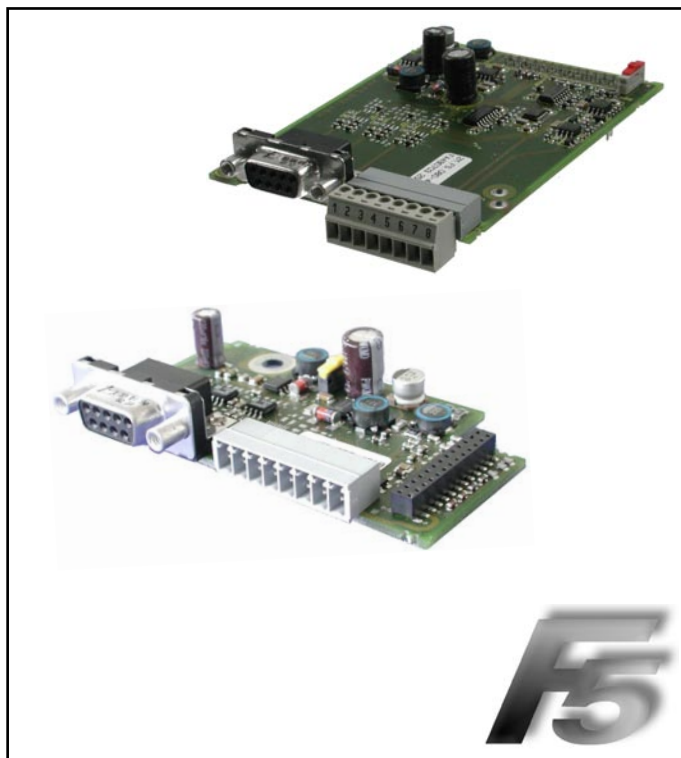


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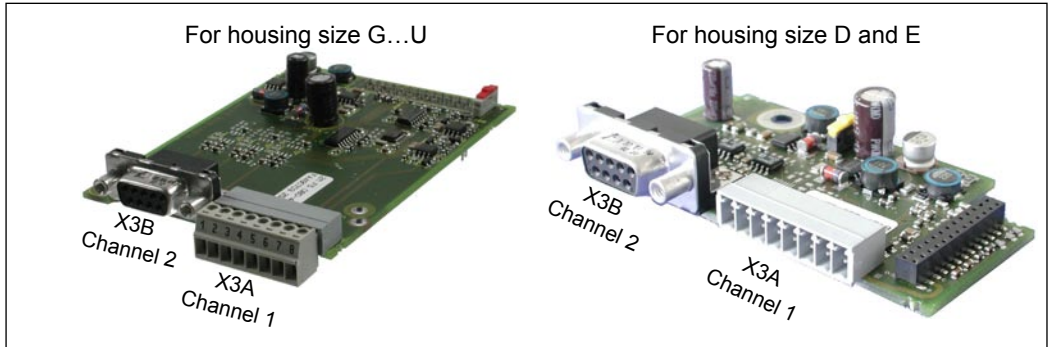


Incremental Encoder HTL at Channel 1 /
Terminal without invers Track

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1. Product Description



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 (without inverse tracks)
 Particularities: alarm at channel 1

1.3 Part Number

2M.F5.K80-J Z 0 8

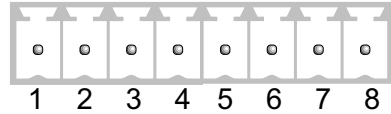
Term of delivery	0: installed	Z: Option, spare part
2. encoder interface	S: TTL-output	T: TTL-input
applicable for housing size	1: D, E	2: G...U

1.4. Scope of Delivery (option or replacement delivery)

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

1.5 Description of Socket X3A

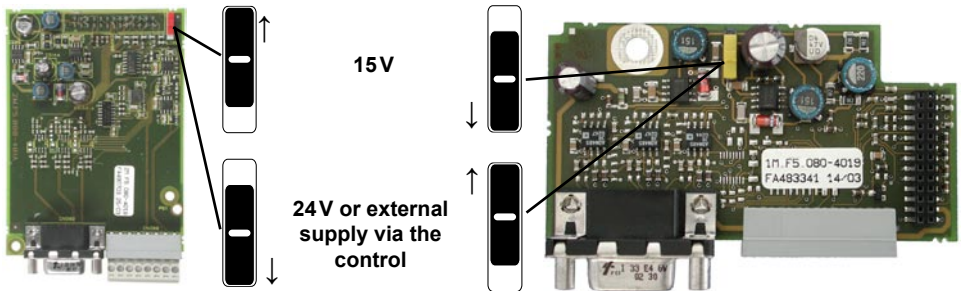
Socket X3A (top view)



PIN	Name	Description
1	GND	Connection for shield - is directly connected with the inverter earth.
2	COM	Reference potential for voltage supply
3	15/24 V	Voltage output 15/24 V switchable via DIP-switch
4	15/24 V	Parallel connection with PIN3
5	Alarm	Encoder breakage recognition via the alarm of the encoder. OK at $U > \text{supply voltage}/2$ Error at $U < \text{supply voltage}/2$ If the encoder has no alarm output PIN 3 or PIN 4 has to be bridged to PIN 5
6	+A	track A
7	+B	track B
8	+N	Zero track

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 15V: 300 mA

Max. load capacity at 24V: 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).

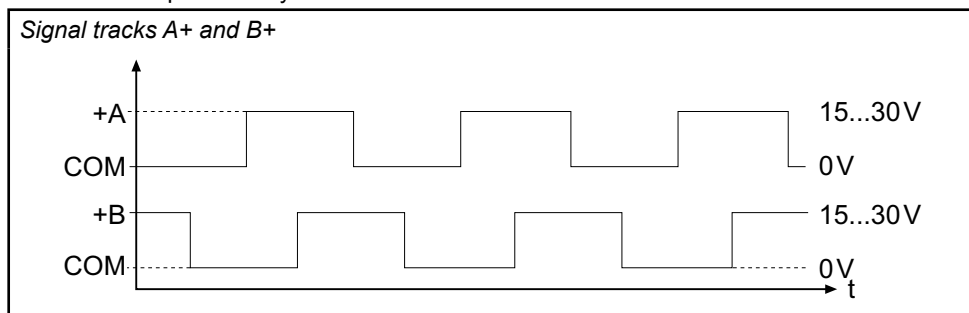
1.7 Signal Inputs and Outputs

1.7.1 Technical Data

Input resistance:	5k Ω
Logic level:	15...30V 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.

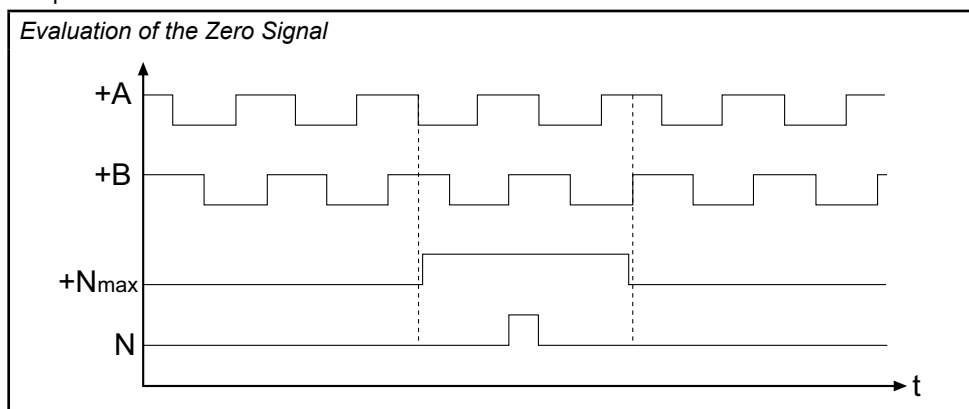
1.7.2 Input Signals of Encoder Inputs

In case of HTL-encoder interface the signals A+ and B+ are rectangular signals with a phase-angle displacement by 90 degrees. The inverted signals will be generated internally and does not need to be provided by the encoder.



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.



Installation and Start-up

1.7.4 Alarm Input

For the monitoring of the encoder at channel 1, as well as the encoder cable, there is an alarm input (PIN 5) at the terminal strip X3A. The monitoring for channel 1 will be switched on with parameter Ec.20 Bit 2.

The alarm input triggers an „error!“ Encoder 1“ (value 32) off, if the voltage at the alarm input is lower than half the supply voltage.

2. Installation and Start-up

2.1 Mechanical Installation

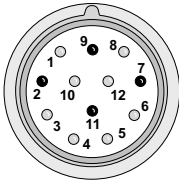
All kind of works on the inverter may be carried out by authorized personnel in accordance with the EMC and safety rules only.

- 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
- Adjust desired supply voltage with DIP-switch
- Attach plastic cover

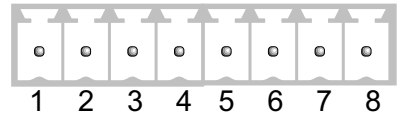
2.2 Electrical Installation

Connection of the encoder cable

Motor encoder plug



Socket X3A



Name	PIN		PIN	Name	Core color
A+	5		6	A+	green
COM	10		2	COM	yellow
B+	8		7	B+	blue
COM	10		2	COM	red
N+	3		8	N+	gray
COM	10		2	COM	pink
20...30V	12		3	20...30V	brown
COM	10		2	COM	white
GND	-		1	GND	shielding

- Encoder cable double-shielded and twisted in pairs
- Connect exterior shielding at both ends to PE/GND
- Connect interior shieldings at one side to COM
- Don't interconnect exterior and interior shielding
- N+ is only required for posi function
- Connect alarm signal only if required

2.3 Tested Encoder

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

- Heidenhain ROD436

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 „15: 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.

**KEB Automation KG**

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

KEB Antriebstechnik GmbH & Co. KG

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

KEB Antriebstechnik Austria GmbH

Ritzstraße 8 • A-4614 Marchtrenk
fon: +43 7243 53586-0 • fax: +43 7243 53586-21
Kostelni 32/1226 • CZ-370 04 České Budejovice
fon: +420 38 7319223 • fax: +420 38 7330697
net: www.keb.at • mail: info@keb.at

KEB Antriebstechnik

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

KEB CHINA Karl E. Brinkmann GmH

(Xinmao Building, Caohejing Development Zone)
No. 99 Tianzhou Road (No.9 building, Room 708)
CHN-200233 Shanghai, P.R. China
fon: +86 21 54503230-3232 • fax: +86 21 54450115
net: www.keb.cn • mail: info@keb.cn

KEB CHINA Karl E. Brinkmann GmH

No. 36 Xiaoyun Road • Chaoyang District
CHN-10027 Beijing, P.R. China
fon: +86 10 84475815 + 819 • fax: +86 10 84475868
net: www.keb.cn • mail: hotline@keb.cn

KEB Antriebstechnik Austria GmbH

Organizacni slozka
Kostelni 32/1226
CZ-370 04 Ceske Budejovice
fon: +420 38 7699111 • fax: +420 38 7699119
mail: info.keb@seznam.cz

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.

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

KEB Italia S.r.l.

Via Newton, 2 • I-20019 Settimo Milanese (Milano)
fon: +39 02 33500782 • fax: +39 02 33500790
net: www.keb.it • mail: kebitalia@keb.it

KEB - YAMAKYU 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 - YAMAKYU Ltd.

711, Fukudayama, Fukuda
J-Shinjo-Shi, Yamagata 996 - 0053
fon: +81 233 29-2800 • fax: +81 233 29-2802
mail: info@keb.jp

KEB Nederland

Leidsevaart 126 • NL-2013 HD Haarlem
fon: +31 23 5320049 • fax: +31 23 5322260
mail: vb.nederland@keb.de

KEB Polska

ul. Budapesztańska 3/16 • PL-80-288 Gdańsk
fon: +48 58 524 0518 • fax: +48 58 524 0519
mail: vb.polska@keb.de

KEB Portugal

Avenida da Igreja - Pavilão A.n. ° 261 Mouquim
P-4770 - 360 MOUQUIM V.N.F.
fon: +351 252 371318 + 19 • fax: +351 252 371320
mail: keb.portugal@netc.pt

KEB Taiwan Ltd.

No.8, Lane 89, Sec.3; Taichung Kang Rd.
R.O.C.-Taichung City / Taiwan
fon: +886 4 23506488 • fax: +886 4 23501403
mail: info@keb.com.tw

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 Sverige

Box 265 (Bergavägen 19)
S-43093 Hälso
fon: +46 31 961520 • fax: +46 31 961124
mail: vb.schweden@keb.de

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