

# COMBIVERT



Instruction Manual

LCD Operator

Original Manual		
Document	Part	Version
20136868	GBR	00








# Preface

The described hard- and software are developments of the Karl E. Brinkmann GmbH. The enclosed documents correspond to conditions valid at printing. Misprint, mistakes and technical changes reserved.

## Signal words and symbols

Certain operations can cause hazards during the installation, operation or thereafter. There are safety informations in the documentation in front of these operations. Security signs are located on the machine. A warning contains signal words which are explained in the following table:

	Dangerous situation, which will cause death or serious injury in case of non-observance of this safety instruction.
	Dangerous situation, which may cause death or serious injury in case of non-observance of this safety instruction.
	Dangerous situation, which may cause minor injury in case of non-observance of this safety instruction.
<b>Attention</b>	Situation, which can cause damage to property in case of non-observance.

### **RESTRICTION**

Is used when certain conditions must meet the validity of statements or the result is limited to a certain validity range.



Is used when the result will be better, more economic or trouble-free by following these procedures.

### **More symbols**

- ▶ This arrow starts an action step.
- / - Enumerations are marked with dots or indents.
- => Cross reference to another chapter or another page.



Note to further documentation.  
<https://www.keb.de/de/service/downloads.html>



## Preface

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### Laws and guidelines

KEB confirms with the CE mark and the EC declaration of conformity, that the device complies with the essential safety requirements.

The CE mark is located on the name plate. The EC declaration of conformity can be downloaded on demand via our website. Further information is provided in annex "Certification".

### Warranty

The warranty on design, material or workmanship for the acquired device is given in the current terms and conditions.



Here you will find our current terms and conditions.  
<https://www.keb.de/de/agb.html>



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Further agreements or specifications require a written confirmation.

### Support

Through multiple applications not every imaginable case has been taken into account. If you require further information or if problems occur which are not treated detailed in the documentation, you can request the necessary information via the local Karl E.Brinkmann GmbH agency.

**The use of our units in the target products is beyond of our control and therefore exclusively the responsibility of the machine manufacturer, system integrator or customer.**

The information contained in the technical documentation, as well as any user-specific advice in spoken and written and through tests, are made to best of our knowledge and information about the application. However, they are considered for information only without responsibility. This also applies to any violation of industrial property rights of a third-party.

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# 1 Basic Safety Instructions

The COMBIVERT is designed and constructed in accordance with state-of-the-art technology and the recognised safety rules and regulations. However, the use of such devices may cause functional hazards for life and limb of the user or third parties, or damages to the system and other material property.

## ATTENTION



### Safety rules and dangers

- ▶ Apply the basic safety instructions of the used drive converter !
- ▶ These can be found in the corresponding instruction manual.
- ▶ All instruction manuals are available in the download area of [www.keb.de](http://www.keb.de).

## 1.1 Target group

This instruction manual is determined exclusively for electrical personnel. Electrical personnel for the purpose of this instruction manual must have the following qualifications:

- Knowledge and understanding of the safety instructions.
- Skills for installation and assembly.
- Start-up and operation of the product.
- Understanding of the function in the used machine.
- Detection of hazards and risks of the electrical drive technology.
- Knowledge of [DIN IEC 60364](#).
- Knowledge of [EN 60664-1](#).
- Knowledge of national safety regulations (e.g. [DGUV Regulation 3](#)).

## 1.2 Accessory

The safety instructions contained in these instructions apply in addition to the associated drive converter.



## 2 Product Description

The LCD operator has a display with a text indicator, which enables a clearly representation of comprehensive informations, for example a parameter name with its value. Several languages are available.

The four function keys are occupied variable. Internal and external possibility of saving enables the transmission and storage of parameter lists and thereby a faster programming of inverter.



Support of the drive mode is not implemented.

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This instruction manual describes the software status starting from 2009-12-08.

### 2.1 Specified application

The KEB COMBIVERT serves exclusively for the control and regulation of three-phase motors. It is intended for the installation into electrical systems or machines.

Technical data and information for connection conditions shall be taken from the type plate and from the instruction manual and must be strictly observed.

Die bei KEB eingesetzten Halbleiter und Bauteile sind für den Einsatz in industriellen Produkten entwickelt und ausgelegt.

#### **Restriction**

If the KEB COMBIVERT F5 is used in machines, which work under exceptional conditions or if essential functions, life-supporting measures or an extraordinary safety step must be fulfilled, the necessary reliability and security must be ensured by the machine builder.

#### 2.1.1 Residual risks

Despite intended use, the drive converter can reach unexpected operating conditions in case of error, with wrong parameterization, by faulty wiring or non-professional interventions and repairs. This can be:

- wrong direction of rotation
- motor speed too high
- motor is running into limitation
- motor can be under voltage even in standstill
- automatic start

### 2.2 Unintended use

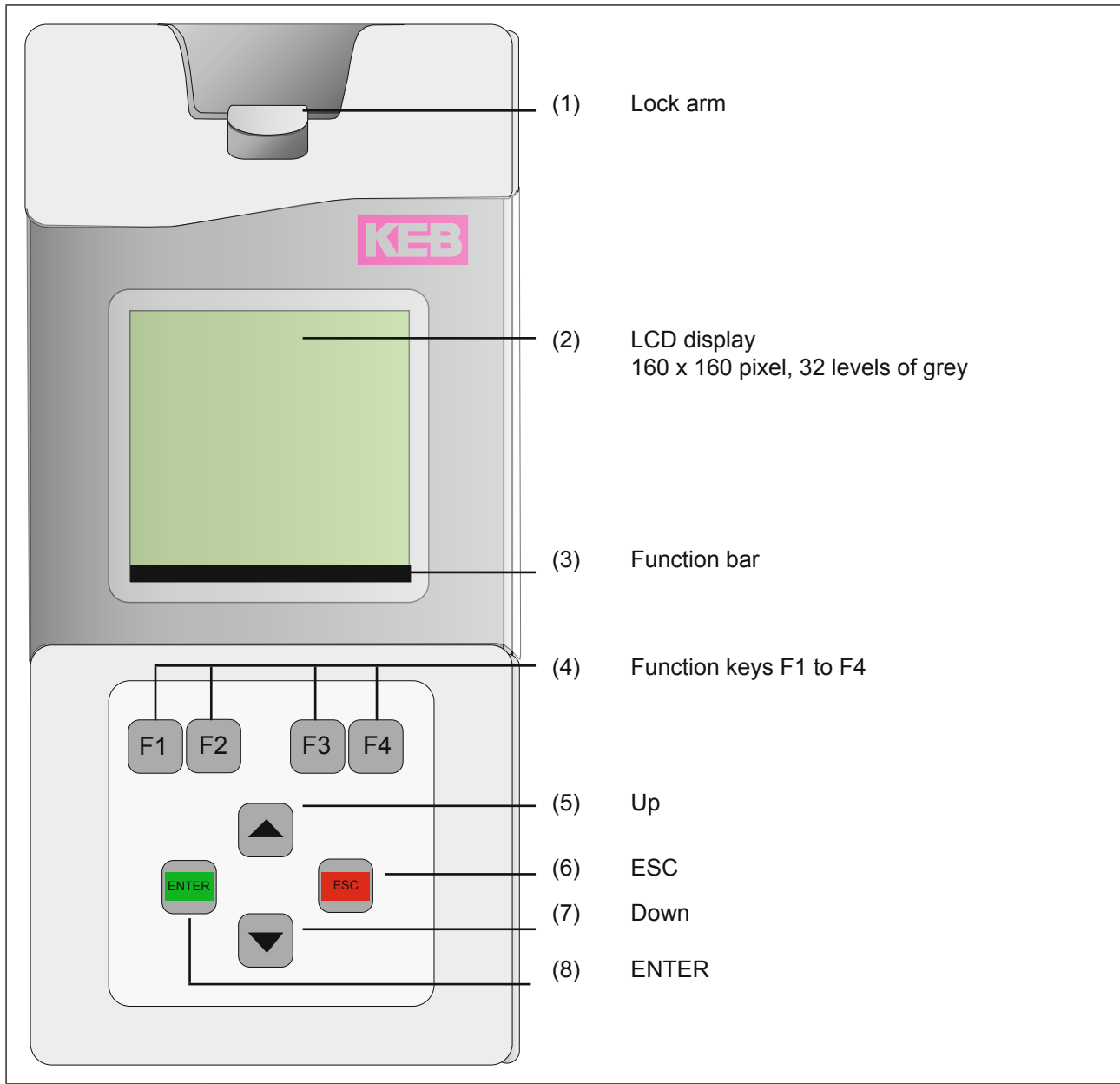
The operation of other electric consumers is prohibited and can lead to the destruction of the unit. The operation of our products outside the indicated limit values of the technical data leads to the loss of any liability claims.

### 2.3 Order data

Version	Material number
Operator graphic LCD	00F5060-K000
Optional to the connections of the LCD operator to the diagnostic interface of standard operators:	
HSP5 cable between LCD and standard operators	00F50C0-0200

*Table 1: Order data*

### 3 Description of the operator



Number	Function
(1)	Lock arm
(2)	LC display 160 x 160 pixel, 32 levels of grey
(3)	Function bar
(4)	Function keys F1 to F4
(5)	Up
(6)	ESC
(7)	Down
(8)	ENTER

Figure 1: Description of the operator



Figure 2: Rear view

	1	GND	Voltage supply
	2	RxD	Receive signal, 0-active
	3	TxD	Transmission signal, 0-active
	4	VCC	Voltage supply +, connected with 9
	5	GND	Reference for signals
	6	GND	connect with 5
	7	E_TxD	transmit handshake signal, 1-active
	8	E_RxD	receive handshake signal, 1-active
	9	VCC	Voltage supply +, connected with 4

Figure 3: Interface

## Description of the operator

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An installed card shaft at the bottom side serves for input of SD or MMC memory cards.

Figure 4: Bottom side card shaft

### 3.1 Internal flash memory

This memory is accessed as drive C:. System files, work and parameter lists are stored here. Observe the following particularities:

- Long file names up to 32 characters are possible.
- Data are not physically deleted. At first they are internal marked as deleted. Thus the available memory capacity decreases. The complete memory is formatted new with the command "format". All data are irrevocable deleted.
- With the command "clear" the deleted memory capacity can be made available again without reformatting.



If the Flash memory is formatted during a firmware update, so the files LANGUAGE.DAT and PARAS.BLB must be copied from the SD card.

### 3.2 External memory card

A SD or MMC memory card of any capacity can be insert into the slot of the operating unit. This memory is accessed as drive A:. Any files can be stored also here. Observe the following particularities:

- The file system is FAT16 and FAT 32 and thus compatibly to external readers and Windows operating systems.
- It can be accessed only to files in the main directory.
- Long file names (up to 32 characters) are possible.
- The write protection switch (at SD cards) is considered, writing on the card only possible after release.

### 3.3 System files

Necessary system files:

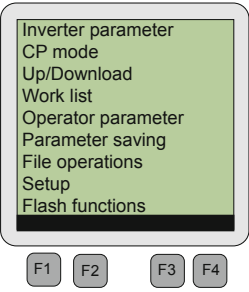
- LANGUAGE.DAT: Texts in all languages for the operation of the operator
- PARAS.BLB: Parameter functions and names for all inverter and operator parameters

### 3.4 Technical data

General	
Dimension (HxBxT)	160 x 75 x 30
Weight	160 g
Protective system (EN 60529)	IP20
Operation temperature	-10°...45°C
Storage temperature	-25°...70°C
Climatic category (EN60721-3-3)	3 K 3
Environment (IEC 664-1)	Pollution degree 2
Flash memory	4 MBytes
External memory	SD or MMC memory cards of any capacity
<i>Table 2: Technical data</i>	

## 4 Software


### 4.1 Main menu

	Name	Function
	ENTER	Jump into the submenu
	→	
	←	Return to the main menu
F1		

*Figure 5: Control elements*

The function keys F1 to F4 can be assigned as follows depending on the respective submenu.

### 4.2 Operation of the function keys

Display	Function	
Flash	Change between internal flash memory and external memory card.	
DecHex	Change between decimal and hexadecimal display.	
Num	Numeric input: manual input of numbers.	
Set	Changing the sets [I], [A] or [0-7].	
Select	Selection of a configuration file.	
Last	Select the last used configuration file.	
Top/Bottom	Change between first and last list item.	
Formt <sup>1)</sup>		The complete memory including the system file is formatted again. → Data are irrevocable deleted.
CinUp <sup>1)</sup>	Make deleted memory space without new formatting available again.	
Delete <sup>1)</sup>	Delete the selected file of memory card or flash memory.	
Upload	Load complete download list from current inverter.	
Download	Store download list in the inverter.	
Copy	Copy of files between flash memory and memory card.	
← →	Move to the left and right (e.g. at numeric input or input of file names).	
CList	A complete parameter list is generated.	
Menu	Return to the main menu.	
Yes	Process confirm.	
+ -	The sign is changed	
,	A point and a further digit are inserted.	
<sup>1)</sup>	File access is possible depending on the password level, reduced or switched off.	

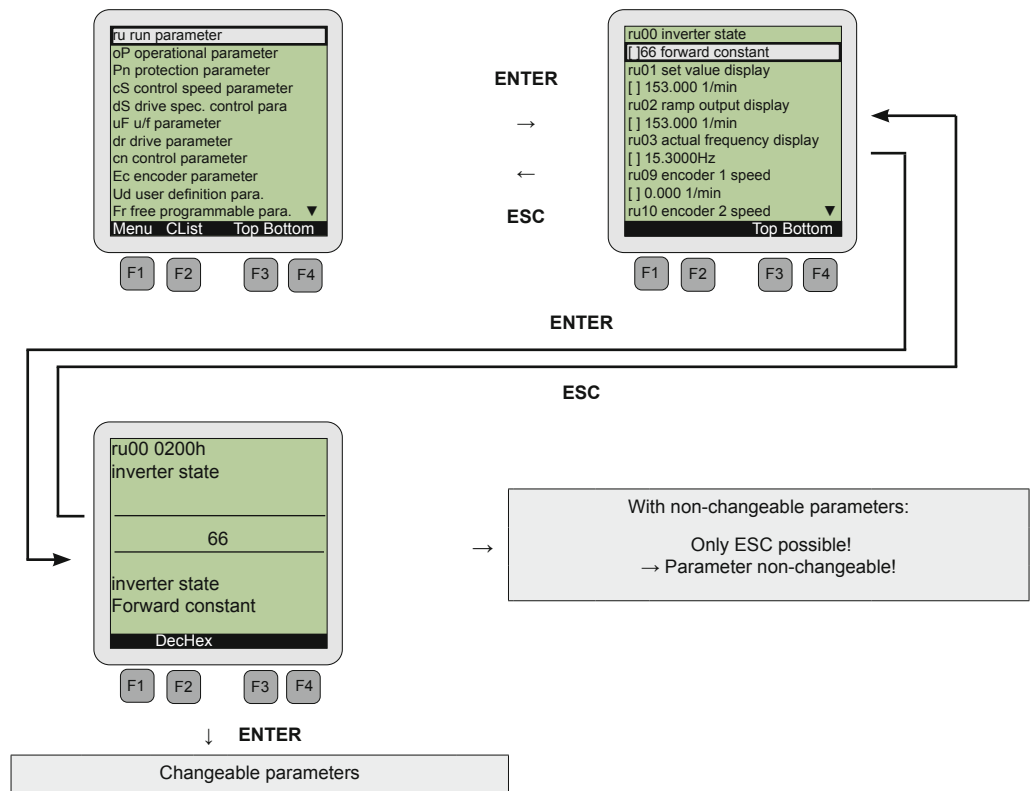
*Table 3: Operation of the function keys*

# 5 Inverter parameter

## 5.1 Non-changeable parameters



The parameter groups are depending on the inverter.

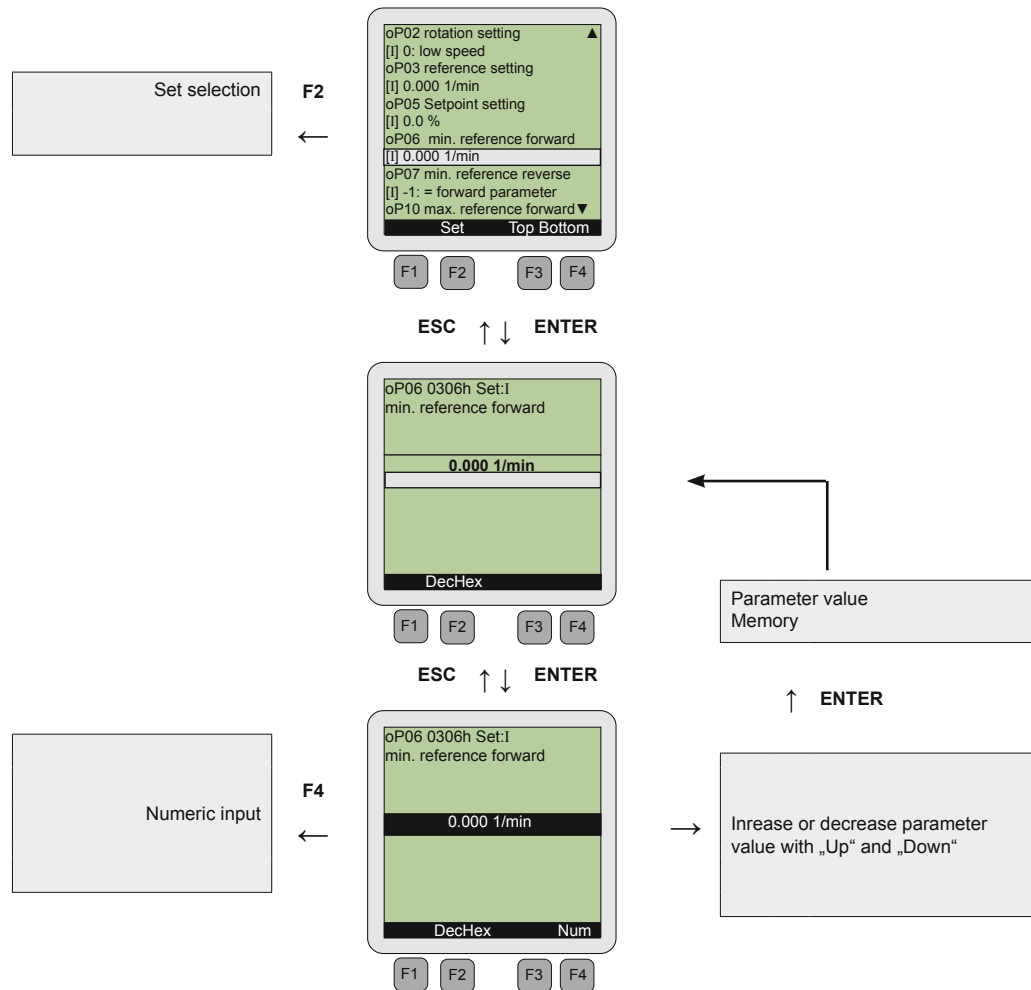




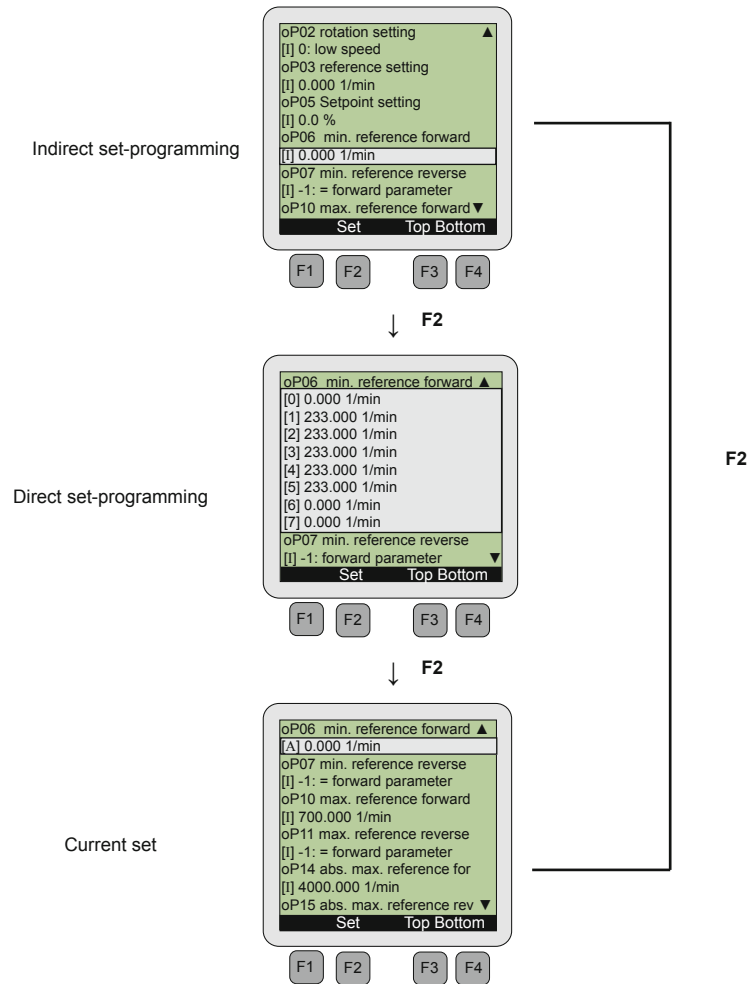
# Inverter parameter

## 5.2 Changeable parameters

### 5.2.1 Changing with „Up“ and „Down“

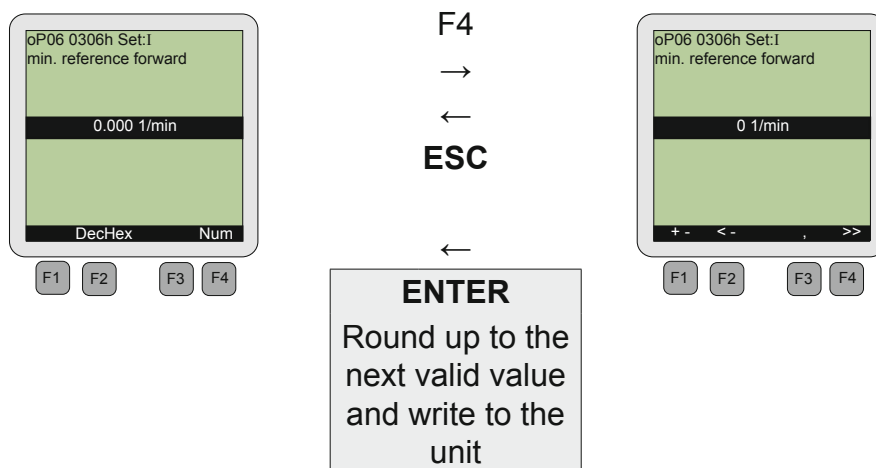


### 5.2.2 Set selection



# Inverter parameter

## 5.2.3 Numeric input



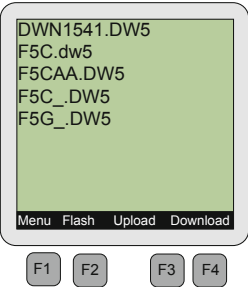
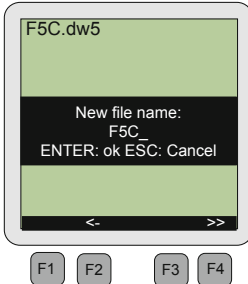

F1	F2	F3	F4
The sign is changed	A digit is removed	A point and a further digit are inserted. The digit can be changed with "UP" and „Down“.	The display is extended by a digit. The digit can be changed with "UP" and „Down“.
		<b>i</b> With several points only the first is considered!	

## 6 Up/Download

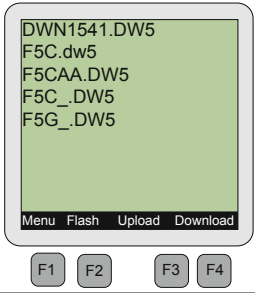


A complete parameter list can be generated with "CList" in the menu item "inverter parameter".(=> 5.1)

### 6.1 Upload

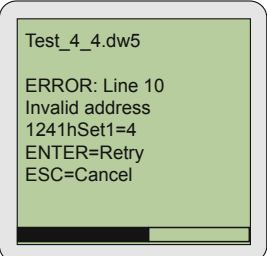
	<p>F1</p> <p>Back to the main menu</p>	<p>F2</p> <p><b>Card</b> The file path is on memory card and changes to flash</p> <p><b>Flash</b> The file path is on flash and changes to memory card</p>
<p>F3 Generate-correction is required</p>		
<p>A downloadlist is loaded from the current inverter and stored under new name</p>		
<p>↓ ENTER</p> 	<p>↓ ESC</p> <p>Cancel</p>	
<p>↓</p> <p>A digit is removed</p>	<p>↓</p> <p>A digit is added. The digit can be changed with "UP" and „Down“: 0-9; _ ; A-Z</p>	
<p>↓ ENTER</p> <p>Procedure confirmed/if necessary "overwrite" inquiry</p> <p>↓ ESC</p> <p>Cancel</p>		
<p> Display of file name / size / date / time. Since there is no real-time clock integrated in the LCD operator, new created files have the date 2003-01-01.</p>		

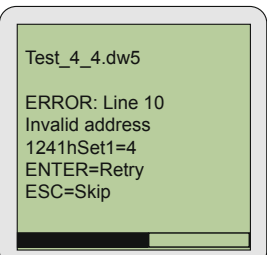
## 6.2 Download

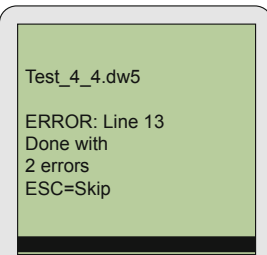
	<p style="text-align: center;">F1</p> <p>Back to the main menu</p>	<p style="text-align: center;">F2</p> <p>Card The file path is on memory card and changes to flash.</p> <p><b>Flash</b> The file path is on flash and changes to memory card.</p>
<p style="text-align: center;">F4</p>		
<p>A downloadlist is stored in the inverter</p>		
<p>↓ <b>ENTER</b></p>	<p>↓ <b>ESC</b></p>	
<p>process confirmed</p>	<p>Cancel</p>	

**Error during download**

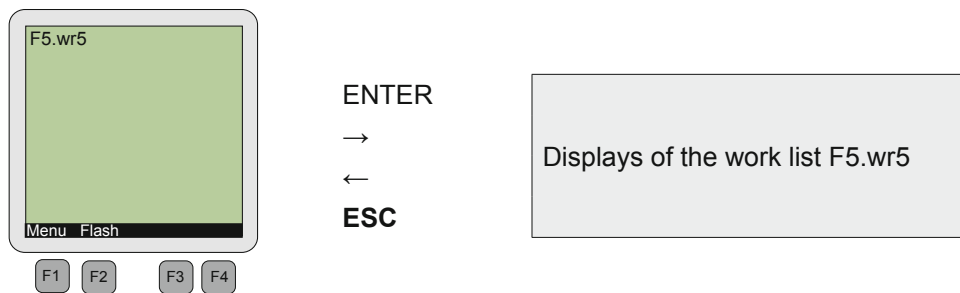
If a parameter can not be written during the download, this parameter can be continued as follows:

	3 X ENTER
---	-----------

	skip line
--	-----------

	Number of skipped parameters are listed.
---	--

### 7 Work list



The selection of a work list of the memory card or the flash memory (function key F2) occurs in this menu item.



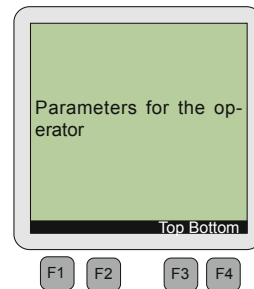
The compilation of the work list must be done with COMBIVIS.

---

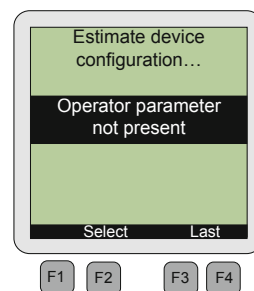
## 8 Operator Parameters

The LCD operator must be connected to the HSP5 diagnostic interface of the appropriate operator for representation of operator parameters.

The operator can load the appropriate parameters if a valid configuration number is recognized. Operation takes place like the inverter parameters.

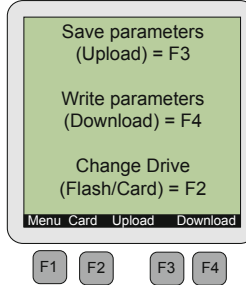


Either a configuration file can be selected via function key F2 or the last used configuration file can be taken via function key F4 if no configuration number is recognized.





## 9 Parameter Saving



F3	F4
<p>All inverter and operator parameters (if an operator is available) are read out and saved in the flash memory or memory card. Every new upload process overwrites the pre-saved parameter lists.</p>	<p>A download is not possible without saved inverter parameters → error message!</p> <p>Operator parameters are only written if they are saved in the flash memory or memory card and if an operator is on the new inverter, which is to be written.</p>
<p><i>Table 4: Password Protection of the KEB COMBIVERT</i></p>	



Fixed file names for saved parameter lists:

Inverter parameter	%%SAVEFU.DW5
Operator parameter	%%SAVEOP.DW5

## 10 File Operations

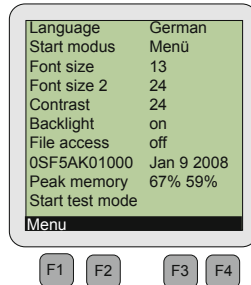


F2	F3	F4	ENTER
Change between the files of the memory card and the files of the flash memory.	The selected file is copied between flash memory and memory card. The generate-correction is required. If the target file is already available, also the delete-authorization is necessary.	The selected file of the memory card or the flash memory is deleted. The delete-authorization is necessary.	Display of file name / size / date / time. Since there is no real-time clock integrated in the LCD operator, new created files have the date 2003-01-01.



An automatic "clearing" is done if not sufficient memory is available during copying files to the flash memory.

## 11 Setup



To store changes non-volatile, a return to the main menu is required with the F1 key.

---

### 11.1 Language

A language is selected for the menu and the parameters.

If the selected language is not available the parameters are displayed in english.

### 11.2 Startup mode

The startup mode determines the menu item after initialization of the operator.

### 11.3 Font size

It can be selected between font sizes 8,10,13,16 and 24 in the display.

**Exception:** see „font size 2“

### 11.4 Font size 2

The font size for the display of parameter values is specified in the CP mode and in the work list.

### 11.5 Contrast

The contrast adjustments of the LCD display can be changed within the range of 0 to 50.

## 11.6 Backlight

If the backlight displays „on" it is generally switched on. If the backlight is adjusted to "out" it is generally switched off. If the backlight is adjusted to "auto", it is switched on during pressing a key and switched off again after 10 seconds if no key is pressed.

## 11.7 File access

The following possibilities are available to determine the file access:

Display	Function	Password
Off	Files cannot be generated or deleted	0
Create	Files can be generated	55
Create/Delete	Existing files can be generated, deleted or overwritten	345

## 11.8 Software information

The display indicates the material number and the output data of the operator software.

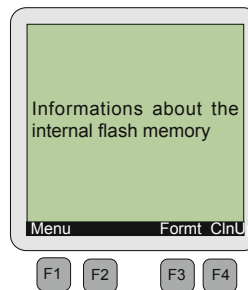
## 11.9 Peak memory


The peak load of the text memory is displayed first. The peak load value of the communication buffer is displayed behind (this display is only for information).

## 11.10 Start test mode

This mode tests the keyboard and the display. Follow the instructions of the display.

## 12 Flash functions



F3	Generate-/delete-authorization is required.	F4
	The complete memory including the system files is formatted again. → Data are irrevocable deleted!	The deleted memory capacity can be made available again without reformatting.

# 13 Start-Up

## 13.1 Password Protection of the KEB COMBIVERT

The KEB COMBIVERT is equipped with an extensive password protection. This affects the LCD operator as follows:

Password level	Meaning	LCD Operator
CP read	Reading is only possible in the final customer menu (CP-Parameter).	No inverter parameters No operator parameters
CP read / write	Reading and writing is possible in the final customer menu (CP-Parameter).	
Application mode	All parameter groups and parameters are visible.	No restriction

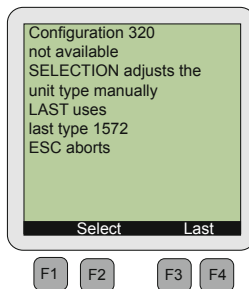
The change between the password inputs:

Current password level	Password input in parameter
CP mode	CP.00
Application mode	Ud.01

## 14 Error

- Error: Password setting insufficient.  
Cause: Selection of parameters at low password level.  
Solution: Adjust another password in the CP mode.

- Error: The following message is displayed when switching on:



- Solution:
- Select the last used parameter configuration with the function LAST.
  - Select a new parameter configuration with the function SELECTION.
  - Load the current system file "PARAS.BLB" from the internet to the memory card and download it to the operator flash memory in the menu item "file management".

- Error: The parameters are not displayed in the selected language.  
Solution: Load the current system file „PARAS.BLB“ from the internet to the memory card and download it to the operator flash memory in the menu item "file management" → eventually not all parameters are available here in the desired language.



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