

COMBIVERT



GB INSTRUCTION MANUAL

Channel 1
Channel 2

Encoder Interface
variable
HTL Output

Mat.No.	Rev.
DLF5ZEM-K060	1B

KEB

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1. Safety Instructions

Prior to performing any work on the unit the user must familiarize himself with the unit. This includes especially the knowledge and observance of the safety and warning directions. The pictographs used in this instruction manual have following meaning:

	Danger	Refers to danger of life by electric current.
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	Warning	Refers to possible danger of injury or life.
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	Note	Refers to tips and additional information.
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1.1 Validity

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.

Inspection of our units in view of their suitability for the intended use must be done generally by the user. Inspections are particularly necessary, if changes are executed, which serve for the further development or adaption of our products to the applications (hardware, software or download lists). Inspections must be repeated completely, even if only parts of hardware, software or download lists are modified.

	Controlling by the user	Application and use of our units in the target products is outside of our control and therefore lies exclusively in the area of responsibility of the user.
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	Use under special conditions	The used semiconductors and components of KEB are developed and dimensioned for the use in industrial products. If the KEB COMBIVERT 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.
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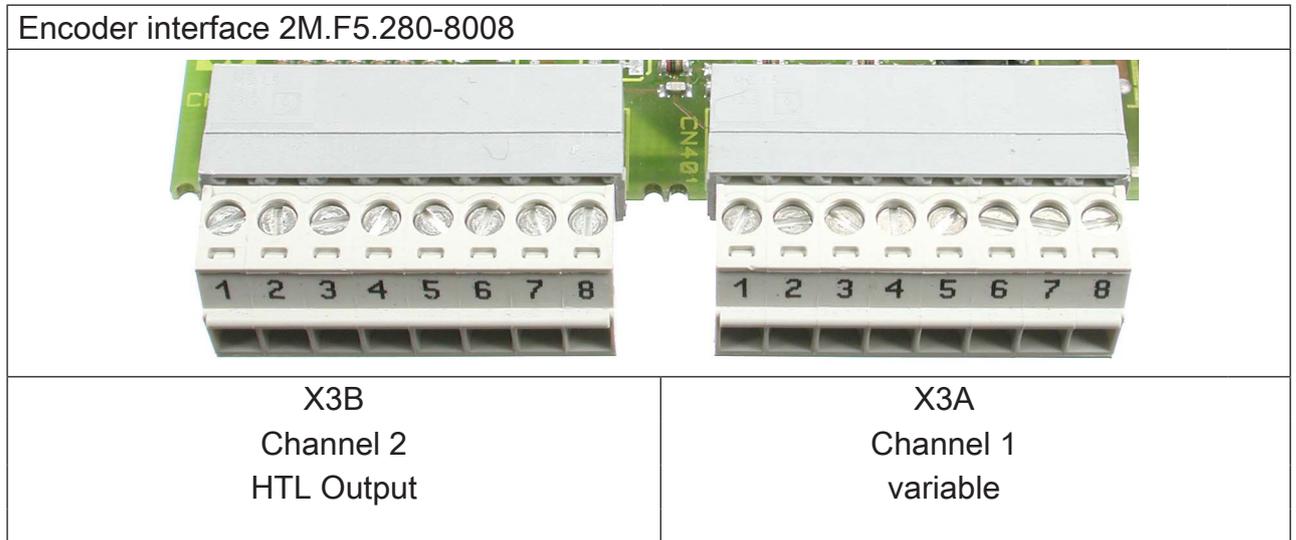
1.2 Qualification

All operations serving transport, installation and commissioning as well as maintenance are to be carried out by skilled technical personnel (observe IEC 364 or CENELEC HD 384 or DIN VDE 0100 and national accident prevention rules!). According to this manual qualified staff means:

- those who are able to recognise and judge the possible dangers based on their technical training and experience
- those with knowledge of the relevant standards and who are familiar with the field of power transmission (VDE 0100, VDE 0160 (EN 50178), VDE 0113 (EN 60204) as well as the appropriate regulations for your area.

	Danger by high voltage	KEB electronics components contain dangerous voltages which can cause death or serious injury. In operation, drive converters, depending on their degree of protection, may have live, uninsulated, and possibly also moving and hot surfaces. In case of inadmissible removal of the required covers, of improper use, wrong installation or maloperation, there is the danger of serious personal injury and damage to property.
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2. Product Description



2.1 General

Each of the interface cards delivered by KEB include two interfaces. As there are numerous different combinations available each interface will be described by means of separate instructions. The instruction covers the installation of the interface card, the connection as well as the start-up of a suitable encoder. Further information and the parameter adjustments are described in the application manual for the inverter/servo.

2.2 Material number

2M	F5	K81	8	0	0	8			
				0	installed	Z	Option, spare part		
				8	HTL input / HTL output				
				F5	Series				
				2M	For housing size G...U (PCB 2M.F5.280-8008)				

2.3 Scope of delivery (option or replacement delivery)

- Encoder interface
- two instruction manuals
- fixing bolt
- packing material

Encoder Interface HTL Output on Channel 2

2.4 Mechanical installation

All kind of works on the inverter may be carried out by authorized personnel in accordance with the EMC and safety rules only.

- Switch inverter de-energized and await capacitor discharge time
- Pull off operator
- Remove plastic cover
- Remove fixing bolt
- Fix interface board beginning from the socket connector straightly
- Screw in fixing bolt
- Adjust desired supply voltage with DIP-switch (if it exists)
- Attach plastic cover

3. Description of the Interface

3.1 Voltage supply

U_{int}	24 VDC	internal voltage supply of the COMBIVERT (I_{max} 120 mA).	
U_{ext}		Control terminal strip (X2A) of the COMBIVERT with external voltage supply 24...30 Vdc.	
24 V		Voltage output of encoder interfaces X3A und X3B for encoder supply (max. 1 A at external supply). Current I_{int} reduces itself by draw current to the 5V output in accordance with the following formula: $I_{24V} = I_{int} - \frac{5V \times I_{5V}}{U_{int}}$	
5 V		Voltage output for encoder supply (I_{max} 300 mA). 5V are obtained from the 24 V voltage.	

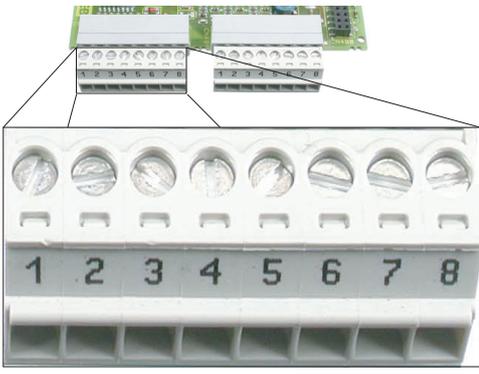
3.2 Channel 1

The description of input X3A is depending on the used encoder interface. It is described in a separate manual.

3.3 Channel 2

Terminal strip	X3B
Interface type	Incremental encoder simulation (output)
Output signals	HTL 20...26 V (input voltage - 4 V) max. 30 mA per output (briefly short-circuit proof)
Outputs / tracks	A+, A-, B+, B-, N+, N-
Input	Voltage input for HTL signal level
Increments per revolution	programmable
Max. line length	50 m, the value is additionally limited by the signal frequency, cable capacity and supply voltage.

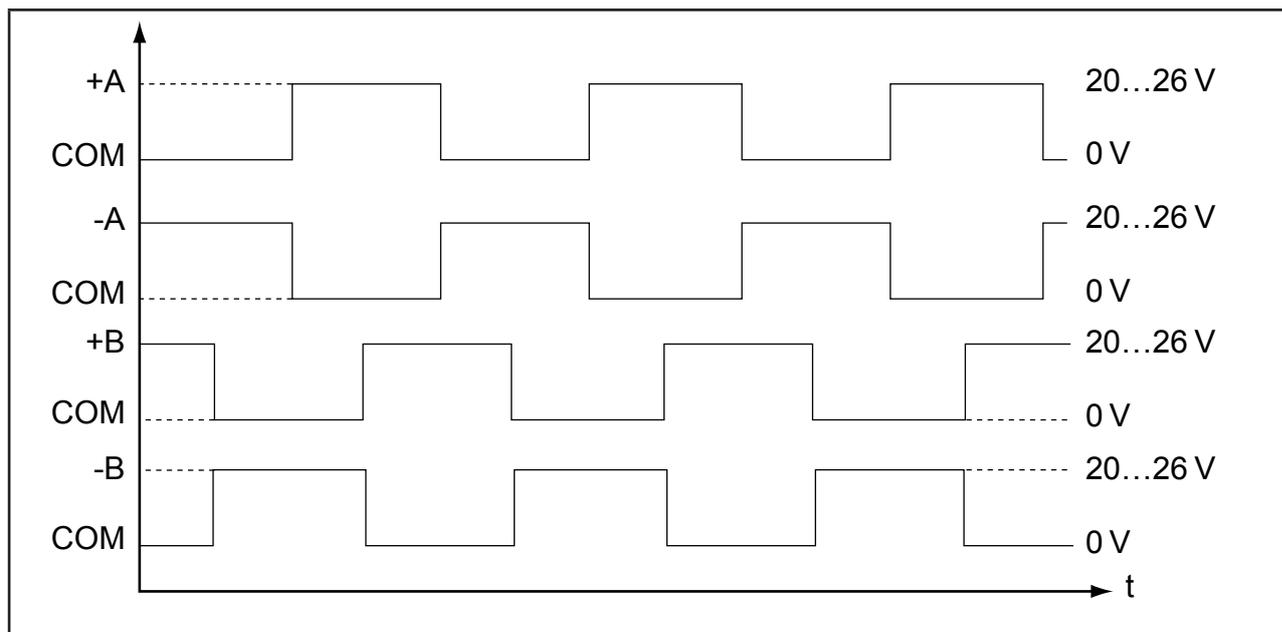
3.3.1 Description of terminal strip X3B

	Stripping length	mm	7
	Tightening torque	Nm	0,22
lb inch		2	
Conductor cross-section (min)	mm ²	0,14	
	AWG	28	
Conductor cross-section (max)	mm ²	1,5	
	AWG	16	

PIN	Name	Description
1	A+	Encoder track A HTL signal+
2	B+	Encoder track B HTL signal+
3	N+	Zero track HTL signal+
4	A-	Encoder track A HTL signal-
5	B-	Encoder track B HTL signal-
6	N-	Zero track HTL signal-
7	24 V	Voltage input 24...30 V, if higher HTL level are required.
8	COM	Reference potential for voltage supply. Reference potential for encoder tracks, if the signals are used as single-ended signals (without inverse signals).

3.3.2 Output signals channel 2

At the HTL encoder simulation the signal tracks A and B are electrically phase-shifted by 90° . The output signals can be connected optionally as difference signal with the respective inverse tracks or as single-ended signals. The zero signal is output once per revolution with the same level.



4. Start-up

After the installation or exchange of an encoder interface some adjustments of the inverter/servo software have to be done before operation:

- Switch on inverter
- Select application mode
- Select parameter Ec.10 and control whether value „24: inc.input simulation“ is entered.
- Select parameter Ec.11 and adjust increments per revolution
- Select Ec.42 (Ec.20 upto V2.8) and adjust the encoder breakage recognition dependent on the case of operation.

5. Error Messages

Error messages and their meaning are described in Chapter 9 of the application manual.



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