

COMBICOM



Instruction manual

Ethernet Operator
Version 1.1

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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.
	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/en/service-downloads.html>



Preface

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/en/terms-conditions.html>



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.

Copyright

The customer may use the instruction manual as well as further documents or parts from it for internal purposes. Copyrights are with Karl E. Brinkmann GmbH and remain valid in its entirety.

Other wordmarks or/and logos are trademarks (™) or registered trademarks (®) of their respective owners and are listed in the footnote on the first occurrence.

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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



Hazards and risks through ignorance.

- ▶ Read the instruction manual !
- ▶ Observe the safety and warning instructions!
- ▶ If anything is unclear, please contact KEB !

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 national safety regulations (e.g. DGUV regulation 3).

1.2 Accessoires

The safety instructions of this manual apply in addition to the according drive converter

2 Product description

The described module is a plug-on operator with Ethernet interface for the frequency inverter KEB COMBIVERT F5. The voltage supply takes place via the frequency inverter and for independent supply it can also be fed externally over the terminal strip of the inverter. Parallel to the network access the operation via the integrated display/keyboard as well as a further serial interface for diagnosis/parameterizing (KEB COMBIVIS) is possible.

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. The used semiconductors and components of the Karl E.Brinkmann GmbH are developed and dimensioned for the use in industrial products.

Einschränkung

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.

3 Technical data F5 Ethernet Operator

Ethernet Connector	RJ45
Ethernet Interface	IEEE 802.3 10Base-T (10 MBaud)
Voltage supply	via the inverter
Housing	Standard F5 Operator, pluggable
Operating temperature	-10° to 45° Celsius
Part number	00F5060-8000

4 Ethernet Interface

4.1 Supported Protocols

ARP	Address Resolution Protocol Response
ICMP	Echo Response (Ping)
TCP/IP	HTTP-Port, Data-Port
TCP/UDP	Data-Port

4.2 IP Adress

The IP address can be adjusted by the operator parameters. If the lowest byte is 255 (xxx-xxx-xxx-255), then the operator uses the address which is selected in inverter parameter sy.06 instead for the low byte. The real actual IP address can also be seen in the operator parameter. In case of doubt the network administrator gives the address to be adjusted because in the whole connected Ethernet no address may be used twice.

When using a direct connection of operator and PC with a cross cable, this IP address should be adjusted in such a way that the difference is only in the lowest byte to the address of the PC's (same network but different node).

4.3 Supported Ports

Multiple clients can access the ethernet operator the same time. The following ports are defined at this time:

4.4 Http

This port ist set fixed to 80, the standard http-Port. Here the Hypertext-Transfer-Protocol can be used to view the inverter parameters online by a standard internet browser. Only TCP/IP is possible.

4.5 Data

The data port is used to transfer inverter parameter data by using encapsulated DI-N66019II-Frames. This port is initially set to 8000, but can be changed by the operator parameter settings. Possible protocol types are TCP/IP or TCP/UDP here. By this port the access with the COMBIVIS5 IP driver is possible. To protect this port from unauthorized write access, by means of an operator parameter a write-protection password can be defined. Read access is possible everytime. The definition of the password can only be done by the diagnostic interface, a value of 0 disables the write protection. On access by the ethernet interface this password has to be entered once on the same operator parameter to allow any write operations. If the password is not or erroneous entered, the error message 'operation not possible' appears. If the TCP connection is aborted or there is no data communication on that IP connection for 30 seconds, the operator shuts down the connection himself and the password has to be entered again.

Attention

The reading out of the cfg-file of an inverter using the ethernet interface is not possible with activated data port password, because here pointer parameters have to be written also.

5 Diagnostic Interface

Attention

To prevent a destruction of the PC-interface, the diagnostic interface may only be connected to the PC over a special HSP5 cable with voltage adaption. On disregard the PC-interface may be damaged.

Over an adapter a HSP5 cable is connected to the diagnostic interface. By way of the PC-software KEB COMBIVIS 5 one has now normal access to all inverter parameters. The operator-internal parameters can also be read and adjusted or parameterized by means of download

Separately available accessory

HSP5-cable between PC and adaptor:	00F50C0-0001
Adapter DSUB 9 / RJ45	00F50C0-0020

6 Operator parameters

The operator parameters are displayed in password level 5. For this the value ,555' (if not changed) has to be entered in parameter Ud.01. The values of the configuration parameters are stored nonvolatile in the operator. Following parameters and groups are available (some parameters are not visible on the display and can only be accessed by COMBIVIS):

6.1 Group : Operator system

ID	Name	Description
OS.00	Operator type	Display of the operator type. Writable for verification only with the same value.
OS.01	Password	Input/display of the password. Serves also for switching between operator and inverter parameters on the display.
OS.02	Software date	Date of operator firmware.
OS.03	Diag Error count	Error counter of diagnostic interface. Can be reset by writing.
OS.04	Diag Response delay time	Adjustable time delay for the diagnostic interface
OS.06	HSP5 Max InvBusy retries	Adjustment of the number of repetitions at error code ,Inverter Busy'.
OS.07	HSP5 Tout count	Error counter of HSP5-interface to the inverter. Can be reset by writing.
OS.09	Memory low count	Error counter of internal memory manager. Can be reset by writing a value of 0.

6.2 Group : Fieldbus

ID	Name	Description
Fb.00	MAC Address	Display of physically ethernet address. High bytes are always 00-08-FA-xx-xx-xx.
Fb.01	IP Address	Settable IP address for the operator, see part [IP Address].
Fb.02	Active IP Address	Currently effective IP address, Read only.
Fb.03	Data Port Number	Port number for the data port, see part [supported ports].
Fb.04	Watchdog Inhibit	Activates the watchdog-reset function. In conjunction with the inverter bus watchdog here the shutdown of the drive in case of errors can be projected. Bit 0 = 1 present ethernet-link resets watchdog time Bit 1 = 1 communication on the data port resets watchdog time

further on next page

Group : Debugging

ID	Name	Description
Fb.05	IP Errorcount	Error counter of IP protocol stack.Can be reset by writing
Fb.06	TCP Connections	Number of currently active TCP-connections. Read-only.
Fb.07	UDP Connections	Number of currently active UDP-connections. Read-only.
Fb.08	Sockets	Number of currently active IP tasks. Read-only.
Fb.09	Data Port Password	Defines or enters the data port write protection password. See part [supported ports].

6.3 Group : Debugging

The parameters in this group only serve for diagnostic while the vendor device tests.

7 Operation

7.1 Keyboard parameters

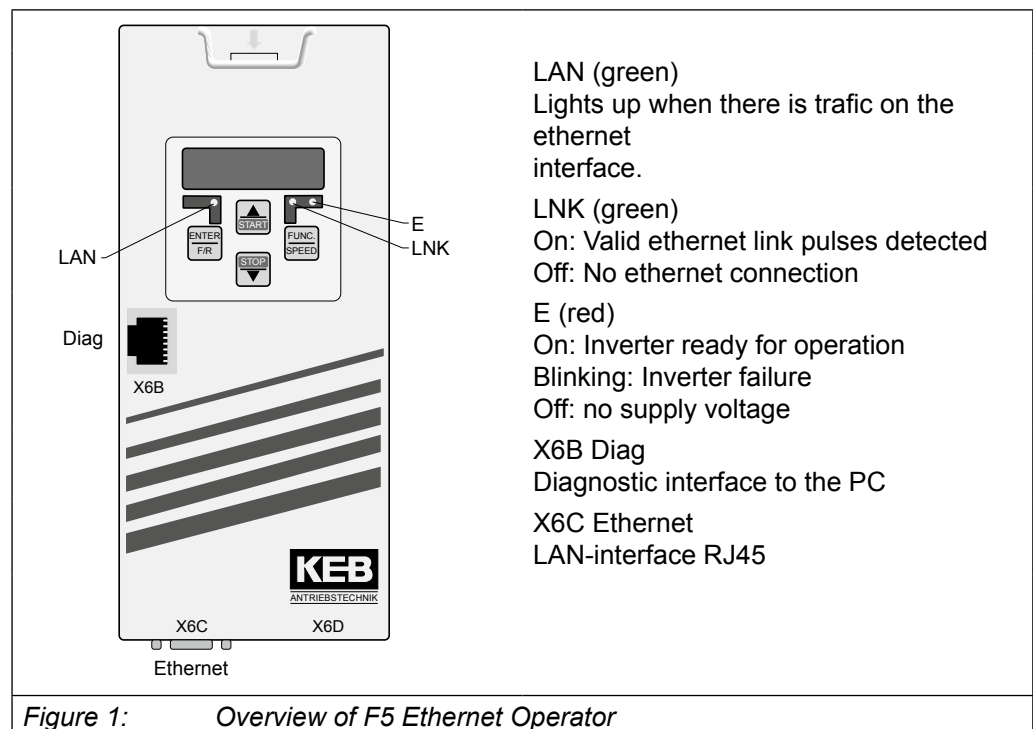
The setting of the IP-Address and the dataport number can be processed via the keyboard also. For that the keys ENTER and FUNC are to be pressed simultaneously and been hold until the display shows five dots.

With the FUNC-key the desired parameter is selected, UP or DOWN shows and changes the value. With the ENTER-key the value is stored (FUNC without previous ENTER does not change the value !).

All values are displayed decimal. For leaving the setup mode the keys FUNC and ENTER are hold simultaneously again until the display shows five dots. Following parameters are available:

Name	Description
IP_1	High byte of the IP-address
IP_2	2.nd byte of IP-address
IP_3	3.rd byte of IP-address
IP_4	Lowest byte of IP-address. 255 uses the value of the inverter parameter Sy.06.
dPort	Data port number

7.2 Diagnostic Elements



Connector Pin Assignment

7.3 Connector Pin Assignment

Pin	Connector Ethernet (RJ45 female)
1	TxD+
2	TxD-
3	RxD+
4	n.c.
5	n.c.
6	RxD-
7	n.c.
8	n.c.



KEB Automation KG

Südstraße 38 • D-32683 Barntrup
fon: +49 5263 401-0 • fax: +49 5263 401-116
net: www.keb.de • mail: info@keb.de

KEB worldwide...

KEB Antriebstechnik Austria GmbH

Ritzstraße 8 • A-4614 Marchtrenk
fon: +43 7243 53586-0 • fax: +43 7243 53586-21
net: www.keb.at • mail: info@keb.at

KEB Antriebstechnik

Herenveld 2 • B-9500 Geraadsbergen
fon: +32 5443 7860 • fax: +32 5443 7898
mail: vb.belgien@keb.de

KEB Power Transmission Technology (Shanghai) Co.,Ltd.

No. 435 Qianpu Road, Chedun Town, Songjiang District,
CHN-Shanghai 201611, P.R. China
fon: +86 21 37746688 • fax: +86 21 37746600
net: www.keb.de • mail: info@keb.cn

KEB Antriebstechnik Austria GmbH

Organizační složka
Suchovrbenske nam. 2724/4 • CZ-370 06 České Budějovice
fon: +420 387 699 111 • fax: +420 387 699 119
mail: info@keb.cz

KEB Antriebstechnik GmbH

Wildbacher Str. 5 • D-08289 Schneeberg
fon: +49 3772 67-0 • fax: +49 3772 67-281
mail: info@keb-drive.de

KEB España

C/ Mitjer, Nave 8 - Pol. Ind. LA MASIA
E-08798 Sant Cugat Sesgarrigues (Barcelona)
fon: +34 93 897 0268 • fax: +34 93 899 2035
mail: vb.espana@keb.de

Société Française KEB

Z.I. de la Croix St. Nicolas • 14, rue Gustave Eiffel
F-94510 LA QUEUE EN BRIE
fon: +33 1 49620101 • fax: +33 1 45767495
net: www.keb.fr • mail: info@keb.fr

KEB (UK) Ltd.

Morris Close, Park Farm Industrial Estate
GB-Wellingborough, NN8 6 XF
fon: +44 1933 402220 • fax: +44 1933 400724
net: www.keb.co.uk • mail: info@keb.co.uk

KEB Italia S.r.l.

Via Newton, 2 • I-20019 Settimo Milanese (Milano)
fon: +39 02 3353531 • fax: +39 02 33500790
net: www.keb.de • mail: kebitalia@keb.it

KEB Japan Ltd.

15-16, 2-Chome, Takanawa Minato-ku
J-Tokyo 108-0074
fon: +81 33 445-8515 • fax: +81 33 445-8215
mail: info@keb.jp

KEB Korea Seoul

Room 1709, 415 Missy 2000
725 Su Seo Dong, Gang Nam Gu
ROK-135-757 Seoul/South Korea
fon: +82 2 6253 6771 • fax: +82 2 6253 6770
mail: vb.korea@keb.de

KEB RUS Ltd.

Lesnaya Str. House 30, Dzerzhinsky (MO)
RUS-140091 Moscow region
fon: +7 495 632 0217 • fax: +7 495 632 0217
net: www.keb.ru • mail: info@keb.ru

KEB America, Inc.

5100 Valley Industrial Blvd. South
USA-Shakopee, MN 55379
fon: +1 952 224-1400 • fax: +1 952 224-1499
net: www.kebamerica.com • mail: info@kebamerica.com

More and latest addresses at <http://www.keb.de>

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