



KONVEKTA

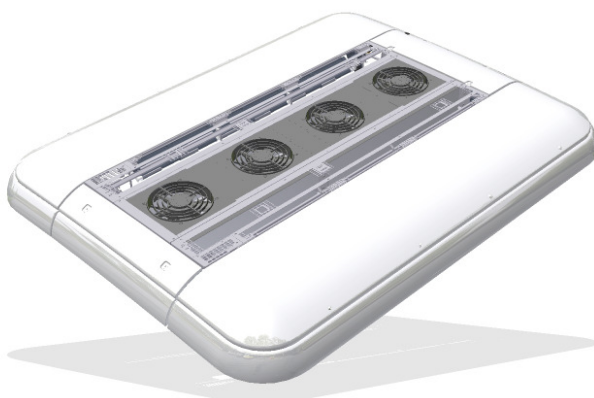
Technical leadership starts with ideas.

Operating Instructions

for KONVEKTA

Air Conditioning units

UL500 / UL700 / UL800



With control KS410-CAN

R134a
24 Volt DC

ID#: BBA-KL6U022AD
Version: A01

Konvekta AG
Am Nordbahnhof 5
34613 Schwalmstadt
Germany



+49 (0) 66 91 / 76 – 0



+49 (0) 66 91 / 76 - 200



Info@konvekta.com
www.konvekta.com

Contents

Page:

• Introduction	3
• Information on the operating instructions	4
1. Technical data	4
1.1. Air conditioner	4
1.2. Compressors	4
2. Intended Use	4
2.1. Operating Conditions	5
3. Control unit KS10-CAN	5
4. KS410-CAN self-test	5
5. Operation	6
5.1. Description keys driver's seat	6
5.2. Description keys passengers compartment	7
5.3. Adjustments of KS410	8
5.3.1. Time adjustment	8
5.3.2. Adjust starting time of the additional heating	9
5.3.3. Read trouble memory	9
6. Maintenance / Service	10
6.1. Troubleshooting	10
7. Warranty Conditions	11
8. Waste disposal in accordance with legal provisions	11
9. History of modification	11

Appendix:

- Maintenance Schedule Bus [WP07050618](#)

Introduction

These operating instructions have been written for drivers, operators and the maintenance staff of your air conditioning unit.

In this context, we refer implicitly to the compliance with our general installation guidelines. These can be obtained from the KONVEKTA technical after sales service: TKD@konvekta.com.

Please observe our valid safety instructions, available under www.konvekta.de/asv.html. In case of order placement or any other conclusion of contract the safety instructions get integral part of the contract.

These operating instructions have to be read carefully and made use of before the first start-up and after that regularly by each person who is involved in handling the machine:

- Operation including troubleshooting and waste disposal of fuels and auxiliary agents.
- Servicing, inspection, repair
- Transport

This facilitates the handling and avoids trouble caused by improper operation. Working in compliance with these operating instructions increases operation reliability and service life of the air conditioning unit and reduces life cycle costs.

Please complete these instructions by adding the national provisions for prevention of accidents and environmental protection

These instructions are part of the air conditioning unit. Always have a copy at hand in the driver's cabin.

You will certainly understand that we will not recognize any warranty claims due to improper handling, inadequate maintenance, applications that do not correspond with the determined use, utilization of unadmitted fuels or the non-observance of safety provisions. KONVEKTA will annul without prenotice all obligations concerning guarantee, service contracts etc. regardless if granted by KONVEKTA or its distributors in case other than original KONVEKTA spare parts or parts bought from KONVEKTA AG have been used for maintenance and repair. These operating instructions contain all necessary information to operate your air conditioning unit. In case you need more explanations please contact the next KONVEKTA service station^①.

^① On our website www.konvekta.com in category >service< you will find a survey of contact details of all our service partners close to your location.

Information on the operating instructions

These operating instructions are valid for the air conditioners type:

➤ **UL500** ➤ **UL700** ➤ **UL800**

With control KS410-CAN

☞ When taking the unit into operation we recommend adding the following data.

This will also be important for your orders of spare parts, and in case of warranty.

Serial number of the unit:

Order No.:

Year of construction: (MM/YY)

Date of first operation: (DD/MM/YY)

The machine is in accordance with the EC machinery directive 2006/42/EC.

The unit contains or needs fluorinated greenhouse gas for operation and is subject to identification requirements in accordance with F-Gas Regulation 517/2014.

Due to the fact that scope of supply depends on the order, equipment of your product may differ in some parts of description.

In case your product is equipped with details not shown or described in the operating instruction, your KONVEKTA -Service-Station will always be at disposal for informing you about correct operation.

In the course of further developments we reserve the right to technical modifications without notice. Guarantee and liability conditions of **KONVEKTA AG**'s general business conditions are not enlarged by the above notes.

Indications and photos should neither be copied and circulated nor used for competitor's purposes. All rights according to the copyright remain expressly reserved.

Manufacturer: KONVEKTA AG, P.O.Box 2280, D-34607 Schwalmstadt

1. Technical data

1.1. Air conditioner

Type		UL 500	UL 700	UL 800
Refrigerant		R 134a	R 134a	R 134a
GWP		1.430	1.430	1.430
Refrigerant quantity ca.	kg	8,5	9,5	10,5
Operating voltage	Volt DC	26	26	26
Power consumption	A	72	104	136
Cooling capacity	W	24.000	33.000	39.000
Evaporator – air volume	m ³ /h	4.320	6.480	8.640

1.2. Compressors



Important to avoid leakage at the shaft seals of the compressor:

The **compressor must be switched on every 4 weeks for about 15 minutes!**

Even if the vehicles or the air conditioner has not been used for a longer period of time!

⇒ Compressor is dependent on delivery, see nameplate on the compressor.

2. Intended Use

The KONVEKTA air conditioning unit is an air conditioning system that works with the ozone friendly refrigerant R134a and which creates a pleasant and individually adjustable room temperature by means of forced convection. The determined use includes also the observance of the operating instructions as well as the proof of regular inspections.

2.1. Operating Conditions

NOTE: KONVEKTA uses components made of copper and aluminium, which last a whole unit life-time under normal environmental conditions. Should the units be operated under aggressive environmental conditions, i.e. air containing salt-, phosphate- or ammoniac extremely, a corrosion of the copper- and aluminium components cannot be ruled out. The copper- and aluminium components of the KONVEKTA systems are not suitable for such extreme application conditions. We indicate emphatically, that corrosion is not subject to warranties for defects. KONVEKTA does not take over any warranties for defect, neither for corrosion nor for consequential damage resulting there from, nor for damages caused by cleaning the systems with highly compressed or corrosion advancing substances.

3. Control unit KS10-CAN

The control unit is radio-sized, out of plastic material and with lateral fastening clips. At the rear are 4 AMP plugs for making contact.

For removing the unit, two conventional release handles are necessary.

With 16 keys you can choose/adjust all functions for front box, air conditioning unit, Convectors or under seat-blowers.

With LCD announcement all functions are represented user-friendly over the keys.

The announcement has green background lighting.

The keyboard is a wear-resistant keyboard.

The film is designed in a way that the printed circuit board located behind is not protected from possible penetrating splashed water!

4. KS410-CAN self-test

Self-test

After connecting to supply voltage the nodes are logged on and the version numbers are displayed before the self-test starts.

01- version numbers KS410-CAN:

On the display the following is indicated:

<i>Unit climate control</i>	InFo	0410
<i>Software version</i>	SoFt	0101
<i>Parameter version</i>	PArA	0001
<i>DIP code setting</i>	dIP	01
<i>Registration of CAN Substation 1</i>	CAn1	0107
<i>Registration of CAN Substation 2</i>	CAn1	0107
<i>Self-test is active</i>	tESt	- -

-02- Auto-test KS410:

- 01- Test of digital outlets DA01 to DA24
- 02- Test of motors and water valves
- 03- Test of the PWM and voltage
- 04- Test temperature sensors

After self-test time, actual temperatures are shown of display.

5. Operation



Danger of accident!

- Focussing your attention on the road traffic is of top priority
- Only operate your air conditioning unit when the traffic situation allows it
- Make sure you can clearly recognize and read all operation- and display-elements at any time
- Protect all displays against irritating sun glare and any other optical disturbances
- Please note that the control panel keys have not been designed for heavy stressing
- Excessive or fast pressing of the keys for adjusting the set temperature does not accelerate the cooling down process. It possibly damages the control panel and so affects the general performance of the air conditioning unit



5.1. **Description keys driver's seat**

Key	function
S1  Air distribution/ Defrost	Air distribution at the wind shield driver's seat Front box blower windshield active LCD Air distribution arrow up. <u>Prolonged activation of key:</u> Activation of the DEFROST – function for the front windshield. a) Blower switches to 100% air volume. b) Water valve opened 100%, c) Air distribution 100% to windshield. If the compressor is active, open the liquid solenoid valves, to support the front box DEFROST function. When DEFROST is OFF of the settings, switched before start of DEFROST back. LCD Air distribution arrow up and DEFROST symbol.
S2  Air distribution	Air distribution to the driver's seat. LCD: Air distribution arrow up middle below
S3  Air distribution	Air distribution to the foot area driver's seat. LCD: Air distribution arrow down.

Key	function
S4  Frontbox climate	Activate the frontbox climate When AUTO is active, the front box climate can be activated. If it was OFF beforehand, the front box blower is automatically adjusted to the minimum level.
S5  Recirculated air flap	Operate the recirculated air flap at driver's seat Return air flap is permanently placed to return air function. (Without automatic back space mechanism.)
S6  Blower	Adjust air volume driver's seat With Key S6 you can increase or decrease the set point. Setting of the front box blower is made in 7 stages. When ignition is ON without run of engine, the blower is limited to stage 3. While front box is activated, blower can not be switched off. LCD: Bar graph left 1-7
S7  Temperature adjustment	Adjustment of air delivery temperature driver's seat With Key S7 you can increase or decrease the set point. The desired temperature can be set from 12 to 90°C in 10 levels. As a result of suitable positioning of the sensor in the front box, the outlet temperature to the driver is held constant. LCD: Display left step 1-10.

5.2. Description keys passengers compartment

Key	function
S8  blower	Adjustment of air volume driver's seat When AUTO mode is activated the air speed is controlled automatically. With key S8, you can increase or reduce the air speed manually. The adjustment of the front box blower is implemented in 7 levels. When ignition is ON the blower is limited to 3 levels. LCD: Bar graph right 1-7.
S9  Temperature adjustment	Adjustment of room temperature in the passengers compartment With key S9, you can increase or reduce the set temperature. The set temperature can be adjusted from 12°C to 30°C. In AUTO mode, the temperature in the passenger space is fixed to the set temperature. LCD: Display right 12°C to 30°C.
S10  Automatic	Reset and activate the Automatic in the passenger's compartment By pressing the key S9 the AUTO is activated and the AUTO symbol appears on the LCD. The automatic controls heating, ventilation and refrigeration depending upon the desired and actual temperature. Via manually activation of AUTO the desired temperature is set to a default value of 22°C. With AUTO the a/c compressor switches off at an outside temperature of less than 10°C. LCD: Symbol AUTO and convector if active. LCD: Climate symbol when compressor is ON.

Key	function
S11  Reheat	Start of REHEAT mode in the passenger's compartment By pressing key S11 the REHEAT mode is activated and the REHEAT symbol is indicated in the display. In REHEAT mode the compressor is switched on to dehumidify the air in the vehicle. The a/c operates in recirculated air mode, the heating is working to keep the temperature in the vehicle constant. In REHEAT mode the unit switches back to AUTO mode automatically after 20 minutes. At an ambient temperature of $< 3\text{ }^{\circ}\text{C}$ the compressor is blocked in REHEAT mode LCD: Symbol REHEAT and convector heater if activated
S12  Eco	Deactivation of the climate compressor If ECO is active, the compressor is always locked independent of temperature in order to save energy. The symbol ECO appears in the LCD.
S13 -Option  convectors	Activation of the convector heating When convectors are switched ON, they are in a state of operational readiness and are switched on according to temperature. The convector symbol appears on the LCD. In case of AUTO, the convector heating is always in a state of operational readiness. However they can also be activated or deactivated manually.
S14  programming	Change display from time to temperature Outside temperature : A 20 Time : 12:10 By pressing key S14 the display indication changes from time to the outside temperature.
S15  Return air flap	The recirculated air flap switches to the recirculated air position for the passenger compartment The circulating air symbol appears to the right on the LCD. After 10 minutes, the circulating air function switches back automatically. In AUTO – operation the recirculated air flap is tripped depending to temperatures.
S16 -Option  Additional heating	Manual starting of the additional heating At the same time the regulation of the convectors will be put on standby mode. The symbol for auxiliary heating appears on the LCD.

5.3. Adjustments of KS410

5.3.1. Time adjustment

Key	function
 S1 +  S14  S9	The time can be programmed only when the ignition is off. By <u>simultaneous pressing</u> of S1 and S14 at display day flashes up. (z. B. „DAY1“) With key S14, the adjustment is changed between day and time. With key S9, the selected value can changed and increased or reduced. DAY 1 = Monday DAY 2 = Tuesday DAY 3 = Wednesday DAY 4 = Thursday DAY 5 = Friday DAY 6 = Saturday DAY 7 = Sunday After programming the time, the display switches back automatically after 5 sec. to (or by simultaneous pressing of S1 and S14) the normal display.

5.3.2. Adjust starting time of the additional heating

Key	function
 S1 +  S16  S9	Starting time of the additional heating programmed With ignition „OFF“ the starting time of the additional heating can be programmed. Via pressing simultaneously keys S1 and S16 the day is blinking. (z.B. „dAY0“) With key S16, the adjustment is changed between day, time and ON/OFF. With key S9 the selected value can be changed, increased or reduced
	<u>Programming without day:</u> If start of the additional heating system should not depend from the weekday, the adjustment must be on "dAY0" (every day). In the pre-selection you have to enter the starting time with S9 and with „ON / OFF“ you have to choose, whether the additional heating system should start at the adjusted time.
	<u>Programming with day:</u> If the additional heating system should start on defined days can for every day Mon. - Sun. = "dAY1" - "day7" a separate schedule is adjusted. For this purpose, you select the required day with S9, after that select the time, and with "ON/OFF" select whether the auxiliary heating device should start on the adjusted day and time. After the programming of the auxiliary heating device / time, the display switches back automatically after 5 s. (or through pressing key S1 and S16) to the normal display. If a pre-selection is activated, with ignition OFF, the next starting time appears on the display in addition to the time. dAY0 0600 PrEH If the auxiliary heating device is activated over time, it runs with ignition OFF for a maximum of 60 minutes. The remaining runtime is displayed by a timer on the display. AH 059 06 : 00 Note: A maximum of 1 switching response time a day can be programmed. DAY 0 = Every day DAY 1 = Monday DAY 2 = Tuesday DAY 3 = Wednesday DAY 4 = Thursday DAY 5 = Friday DAY 6 = Saturd DAY 7 = Sunday

5.3.3. Read trouble memory

Key	function
 S1 +  S10  S9	With ignition „OFF“ the trouble memory can be read at the display. With keys S1+S10 the actual fault can be shown [Err E020]. With key S10 the fault can be deleted. With key S9 the next fault can be shown. If there is no defect, the display shows [Err.].

6. Maintenance / Service

Please arrange regular dates for maintenance works and services with a KONVEKTA service station, as indicated in maintenance schedule bus no. [WP07050618](#).

- Only qualified staff is allowed to carry out these works! -

For general instructions on repair – and maintenance works please contact via email:

TKD@konvekta.com



Danger of accidents!

Qualified staff in charge of installation and maintenance have to be trained in accordance with EN 378-Part 4 and (EG) No.307 / 2008 and must strictly follow the legal provisions.

Any works or modifications at the air conditioner which are carried out improperly can lead to malfunction and so endanger operational reliability. We recommend having all works and modifications carried out at an authorized KONVEKTA Service Station^①.

Before carrying out any maintenance works at your air conditioning unit, carefully read the KONVEKTA safety provisions (TD00052A^②) in order to avoid any dangers and accidents!

^① On our website www.konvekta.com in category >service< you will find a survey of contact details of all our service partners close to your location

^② Source of supply: **KONVEKTA AG**, P.O. Box 2280, D-34607 Schwalmstadt

6.1. Troubleshooting



Only qualified staff is allowed to carry out these works!

Trouble	Cause	Repair by authorized Service Station ^① only
a/c is not running	thermostat open	- check inside temperature - re-adjust thermostat ^②
	electric connections disconnected	check electric connections at switchboard
	relay defective	check relay, replace if necessary
	defrost thermostat has switched off	check evaporator blower, replace if necessary
	outside temperature too low (possible icing of evaporator)	switch on "ventilation" only
	evaporator coil dirty	clean evaporator coil with compressed air
	magnetic clutch	check connections at magnetic clutch
	compressor does not compress	check high and low pressure, replace compressor if necessary
	excess pressure (pressure too high)	- check axial fans - check fuses at switchboard - clean condenser coil with compressed air
	excess pressure caused by high outside temperature	run unit until pressure has stabilized^②
	leakage in a/c unit, lack of refrigerant	check a/c unit for leakages, refill refrigerant
	low pressure, dryer clogged	replace dryer
Loud noise at compressor	low pressure, screen of expansion valve clogged	clean screen; replace dryer
	defective bearing at compressor	replace either bearing or entire compressor
	slack V-belt	check V-belt at compressor drive

^① On our website www.konvekta.com in category >service< you will find a survey of contact details of all our service partners close to your location.

^② By user

7. Warranty Conditions

The current „General Warranty Conditions“ KONVEKTA AG“ will apply. A copy will be furnished by the warranty department. Please contact gwl@konvekta.com.

8. Waste disposal in accordance with legal provisions

After the phase of use the last proprietor is responsible for the adequate waste management. The environmental regulations in the exporting country must be observed.

The following list contains the most important regulating literature, valid for the *Federal Rep. of Germany*:

- Resolution for dangerous substances
- Law for waste circulation (KRW/AfgG))
- Resolution for the proofs of utilization and removal
- Criminal Code (StGB) 28th section „criminal acts against the environment“ §326 – Environment jeopardizing waste management
- Law of chemicals § 27 – penal prescriptions
- Resolution for used oil
- Law of water balance
- Resolution for the waste management of old cars and the adaptation of road prescriptions
- Resolution (EC) No. 2037/2000 of the European Parliament and of the Council for materials that affect the ozone layer
- Resolution to prohibit certain ozone destroying halogen hydrocarbons.

The used refrigerant endangers the environment. When dealing with refrigerants the existing prescriptions and regulations are to be followed. **Only qualified staff is allowed to carry out these works!**

Water endangering substances - acc. to §§19g-19l - are solid, liquid, and gaseous substances. e.g.: mineral and tar oils (cooling oils), halogen containing organic combinations (refrigerants).

© Source of supply:
- Bundesanzeiger
- Beuth Verlag
- dtv (Deutscher Taschenbuch Verlag)

9. History of modification

Version	Date	Name	Remark	File
A00	28.03.2011	B. Keßler	Source file	BAKL6U022AD
A01	19.04.2017	B. Keßler	File completely updated (F-gas, pressure...)	BAKL6U022AD