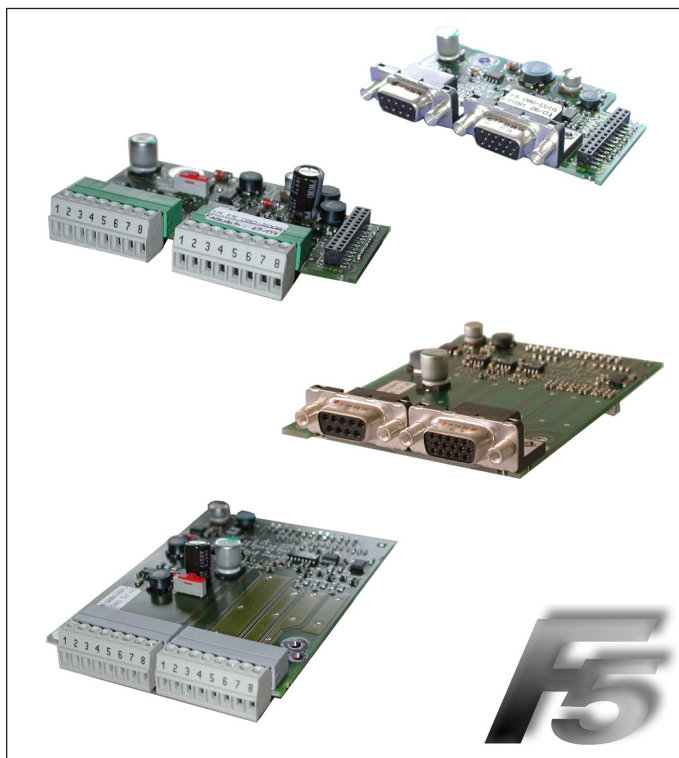


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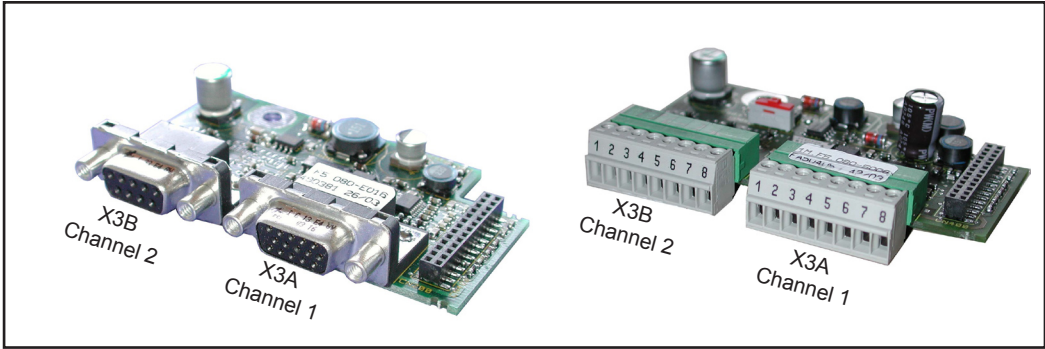


Incremental Encoder Output TTL on Channel 2

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
	1.6.2 Line length	4
	1.7 Signal inputs	5
	1.7.1 Technical data.....	5
	1.7.2 Signal Characteristic of the Encoder	5
	1.7.3 Output of the Zero Signal.....	5
	2. Installation and Start-up	6
	2.1 Mechanical installation	6
	2.2 Electrical installation.....	6
	2.3 Start-up	7
	2.4 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 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.

1.2 Description of encoder interface channel 1

For encoder type:	Incremental encoder simulation (output)
Voltage level:	TTL
Inputs/Tracks:	A, B and N with the respective inverted signals
Particularities:	Version with socket or terminal strip

1.3 Part number

2 M.F5.K80- G Z X X

1. Encoder interface	Term of delivery	0: installed	Z: Option, spare part
		7: Tacho sensor	G: TTL-input
		H: Resolver	I: Hiperface
		K: HTL+	n: SIN/COS
		Q: EnDat	T: HTL-
x : HTL+ (terminals)			
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

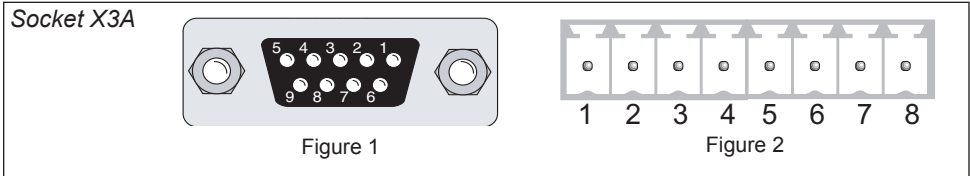


Figure1	Figure2	Name	Description
1	1	A+	Incremental encoder output track A
2	3	B+	Incremental encoder output track B
3	5	N+	Output zero track
4	7	5V	Voltage output 5V
5	-	24 V	Voltage output 20...30V
6	2	A-	Differential signal to A+
7	4	B-	Differential signal to B+
8	6	N-	Differential signal to N+
9	8	COM	Reference potential for voltage supply
-	-	GND	Connection for shield at connector housing - is directly connected with the inverter earth. Connect-up external shield at the respective connector housing.

1.6 Power supply

1.6.1 Max. load capacity in dependence of voltage supply

Max. load capacity at +5 V: 500mA
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).

1.6.2 Line length

The maximum line length results from the voltage drop of the supply line. The value is calculated as follows:

$\text{Encoder cable length} = \frac{U - U_{\min}}{I_{\max} \cdot 2 \cdot R}$
max. encoder current input I _{max} : see encoder description
Supply voltage U: 5,25V
min. supply voltage U _{min} : 4,75V
KEB encoder cable resistance R: 0,072 Ω/m

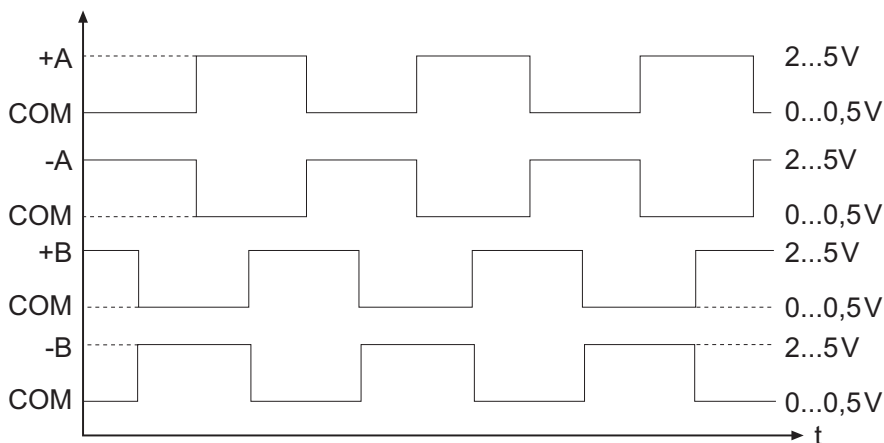
1.7 Signal inputs

1.7.1 Technical data

Input resistance:	120 Ω
Logic level:	5V TTL
Limiting frequency:	300 kHz
Encoder line number:	1...16383 Inc (Recommendation: 2500 Inc at rotary speed < 4500 rpm)

1.7.2 Signal Characteristic of the Encoder

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



Signal tracks A+ and B+

1.7.3 Output of the Zero Signal

The zero signal is output once per revolution if no division is adjusted with Ec.20 Bit 5...6. It has the same level like the signal tracks.

Installation and Start-up

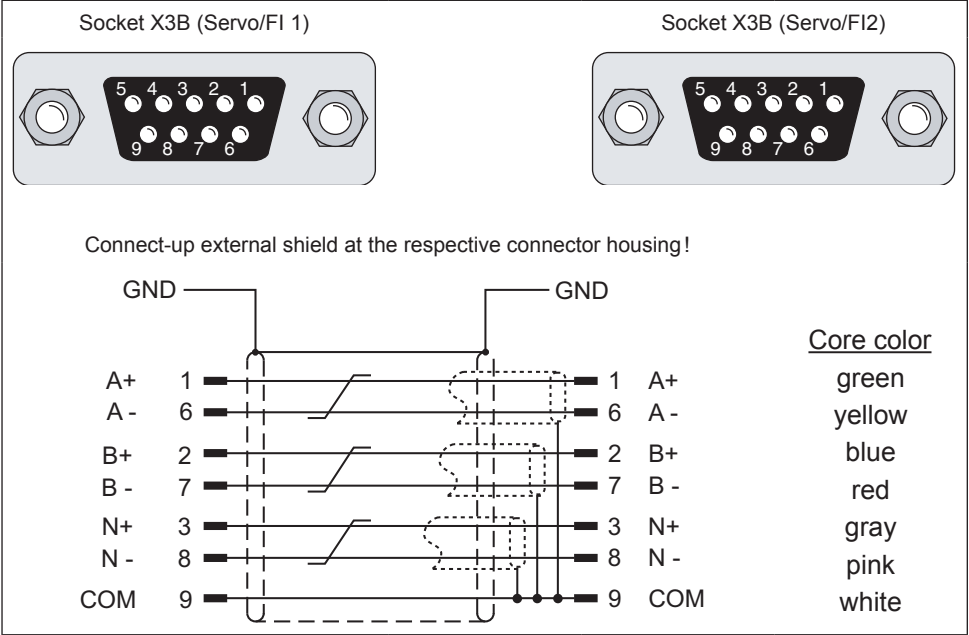
2. Installation and Start-up

2.1 Mechanical installation

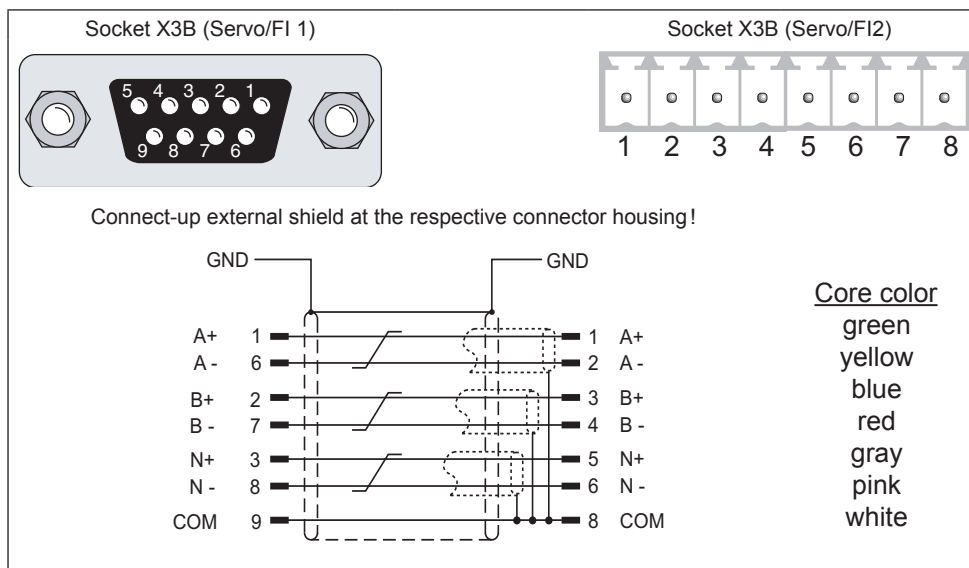
All kind of works on the inverter may be carried out by authorized personnel in accordance with the EMC and safety rules only.

- 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



Connector cable of the incremental encoder simulation at socket X3B



Connector cable of the incremental encoder simulation at terminal strip X3B

2.3 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 „2: Incremental encoder output“ is entered.
The displayed value has to be confirmed by „ENTER“ in any case.
- The increments per revolution of channel 1 (parameter Ec.1) determine the increments per revolution of the simulation
- Select parameter Ec.20 and adjust channel 2 with Bit 0 to output.
- Select parameter Ec.27:
adjust the source for the simulation with Bit 0...1
 - 0: Channel 1
 - 1: Channel 2 (no function at the moment)
 - 2: Actual value (ru.7, if no encoder is connected on channel 1)
 determine resolution with Bit 2...4, if Bit 0...1 = „2“
 - 0: 256 inc./revolution
 - 1: 512 inc./revolution
 - 2: 1024 inc./revolution
 - 3: 2048 inc./revolution
 adjust divisor for division of the increments per revolution with Bit 5...6
 - 0: 1 (direct)
 - 1: 2
 - 2: 4

2.4 Error Messages

Error messages and their meaning are described in the inverter documentation.



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