check the safety thermostat with every change of the set point value and readjust it if necessary.

7.2 Temperature safety device class 3.1 (DIN 12880) (option)

The temperature safety device serves to protect the oven, its environment and the contents from forbidden temperature excesses.

Please also observe the regulations BGR 120 of the German professional association of the chemical industry (formerly ZH 1/119 laboratory guidelines of the employers' liability insurance association) (for Germany).

Function:

The temperature safety device is functionally and electrically independent of the temperature control system and if an error occurs it assumes the regulatory function.

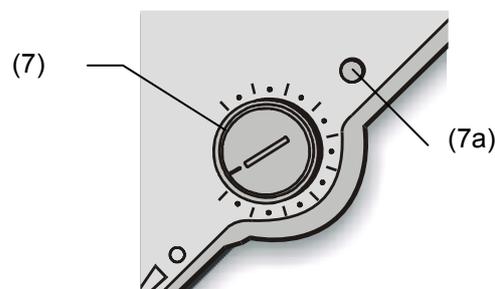


Figure 8: Safety thermostat class 3.1

If the control knob is turned to its end-stop, the safety thermostat class 3.1 functions as a safety device for the unit. If it is set to a temperature somewhat higher than that selected on the control, it functions as a protective device for the material under treatment. If the safety device has assumed the regulation function (identifiable by the red alarm lamp (7a) lighting up and, in case of the option acoustic alarm with activated buzzer (chap. 7.3), by the buzzer sounding), proceed as follows:

- Disconnect the unit from the mains.
- Have the cause of the fault examined and rectified by a technician.
- Restart the unit (see chap. 5).

Adjustment:

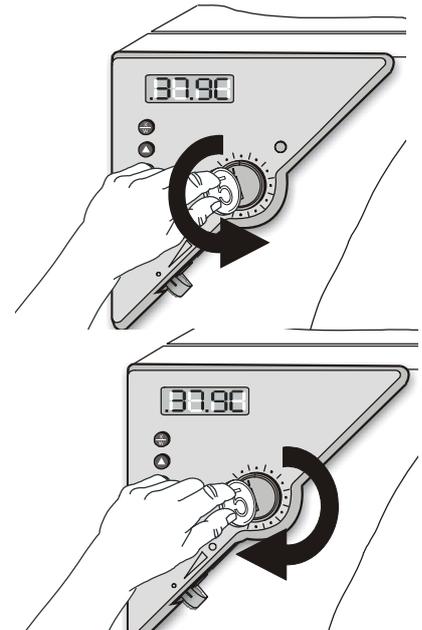
In order to check at which temperature the safety device class 3.1 responds, switch on the unit and set the required set-point on the temperature controller

The scale division from 1 to 10 correspond to the temperature range from 63°C to 350°C and serve as a setting aid.

1. Turn the control knob (7) of the safety thermostat class 3.1 with a coin to its end-stop (unit protection).
2. When the set point is reached, turn the control knob (7) to its trip point (turn it anti-clockwise)
3. The trip point is identifiable by the red alarm lamp (7a) lighting up.

With the option acoustic alarm and the buzzer activated (chap. 7.3), the buzzer sounds as an additional signal. It can be switched off by switch (11).

4. The optimum setting for the safety thermostat class 3.1 is obtained by turning the control knob clockwise by approximately one scale division, which extinguishes the red alarm lamp (7a).



Check the safety thermostat with every change of the set point value and readjust it if necessary.

7.3 Disconnectable acoustic over-temperature alarm (option)

This option allows to activate an acoustic signal with the buzzer switch (11):

Position 0 = buzzer off

Position 1 = buzzer active

If the buzzer is activated, an acoustic signal sounds when the limit temperature set at the temperature safety device class 2 (chap. 7.1) or class 3.1 (chap. 7.2) is exceeded, this happens in addition to the red alarm pilot lamp (7a) lighting up. The buzzer can be switched off using the buzzer switch (11).



Switching off the acoustic alarm does not influence the safety device's regulatory function. Proceed as described in chap. 7.1 / 7.2.

8. Options

8.1 Communication software APT-COM™ 3 DataControlSystem (option)

The oven is regularly equipped with a serial interface RS 422 to which the BINDER communication software APT-COM™ 3 DataControlSystem can be connected. The connection to a computer is established using the FED interface via an interface converter RS 422 / RS 232.

	Make sure that the interface mode is correctly set to “0” = “Modbus” in the user level (chap. 6.4.5).
-----------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------

In adjustable intervals the actual temperature, and fan speed values are put out. Programming can be performed graphically via PC. Up to 30 chambers with RS 422 interface can be cross linked. Further information can be obtained in the operating manual of the BINDER communication software APT-COM™.

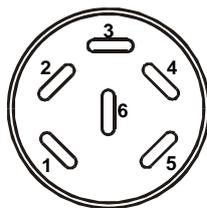
Pin allocation of the RS 422 interface:	pin 2:	RxD (+)
	pin 3:	TxD (+)
	pin 4:	RxD (-)
	pin 5:	TxD (-)
	pin 7:	Ground

	If several multifunctional heating/drying ovens FED are to be recorded via a PC, each one must be allocated a unique address. Addressing is performed via the R3.1-controller (see chap. 6.4.3).
-----------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

8.2 Analog output for temperature (option)

With this option the chamber is equipped with an analog output 4-20 mA for temperature. This output allows transmitting data to external data registration systems or devices.

The connection is carried out as a DIN socket at the rear side of the chamber as following:



ANALOG OUTPUT 4-20 mA DC

PIN 1: temperature –
PIN 2: temperature +

Temperature range:

0°C to +300°C

A suitable DIN plug is enclosed.

Figure 9: Pin allocation of DIN socket for option analogue outputs

8.3 Protocol printer (option)

The protocol printer is connected using the FED interface via an interface converter RS 422 / RS 232.

	<p>Make sure that the interface mode is correctly set to “1” = “Printer” in the user level (chap. 6.4.5).</p>
-----------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------



Interface configuration:

Baud rate: 9600
 Stop bit: 1
 Parity: none

Figure 10: Protocol printer

The actual temperature values are put out regularly with fixed formatting.

Printout: one printed line for each print interval with relative time stamp, temperature value with one decimal point, curve representation (see. “Manual for Setting Matrix Printer Epson LX-300+“, Art. No. 7001-0041). In every 5th line the set print interval “Ptime” in minutes is noted. The printer interval is set in the user level (chap.6.4.5).

Example:

```
Temp.: 34.7          *
Temp.: 35.6          *
Temp.: 32.8          *
Temp.: 30.1          *
Ptime : 001.         *
Temp.: 27.4          *
Temp.: 26.9          *
Temp.: 26.6          *
Temp.: 26.4          *
Ptime : 001.         *
Temp.: 26.2          *
```

In this example the print interval is set to 1 min, i.e., every minute a new temperature value is printed.

	<p>In connection with the set print interval, referring to real time can be achieved by noting the start time of the registration.</p>
-------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------

9. Maintenance, cleaning, and service

9.1 Maintenance intervals, service

 	 DANGER
	<p>Electrical hazard.</p> <p>Danger of life.</p> <ul style="list-style-type: none"> ∅ The unit must NOT become wet during operation or maintenance works. ➤ Put off-circuit the unit before conducting maintenance work. Pull the power plug. ➤ Have all maintenance work conducted by professional electricians or experts authorized by BINDER.

Have conducted regular maintenance work at least once a year.

	Change the door gasket in cold condition only. Otherwise the door gasket will be damaged.
-----------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------

We recommend entering a maintenance agreement. Please consult the BINDER service department.

BINDER telephone hotline:	+49 (0) 7462 2005 555
BINDER fax hotline:	+49 (0) 7462 2005 93555
BINDER e-mail hotline:	service@binder-world.com
BINDER service hotline USA:	+1 866 816 8191 (toll-free in the USA)
BINDER Asia Pacific:	+ 603 3204 2855
BINDER Internet homepage	http://www.binder-world.com
BINDER address	BINDER GmbH, post office box 102, D-78502 Tuttlingen

International customers, please contact your local BINDER distributor.

9.2 Cleaning and decontamination

  	 DANGER
	<p>Electrical hazard.</p> <p>Danger of life.</p> <ul style="list-style-type: none"> ∅ Do NOT spill water or cleaning agents over the inner and outer surfaces. ➤ Put off-circuit the unit before cleaning. Pull the power plug. ➤ Completely dry the appliance before switching it on again.

Cleaning

Disconnect the chamber from the mains before cleaning. Pull the power plug!

Wipe the surfaces with a moistened towel. In addition, you can use the following cleaning agents:

Exterior surfaces inner chamber racks door gaskets	Standard commercial cleaning detergents free from acid or Halogenide. Alcoholic solutions. We recommend using the neutral cleaning agent Art. No. 1002-0016.
Instrument panel	Standard commercial cleaning detergents free from acid or Halogenide. We recommend using the neutral cleaning agent Art. No. 1002-0016.

	For surface protection, perform cleaning as fast as possible. After cleaning completely remove cleaning agents from the surfaces with a moistened towel.
-------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------

Decontamination

Disconnect the chamber from the mains prior to decontamination. Pull the power plug.

You can use the following disinfectants:

Inner chamber	Standard commercial surface disinfectants free from acid or Halogenide. Alcoholic solutions. We recommend using disinfectant Art. No. 1002-0022.
---------------	--------------------------------------------------------------------------------------------------------------------------------------------------------

In case of impurity of the interior with biological or chemical hazardous goods, there are three possible procedures depending on the type of contamination and of the charging material.

(1) The multifunctional heating/drying ovens FED can be hot air sterilized at 190°C for at least 30 minutes. All inflammable goods must be removed from the interior before.

(2) Spray the inner chamber with an appropriate disinfectant.

Before start-up, the unit must be absolute dry and ventilated, because explosive gases might form during the decontamination process.

(3) If necessary, have strongly contaminated inner chamber parts removed by an engineer for cleaning, or have them exchanged. Sterilize the inner chamber parts in a sterilizer or autoclave.

	With every decontamination method, ensure adequate personal safety.
-----------------------------------------------------------------------------------	---------------------------------------------------------------------

	CAUTION
	<p>Danger of corrosion.</p> <p>Damage of the unit.</p> <p>∅ Do NOT use acidic or chlorine cleaning detergents.</p>

	<p>We recommend using the neutral cleaning agent Art. No. Art. Nr. 1002-0016 for a thorough and mild cleaning.</p> <p>Any corrosive damage that might arise following use of other cleaning agents is excluded from liability by the BINDER GmbH.</p>
-------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

9.3 Sending back the unit to the BINDER GmbH

Should you send a BINDER product to us for repair or any other reasons, we shall only accept the BINDER product upon presentation of a so-called authorization number that has previously been issued to you. We shall issue the authorization number after receiving your complaint in writing or via telephone prior to your sending (back) the BINDER product to us. The authorization number will be issued following the receipt of the information mentioned below:

- BINDER product type and serial number
- Date of purchase
- Name and address of the dealer from which you bought the BINDER product
- Exact description of defect or fault
- Your full address; if possible contact person and availability of that person
- Exact location of the BINDER product
- Contamination clearance certificate (chap. 12) via fax in advance

The authorization number needs to be applied to the packaging in such a way that it can be easily recognized or be recorded clearly in the delivery documents.

	For security reasons we cannot accept your delivery if it does not carry an authorization number.
-------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------

10. Disposal

10.1 Disposal of the transport packing

Packing element	Material	Disposal
Straps to fix packing on pallet	Plastic	Plastic recycling
Wooden transport box (option) with metal screws	Non-wood (compressed matchwood, IPPC standard)	Wood recycling
	Metal	Metal recycling
Pallet (from size 115 on)	Solid wood (IPPC standard)	Wood recycling
Transport box with metal clamps	Cardboard	Paper recycling
	Metal	Metal recycling
Wooden sticks for stabilizing and for take out (from size 240 on)	Solid wood (IPPC standard)	Wood recycling
Foamed plastic stuffing (pallet, top cover)	PE foam	Plastic recycling
Top cover (from size 240 on)	Cardboard	Paper recycling
Take out assistance (sizes 240 and 400 only)	Cardboard	Paper recycling
	Plastic	Plastic recycling
Edge protection	Styropor®	Plastic recycling
Protection of doors and racks	PE foam	Plastic recycling
Bag for operating manual	PE foil	Plastic recycling
Insulating air cushion foil (packing of optional accessories)	PE foil	Plastic recycling

If recycling is impossible, all packing parts can also be disposed of in the household waste.

10.2 Decommissioning

Switch off units sizes 400 and 720 at the main switch (10). Disconnect the unit from the mains.



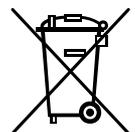
When switching off the main switch ON / OFF (10), the stored parameters remain saved.

- Temporal decommissioning: See indications for appropriate storage, chap. 3.3.
- Final decommissioning: Dispose of the unit as described in chap. 10.3 to 10.5

10.3 Disposal of the unit in the Federal Republic of Germany

According to directive 2002/96/EC of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE), BINDER devices are classified as “monitoring and control instruments” (category 9) only intended for professional use“. They must not be disposed of at public collecting points.

The multifunctional heating/drying oven FED bears the symbol for the marking of electrical and electronic equipment manufactured / placed on the market in the EC after 13 August 2005 and be disposed of in separate collection according to the directive 2002/96/EC on waste electrical and electronic equipment (WEEE) and German national law for electrical and electronic equipment (Elektro- und Elektronikgerätesgesetz, ElektroG). WEEE marking: crossed-out wheeled bin with solid bar under. An important part of the materials must be recycled in order to protect the environment.



After the end of utilization have the device disposed of according to the German national law for electrical and electronic equipment (Elektro- und Elektronikgerätegesetz, ElektroG) from 23 March 2005, BGBl. I p. 762 or contact the BINDER service who will organize taking back and disposal of the unit according to the German national law for electrical and electronic equipment (Elektro- und Elektronikgerätegesetz, ElektroG) from 23 March 2005, BGBl. I p. 762.

	CAUTION
	<p>Violation against existing law.</p> <ul style="list-style-type: none"> ∅ Do NOT dispose of BINDER devices at public collecting points. ➤ Have the device disposed of professionally at a recycling company which is certified according to the German national law for electrical and electronic equipment (Elektro- und Elektronikgerätegesetz, ElektroG) from 23 March 2005, BGBl. I p. 762. <li style="text-align: center;"><i>or</i> ➤ Instruct the BINDER Service to dispose of the device. The general terms of payment and delivery of the BINDER GmbH apply, which were valid at the time of purchasing the unit.

Certified companies disassemble waste BINDER equipment in primary substances for recycling according to directive 2002/96/EC by. In order to exclude any health hazard for the employees of the recycling companies, the devices must be free from toxic, infectious or radioactive substances.

	<p>It is the user's responsibility that the unit is free from toxic, infectious or radioactive substances prior to handing it over to a recycling company.</p> <ul style="list-style-type: none"> – Prior to disposal clean the unit from all introduced or sticking toxic substances. – Prior to disposal disinfect the unit from all sources of infection. Be aware of the fact that sources of infection might be located as well outside the inner chamber. – If you cannot safely free the unit from toxic substances and sources of infection, dispose of it as special waste according to national law. – Fill out the contamination clearance certificate (chap. 12) and enclose it with the unit.
-----------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

 	WARNING
	<p>Contamination of the device with toxic, infectious or radioactive substances.</p> <p>Danger of intoxication.</p> <p>Danger of infection.</p> <ul style="list-style-type: none"> ∅ NEVER lead a unit with sticking toxic substances or sources of infection to recycling according to directive 2002/96/EC. ➤ Prior to disposal, free the unit from sticking toxic substances or sources of infection. ➤ Dispose of a unit which you cannot safely free from all toxic substances or sources of infection as special waste according to national law.

10.4 Disposal of the unit in the member states of the EC except for the Federal Republic of Germany

According to directive 2002/96/EC of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE), BINDER devices are classified as "monitoring and control instruments" (category 9) only intended for professional use". They must NOT be disposed of at public collecting points.

The multifunctional heating/drying oven FED bears the symbol for the marking of electrical and electronic equipment manufactured / placed on the market in the EC after 13 August 2005 and be disposed of in separate collection according to the directive 2002/96/EC on waste electrical and electronic equipment (WEEE). WEEE marking: crossed-out wheeled bin with solid bar under.



After the end of utilization, notify the distributor who sold you the device, who will take back and dispose of the unit according to the directive 2002/96/EC of 27 January 2003 on waste electrical and electronic equipment (WEEE).

	CAUTION
	<p>Violation against existing law.</p> <ul style="list-style-type: none"> ∅ Do NOT dispose of BINDER devices at public collecting points. ➤ Have the device disposed of professionally at a recycling company which is certified according to conversion of the directive 2002/96/EC into national law. <li style="padding-left: 20px;"><i>or</i> ➤ Instruct the distributor who sold you the device to dispose of it. The agreements apply that were reached with the distributor when purchasing the unit (e.g. his general terms of payment and delivery). ➤ If your distributor is not able to take back and dispose of the unit, please contact the BINDER service.

Certified companies disassemble waste BINDER equipment in primary substances for recycling according to directive 2002/96/EC by. In order to exclude any health hazard for the employees of the recycling companies, the devices must be free from toxic, infectious or radioactive substances.

	<p>It is the user's responsibility that the unit is free from toxic, infectious or radioactive substances prior to handing it over to a recycling company.</p> <ul style="list-style-type: none"> - Prior to disposal clean the unit from all introduced or sticking toxic substances. - Prior to disposal disinfect the unit from all sources of infection. Be aware of the fact that sources of infection might be located as well outside the inner chamber. - If you cannot safely free the unit from toxic substances and sources of infection, dispose of it as special waste according to national law. - Fill out the contamination clearance certificate (chap. 12) and enclose it with the unit.
-------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	 WARNING
	<p>Contamination of the device with toxic, infectious or radioactive substances.</p> <p>Danger of intoxication.</p> <p>Danger of infection.</p> <ul style="list-style-type: none"> ∅ NEVER lead a unit with sticking toxic substances or sources of infection to recycling according to directive 2002/96/EC. ➤ Prior to disposal, free the unit from sticking toxic substances or sources of infection. ➤ Dispose of a unit which you cannot safely free from all toxic substances or sources of infection as special waste according to national law.

10.5 Disposal of the unit in non-member states of the EC

 	CAUTION
<p>Alteration of the environment.</p> <ul style="list-style-type: none"> ➤ For final decommissioning and disposal of the oven, please contact the BINDER service. ➤ Observe the regulations under public law for appropriate disposal protecting the environment. 	

The main board of the oven includes a lithium cell. Please dispose of it according to the national regulations.

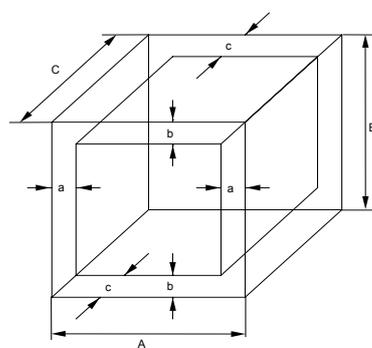
11. Technical description

11.1 Factory calibration and adjustment

This unit was calibrated and adjusted in factory. Calibration and adjustment were performed using standardized test instructions, according to the QM-system of DIN EN ISO 9001 applied by BINDER (certified since December 1996 by TÜV CERT). All test equipment used is subject to the administration of measurement and test equipment that is also constituent part of the BINDER QM-systems of DIN EN ISO 9001. They are controlled and calibrated in relation to a DKD-Standard on regular intervals.

11.2 Definition of usable space

The usable volume illustrated below is calculated as follows:



A, B, C = Internal dimensions (W, H, D)
a, b, c = Wall clearances

$$a = 0.1 \times A$$

$$b = 0.1 \times B$$

$$c = 0.1 \times C$$

$$V_{USE} = (A - 2a) \times (B - 2b) \times (C - 2c)$$

Figure 11: Determination of the useable volume

The technical data refer to the so defined usable space.

	<p>Do NOT place samples outside this usable volume.</p> <p>Do NOT load this volume more than half to enable sufficient airflow inside the chamber.</p> <p>Do NOT divide the usable volume into separate parts with large area samples.</p> <p>Do NOT place samples too close to each other in order to allow circulation between them and thus obtain a homogenous distribution of temperature.</p>
-------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

11.3 Over current protection

Single-phase devices are protected by one miniature fuse against over current, accessible from the outside. The miniature fuse is located at the rear of the chamber below the strain relief of the power cord. The fuse holder is equipped with a fuse clip 5mm x 20 mm. (CUL-Version 6,3x32 mm). The fuse may be replaced only with a substitute of the same ratings. Refer to the technical data of the respective device type.

Three-phase devices are equipped with internal fuses not accessible from outside. If these fuses are blown, please inform an electronic engineer or the BINDER service.

11.4 Technical data series FED

Unit size		53	115	240	400	720
Exterior dimensions						
Width	mm	634	834	1034	1234	1234
	inch	24.96	32.83	40.71	48.58	48.58
Height (incl. feet/roller)	mm	617	702	822	1022	1528
	inch	24.29	27.64	32.36	40.24	60.16
Depth	mm	575	645	745	765	865
	inch	22.64	25.39	29.33	30.12	34.06
incl. door handle, and exhaust duct	mm	105	105	105	105	105
	inch	4.13	4.13	4.13	4.13	4.13
Wall clearance rear	mm	100	100	100	100	100
	inch	3.94	3.94	3.94	3.94	3.94
Wall clearance side	mm	160	160	160	160	160
	inch	6.30	6.30	6.30	6.30	6.30
Exhaust duct, outer diameter	mm	52	52	52	52	52
	inch	2.05	2.05	2.05	2.05	2.05
Steam space volume	l	77	158	308	498	869
	cu.ft.	2.72	5.58	10.88	17.60	30.71
Number of door(s)		1	1	2	2	2
Interior dimensions						
Width	mm	400	600	800	1000	1000
	inch	15.75	23.62	31.50	39.37	39.37
Height	mm	400	480	600	800	1200
	inch	15.75	18.90	23.62	31.50	47.24
Depth	mm	330	400	500	500	600
	inch	12.99	15.75	19.69	19.69	23.62
Interior volume	l	53	115	240	400	720
	cu.ft.	1.9	4.1	8.6	14.3	25.7
Number of racks	regular / max.	2/5	2/6	2/7	2/10	2/16
Load per rack	Kg	15	20	30	35	45
	lbs	33	44	66	77	99
Permitted total load	Kg	40	50	70	90	120
	lbs	88	110	155	199	265
Weight (empty)	Kg	44	62	96	145	195
	lbs	97	137	212	320	430
Temperature data						
Temperature range, 5°C above ambient up to	°C	300	300	300	300	300
	°F	572	572	572	572	572
Temperature variation 1)	at 70°C	± °C	0.8	0.7	0.8	1
	at 150°C	± °C	2	1.8	2	2.5
	at 300°C	± °C	3.7	3.9	4.3	4.8
Temperature fluctuation		≤± °C	0.3	0.3	0.3	0.3
Heating up time 2)	to 70°C	min	6	7	12	18
	to 150°C	min	24	30	27	35
	to 250°C	min	45	49	50	60

Unit size			53	115	240	400	720
Temperature data (continued)							
Recovery time after door was opened for 30 sec 2)	at 70°C	min	2	2	2	2	2
	at 150°C	min	5	8	10	17	20
	at 300°C	min	10	15	16	21	24
Ventilation data							
Air change	at 70°C	x/h	***	29	19	17	11
	at 150°C	x/h	43	32	20	18	12
	at 300°C	x/h	66	26	18	16	10
Electrical data							
IP system of protection acc. to EN 60529			20	20	20	20	20
Nominal voltage (±10 %) 50/60 Hz	V		230 1N~	230 1N~	230 1N~	400 3N~	400 3N~
Nominal power	kW		1.20	1.60	2.70	3.40	5.00
Energy consumption	at 70°C	W	162	230	370	520	570
	at 150°C	W	397	544	850	1200	1320
	at 300°C	W	933	1100	1400	2340	2600
Unit fuse 5 x 20 mm 230V / 10A / middle-time-lag (M)	A		10 A external	10 A external	16 A external	--	--
Over-current release category B			--	--	--	3 x 16A internal	3 x 16A internal
Mains plug			shock proof plug			CEE plug 5 poles	
Installation category acc. to IEC 1010-1			II	II	II	II	II
Pollution degree acc. to IEC 1010-1			2	2	2	2	2

Electrical connection data FED-UL constructed acc. to CUL standard (for USA and Canada)

Unit size		53-UL	115-UL	240-UL	400-UL	720-UL
Electrical data						
Nominal voltage (±10%) 60 Hz	V	115 1N~	115 1N~	208 3N~	208 3N~	208 3N~
Mains plug	NEMA	5-20P	5-20P	L21-20P	L21-20P	L21-20P
Nominal power	kW	1.20	1.60	2.70	3.40	5.00
Unit fuse 6,3 x 32 mm 250V / super-time-lag TT	A	16	16	16	16	20
		external	external	3 x internal	3 x internal	3 x internal

Legend:

1) without outer glass door 2) up to 98 % of the set value

All technical data are specified for units with standard equipment at an ambient temperature of +25°C and a mains voltage fluctuation of ±10. The temperature data are determined in accordance to DIN 12880, part 2, respecting the recommended wall clearances of 10 % of the height, width and depth of the inner chamber. Technical data refer to 100% fan speed.

All indications are average values, typical for units produced in series. We reserve the right to alter technical specifications at all times.



If the cabinet is fully loaded, the specified heating up times may vary according to the load.

11.5 Equipment and Options



To operate the multifunctional heating/drying oven FED, use only original BINDER accessories or accessories of third-party suppliers authorized by BINDER. The user is responsible for any risk when using unauthorized accessories.

Unit size	53	115	240	400	720
Standard equipment					
Microprocessor temperature controller R3.1 with LED display and several time functions	●	●	●	●	●
Controller Timer functions: Delayed ON, delayed Off and temperature dependent delayed OFF	●	●	●	●	●
Temperature safety device class 2 acc. to DIN 12880, part 1 with visual temperature alarm	●	●	●	●	●
Adjustable ramp function	●	●	●	●	●
Rear exhaust duct, internal diameter 50 mm / 1,97 inch with ventilation slide	●	●	●	●	●
Adjustable air change by means of rear exhaust duct (50 mm) with ventilation flap and front ventilation slide	●	●	●	●	●
Four castors (2 lockable)	--	--	--	--	●
RS 422 interface for communication software APT-COM™ DataControlSystem, or switch over to printer output with RS 232/RS 422 interface converter	●	●	●	●	●
Options / accessories					
Access ports with various diameters, with silicone plug	○	○	○	○	○
Temperature safety device class 3.1 acc. to DIN 12880, part 1	○	○	○	○	○
Rack, chrome-plated or stainless steel	○	○	○	○	○
Perforated rack, stainless steel	○	○	○	○	○
Rack lockings (4 pieces)	○	○	○	○	○
Reinforced rack stainless steel, with 1 set rack lockings	○	○	○	○	○
Reinforced inner chamber with 2 reinforced racks	--	--	○	○	○
Lockable door	○	○	○	○	○
Viton door gasket (temperature resistant up to 200°C)	○	○	○	○	○
Fresh air filter, class EU 14	○	○	○	○	○
Measurement of air change rate acc. to ASTM 2436	○	○	○	○	○
Rubber pads for safe stacking (4 pieces)	○	○	○	--	--
Door with window and interior lightning	○	○	○	○	○
Analog output 4-20 mA for temperature with 6 pole DIN socket, DIN plug included	○	○	○	○	○
Disconnectable acoustic over-temperature alarm	○	○	○	○	○
Serial printer with interface, for numerical and graphical temperature registration, with cable set and interface converter RS 422/232	○	○	○	○	○
2-channel pen recorder, external	○	○	○	○	○
Unit acc. to CUL standard in 115V 1N~60Hz	○	○	--	--	--
Unit acc. to CUL standard in 208 V 3N~60Hz	--	--	○	○	○
Factory calibration certificate	○	○	○	○	○
Extension to factory calibration certificate (additional value)	○	○	○	○	○
Measuring protocol acc. to DIN 12880, Part 2	○	○	○	○	○
Qualification folder	○	○	○	○	○
Evaporating dish with rim, small or large	○	○	○	○	○
Instrument tray with lid, small or large	○	○	○	○	○
Neutral cleaning agent (liquid concentrate)	○	○	○	○	○
Stable table on wheels with castors and locking brakes	○	○	○	○	--

Legend: ● Standard equipment

○ Optional

-- Not available

11.6 Spare parts

	<p>The BINDER GmbH is responsible for safety-related unit properties only if skilled electricians or qualified personnel authorized by BINDER perform all maintenance and repair, and if components with relating to chamber safety are replaced in case of failure with original spare parts. The user is responsible for any risk when using unauthorized accessories.</p>
-----------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Accessories and spare parts:

Unit size	53	115	240	400	720
Description	Art. No.				
Rack, chrome-plated	6004-0002	6004-0003	6004-0004	6004-0005	6004-0006
Rack, stainless steel	6004-0007	6004-0008	6004-0009	6004-0011	6004-0010
Perforated rack, stainless steel	6004-0029	6004-0030	6004-0031	6004-0032	6004-0033
Door gasket silicone	6005-0095	6005-0096	6005-0097	6005-0069	6005-0099
Door gasket made of Viton (temperature resistant up to 200°C)	8012-0494	8012-0495	8012-0496	8012-0497	8012-0498
Stable table on wheels with castors and locking brakes	9051-0018	9051-0018	9051-0019	9051-0019	--
Rubber pads for safe stacking (4 pieces)	8012-0001	8012-0001	8012-0001	--	--
Unit fuse 5x20mm 250V 10A semi time lag (M)	5006-0013	5006-0013	5006-0013	--	--
Over-current release category B 16 A	--	--	--	5006-0042	5006-0042
Thermal cut-off device class 1			5006-0037		
Controller R3.1			5014-0076		
Thermostat class 2 30° to 320°C			5006-0031		
Turning knob for thermostat class 2			8009-0004		
Pilot lamp red			5008-0003		
Pilot lamp green			5008-0001		
Temperature sensor Pt 100 bend-off			5002-0022		
Rack lockings (4 pieces)			8012-0531		
Protocol printer			8012-0418		
2-channel pen recorder, external			8012-0152		
Fresh air filter, class EU 14			8012-0076		
Measurement of air change rate acc. to ASTM 2436			8012-0195		
Calibration certificate			8012-0030		
Extension for calibration certificate (additional value)			8012-0022		
Measuring protocol acc. to DIN 12880, Part 2			8012-0156		
Qualification folder			8012-0422		
Instrument tray with lid, small			4022-0123		
Instrument tray with lid, large			4022-0124		
Evaporating dish, small			4022-0125		
Evaporating dish, large			4022-0126		
Neutral cleaning agent, 1 kg			1002-0016		

12. Contamination clearance certificate

Unbedenklichkeitsbescheinigung

Declaration of harmlessness with regard to safety and health

Erklärung zur Sicherheit and gesundheitlichen Unbedenklichkeit

The German Ordinance on Hazardous Substances (GefStofV), and the regulations regarding safety at the workplace, require that this form be filled out for all products that are returned to us, so that the safety and health of our employees can be warranted.

Die Sicherheit und Gesundheit unserer Mitarbeiter, die Gefahrstoffverordnung GefStofV und die Vorschriften zur Sicherheit am Arbeitsplatz machen es erforderlich, dass dieses Formblatt für alle Produkte, die an uns zurückgeschickt wird.

	<p>In the absence of a completely filled out form, repair is not possible. Ohne Vorliegen des vollständig ausgefüllten Formblattes ist eine Reparatur nicht möglich.</p>
-----------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

- A completely filled out form should be transmitted by Fax (+49 (0) 7462 2005 93555) or by letter in advance to us, so that this information is available before the equipment/component part arrives. A second copy of this form should accompany the equipment/component part. Eventually the carrier should be informed.
Eine vollständig ausgefüllte Kopie dieses Formblattes soll per Telefax (Nr. +49 (0) 7462 2005 93555) oder Brief vorab an uns gesandt werden, so dass die Information vorliegt, bevor das Gerät/Bauteil eintrifft. Eine weitere Kopie soll dem Gerät/Bauteil beigelegt sein. Ggf. ist auch die Spedition zu informieren.
- Incomplete information or non-conformity with this procedure will inevitably lead to substantial delays in processing. We hope you will have understanding for this measure, which lies outside of our area of influence, and that you will help us to speed up this procedure.
Unvollständige Angaben oder Nichteinhalten dieses Ablaufs führen zwangsläufig zu beträchtlichen Verzögerungen in der Abwicklung. Bitte haben Sie Verständnis für Maßnahmen, die außerhalb unserer Einflussmöglichkeiten liegen und helfen Sie mit, den Ablauf beschleunigen.
- Please fill out this form completely.
Bitte unbedingt vollständig ausfüllen!

1.	Unit/ component part / type: / Gerät / Bauteil / Typ:
2.	Serial No./ Serien-Nr.:
3.	Details about utilized substances / biological substances / Einzelheiten über die eingesetzten Substanzen/biologische Materialien:
3.1	Designations / Bezeichnungen:
a)	_____
b)	_____
c)	_____
3.2	Safety measures required for handling these substances / Vorsichtsmaßnahmen beim Umgang mit diesen Stoffen:
a)	_____
b)	_____
c)	_____

3.3	Measures to be taken in case of skin contact or release into the atmosphere / Maßnahmen bei Personenkontakt oder Freisetzung: a) _____ b) _____ c) _____ d) _____
3.4	Other important information that must be taken into account / Weitere zu beachtende und wichtige Informationen: a) _____ b) _____ c) _____
4.	Declaration on the risk of these substances (please checkmark the applicable items) / Erklärung zur Gefährlichkeit der Stoffe (bitte Zutreffendes ankreuzen) :
	<input type="checkbox"/> 4.1 For non toxic, non radioactive, biologically harmless materials / für nicht giftige, nicht radioaktive, biologisch ungefährliche Stoffe: We herewith guarantee that the above-mentioned unit / component part... / Wir versichern, dass o.g. Gerät/Bauteil... <input type="checkbox"/> Has not been exposed to or contains any toxic or otherwise hazardous substances / weder giftige noch sonstige gefährliche Stoffe enthält oder solche anhaften. <input type="checkbox"/> That eventually generated reaction products are non-toxic and also do not represent a hazard / auch evtl. entstandene Reaktionsprodukte weder giftig sind noch sonst eine Gefährdung darstellen. <input type="checkbox"/> Eventual residues of hazardous substances have been removed / evtl. Rückstände von Gefahrstoffen entfernt wurden.
	<input type="checkbox"/> 4.2 For toxic, radioactive, biologically harmful or hazardous substances, or any other hazardous materials / für giftige, radioaktive, biologisch bedenkliche bzw. gefährliche Stoffe oder anderweitig gefährliche Stoffe. We herewith guarantee that ... / Wir versichern, dass ... <input type="checkbox"/> The hazardous substances, which have come into contact with the above-mentioned equipment/component part, have been completely listed under item 3.1 and that all information in this regard is complete / die gefährlichen Stoffe, die mit dem o.g. Gerät/Bauteil in Kontakt kamen, in 3.1 aufgelistet sind und alle Angaben vollständig sind. <input type="checkbox"/> That the unit /component part has not been in contact with radioactivity / das Gerät/Bauteil nicht mit Radioaktivität in Berührung kam
5.	Kind of transport / transporter / Transportweg/Spediteur: Transport by (means and name of transport company, etc.) / Versendung durch (Name Spediteur o.ä.) _____ Date of dispatch to BINDER GmbH / Tag der Absendung an BINDER GmbH: _____

We herewith declare that the following measures have been taken / Wir erklären, dass folgende Maßnahmen getroffen wurden:

- Hazardous substances were removed from the unit / component part, so that no hazard exists for corresponding persons in the handling or repair of these items / das Gerät/Bauteil wurde von Gefahrstoffen befreit, so dass bei Handhabung/Reparaturen für die betreffenden Person keinerlei Gefährdung besteht
- The unit was securely packaged and properly identified / das Gerät wurde sicher verpackt und vollständig gekennzeichnet.
- Information about the hazardousness of the shipment (if required) has been provided to the transporter / der Spediteur wurde (falls vorgeschrieben) über die Gefährlichkeit der Sendung informiert.

We herewith commit ourselves and guarantee that we will indemnify BINDER GmbH for all damages that are a consequence of incomplete or incorrect information provided by us, and that we will exempt BINDER GmbH from eventual damage claims by third parties./ Wir versichern, dass wir gegenüber BINDER für jeden Schaden, der durch unvollständige und unrichtige Angaben entsteht, haften und BINDER gegen eventuell entstehende Schadenansprüche Dritter freistellen.

We are aware that, in accordance with Article 823 of the German Civil Code (BGB), we are directly liable with regard to third parties, in this instance especially the employees of BINDER GmbH, who have been entrusted with the handling / repair of the unit / component. / Es ist uns bekannt, dass wir gegenüber Dritten – hier insbesondere mit der Handhabung/Reparatur des Geräts/des Bauteils betraute Mitarbeiter der Firma BINDER - gemäß §823 BGB direkt haften

Name: _____

Position: _____

Date / Datum: _____

Signature / Unterschrift: _____

Company stamp / Firmenstempel:



Equipment that is returned to the factory for repair must be accompanied by a completely filled out contamination clearance certificate. For service and maintenance works on site, such a contamination clearance certificate must be submitted to the service technician before the start of the works. No repair or maintenance of the equipment is possible, without a properly filled out contamination clearance certificate.