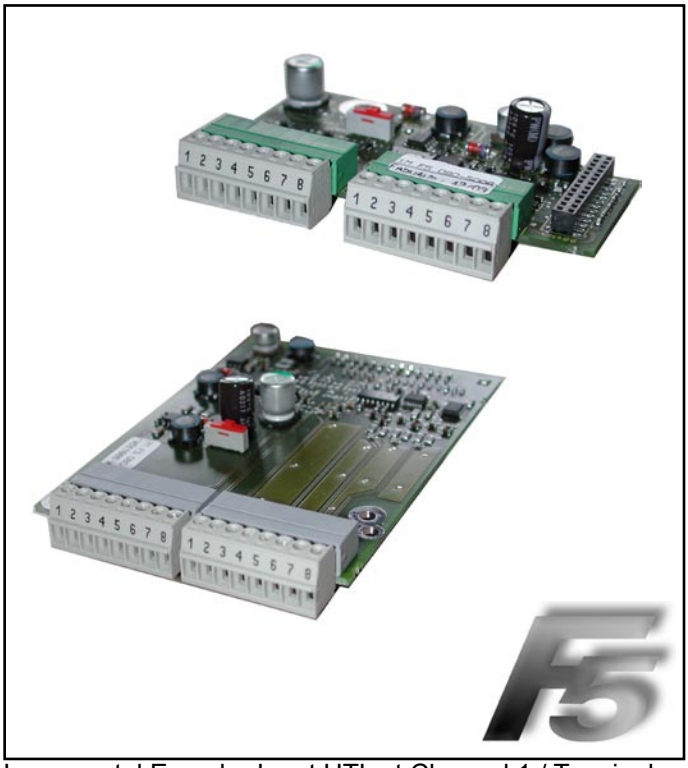
COMBIVERT



Incremental Encoder Input HTL at Channel 1 / Terminal

DL.F5.ZEM-K020

KEB

06/2005

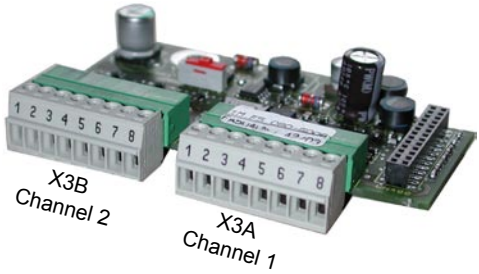
Content

Encoder Input HTL Terminal

1. Product Description

For housing size G…U

For housing size D and E



1.1 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 manual covers the installation of the interface card, the connection as well as the start-up of a suitable encoder. Additional information and the parameter adjustments are described in the application manual for the inverter/servo.

1.2 Description of Encoder Interface Channel 1

Encoder type:	Incremental encoder
Voltage level:	HTL
Inputs/Tracks:	A, B and N with the respective inverted signals
Particularities:	alarm at channel 1

1.3 Part Number

2 M.F5.K80- X Z 0 8

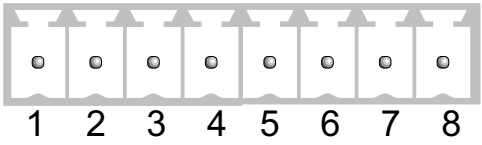
Term of delivery	0: installed	Z: Option, spare part
2. encoder interface	x : TTL-output	W: TTL-input
applicable for housing size	1: D, E	2: G…U

1.4. Scope of Delivery (option or replacement delivery)

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

1.5 Description of Socket X3A

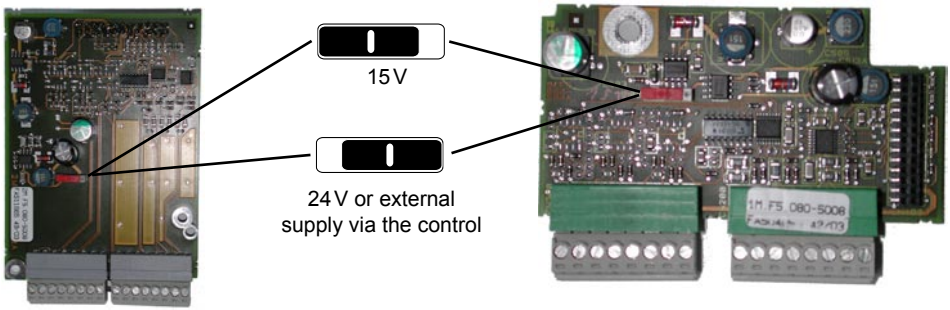
Socket X3A (top view)



PIN	Name	Description
1	A+	HTL - incremental encoder track A+
2	A-	Signal input A- (difference signal to A+)
3	B+	HTL - incremental encoder track B+
4	B-	Signal input B- (difference signal to B+)
5	N+	HTL - Zero track N+
6	N-	Signal input N- (difference signal to N+)
7	15/24 V	Voltage output 15/20…30 V, power supply for the encoders switchable with dip switch S100
8	COM	Reference potential for supply voltage
-	GND	Connect the shield on a proper place at the inverter ground.

1.6 Power supply

1.6.1 Adjustment of the Supply Voltage



1.6.2 Max. Load Capacity in Dependence of Voltage Supply

Max. load capacity at 15 V: 300 mA
Max. load capacity at 24 V: 170 mA
Max. load capacity in case of external supply 1 A (dependent on external voltage source)

The specified currents are reduced by the current taken from the second interface (see application manual Chapter 6.10). In the case the specified currents are not sufficient an external supply can be connected via the control unit (see application manual Chapter 3.1).

1.7 Signal Inputs and Outputs

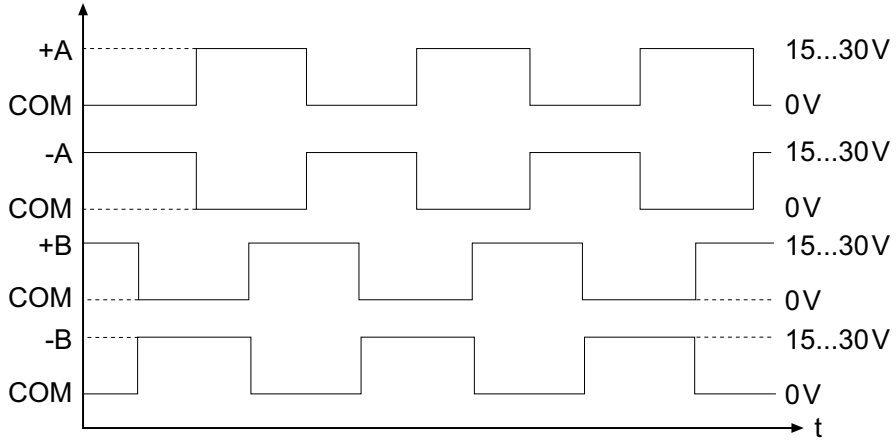
1.7.1 Technical Data

Input resistance:	2,1 kΩ
Logic level:	15…30 V HTL
Cut-off frequency:	100 kHz
Encoder line number:	1…16383 Inc (Recommendation: 2500 Inc at rotary speed < 2400 rpm
Maximum cable length:	50 m, the value is additionally limited by the signal frequency, cable capacity and voltage supply.

1.7.2 Input Signals of Encoder Inputs

At this HTL-encoder interface the signals A+ and B+ are electrically phase-shifted by 90° rectangular signals with the respective inverted signals.

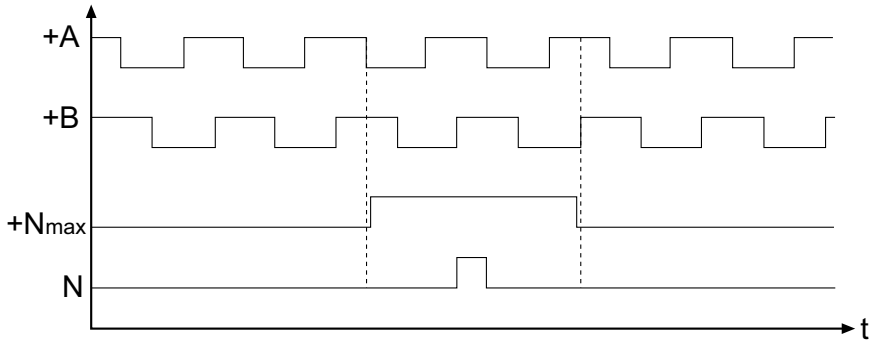
Signal tracks A+ and B+



1.7.3 Evaluation of the Zero Signal

The zero impulse is required to determine valid position points. In case of pure speed controls the signal does not need to be connected. In the following signal sequence the maximum permissible length of the zero impulse of the encoder is visible. The zero signal will be acquired if A+ ,B+ and N+ are at high level. By that there is only one valid position point which is independent from the travel direction.

Evaluation of the Zero Signal



1.7.4 Encoder breakage recognition

For a monitoring of the encoder to channel 1 and the encoder cable the signal tracks and the zero track are monitored. If the connected encoder has no zero track, then the the 5V-supply must be assigned to track N+ and COM to N- at the encoder plug. The monitoring for channel 1 will be switched on/off with parameter Ec.20 Bit 2.
The recognition of encoder breakage triggers an „error! encoder 1“ (value 32), if the voltage between two signal pairs is smaller than 2V.

2. Installation and Start-up

2.1 Mechanical Installation

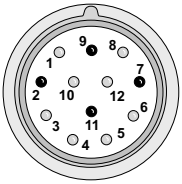
All kind of works on the inverter may be carried out by authorized personnel in accordance with the EMC and safety rules only.

- 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
- Attach plastic cover

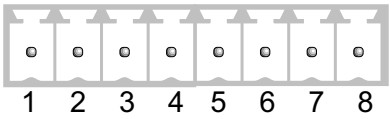
2.2 Electrical Installation

Connection of the encoder cable

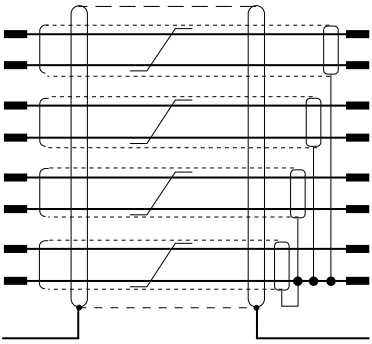
Motor encoder plug



Socket X3A



Name	PIN
A+	5
A-	6
B+	8
B-	1
N+	3
N-	4
20…30 V	12
COM	10
GND	-



PIN	Name	Core color
1	A+	green
2	A-	yellow
3	B+	blue
4	B-	red
5	N+	gray
6	N-	pink
7	20…30 V	brown
8	COM	white
-	GND	shielding

2.3 Tested Encoder

The following HTL-incremental encoder have been tested by KEB on it application:

- Heidenhain ROD 436

However, this does not restrict the use of rotary encoder with same specifications of other manufacturers.

2.4 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.0 and control whether value „17: inc. input with alarm 24V HTL is entered. **The displayed value has to be confirmed by „ENTER“ in any case.**
- Select parameter Ec.1 and adjust increments per revolution
- Select parameter Ec.20 and adjust the alarm function dependent on operation with Bit 2.

2.5 Error Messages

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

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