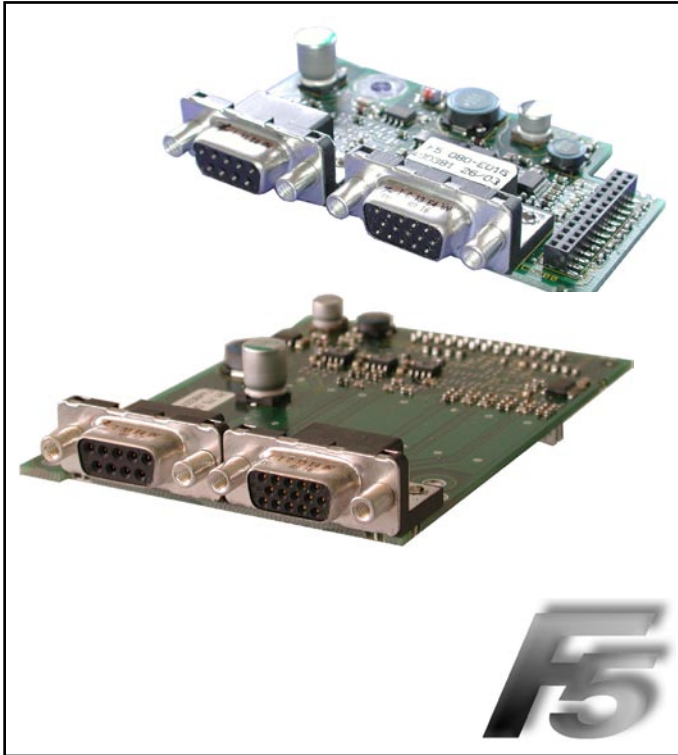


COMBIVERT

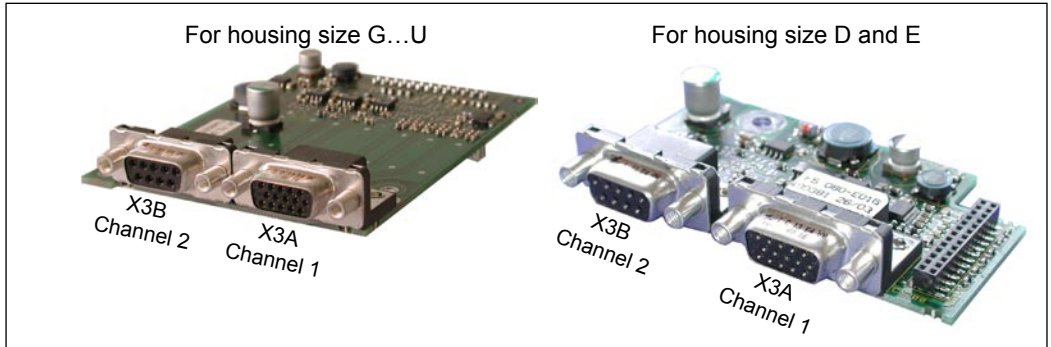


Incremental Encoder Input HTL at Channel 1

Content

GB	1. Product Description.....	3
	1.1 General	3
	1.2 Description of Encoder Interface Channel 1	3
	1.3 Part Number	3
	1.4. Scope of Delivery (option or replacement delivery)	3
	1.5 Description of Socket X3A.....	4
	1.6 Power supply	4
	1.6.1 Max. Load Capacity in Dependence of Voltage Supply	4
	1.7 Signal Inputs and Outputs	4
	1.7.1 Technical Data	4
	1.7.2 Input Signals of Encoder Inputs	4
	1.7.3 Evaluation of the Zero Signal	5
	1.7.4 Encoder breakage recognition	6
	2. Installation and Start-up	6
	2.1 Mechanical Installation	6
	2.2 Electrical Installation	7
	2.3 Tested Encoder	7
	2.4 Start-up	7
	2.5 Error Messages	7

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 with the respective inverted signals
 Particularities: Alarm at channel 1

1.3 Part Number

2M.F5.K80-J Z 0 8

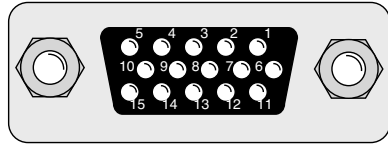
Term of delivery	0: installed	Z: Option, spare part
2. encoder interface	J: TTL-output	K: TTL-input
applicable for housing size	1: D, E	2: G...U

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
3	A-	Signal input A- (difference signal to A+)
4	B-	Signal input B- (difference signal to B+)
8	A+	HTL - incremental encoder track A+
9	B+	HTL - incremental encoder track B+
11	24V	Voltage output 20...30V, power supply for the encoders
12	5V	Voltage output 5V
13	COM	Reference potential for supply voltage
14	N-	Signal input N- (difference signal to N+)
15	N+	HTL - Zero track N+
-	GND	Connection for shield at connector housing - is directly connected with the inverter earth.

1.6 Power supply

1.6.1 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 1A (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

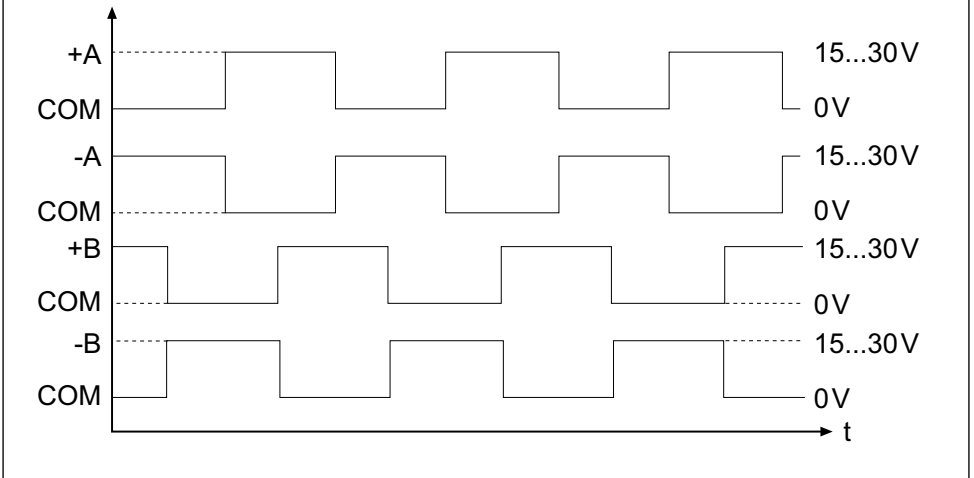
1.7.1 Technical Data

Input resistance:	2,1 kΩ
Logic level:	15...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

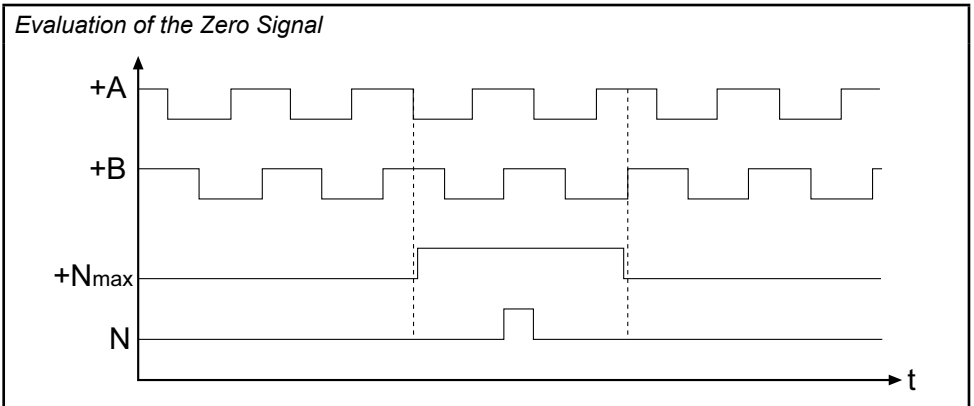
At this HTL-encoder interface the signals A+ and B+ are electrically phase-shifted by 90° rectangular signals with the respective inverted signals.

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.



Installation and Start-up

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

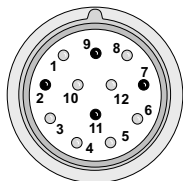
All kind of works on the inverter may be carried out by authorized personnel in accordance with the EMC and safety rules only.

- 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

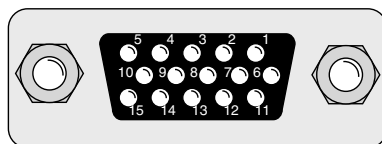
Connection of the encoder cable

Motor encoder plug



Connect-up external shield at the respective connector housing!

Socket X3A



Name	PIN		PIN	Name	Core color
A+	5		8	A+	green
A-	6		3	A-	yellow
B+	8		9	B+	blue
B-	1		4	B-	red
N+	3		15	N+	gray
N-	4		14	N-	pink
20...30V	12		11	20...30V	brown
COM	10		13	COM	white
GND	-		-	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.



Karl E. Brinkmann GmbH

Försterweg 36-38 • 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 GmbH

(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 GmbH

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 QUEUEU 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