

# SETUP INSTRUCTIONS FOR ENCODEROPTIONBOARD

## ECB/II 7000

### FOR THE UD 7000

up to Softwareversion 17.00

#### Technical datas

Benennung	Wert	Einheit
Encoder voltage supply (variabel)	5...17 ⇒ see jumperdescription J1 and J2	V
Max supply current (variable voltage supply)	300	mA
Encoder voltage supply (fix voltage)	24 ⇒ see jumperdescription J1 and J2	V
Max supply current (fix voltage)	300	mA
Maximale Encoder Pulsfrequency	330	kHz
„Slave Out“ Output (X4)	depends on the controll signal (X5) or motor feedback signal (X3). ⇒ see description of jumper J3	
Speed reference input / voltage (V_IN) <sup>1</sup>	0...10 +/- 10 2...10	V
V_IN resolution input	Standard 10BIT see jumper S1 and IC U1 Optional 12BIT see jumper S1 and IC U1	
Input resistor	100	kΩ
Other signalinputs	see the UVC7000 Manul Part 1	
Inputresistors of different encoder systems:		
TTL	possibility: 150R or 150R and 1nF in series (Factorysetting)	
HCL	4,4	kΩ
Open kollektor (possible NPN or PNP (Factorysetting))	4,7	kΩ
Sanning rate Inputreference	1	msec
Sanning rate digital inputs	8	msec

#### Versions

Every fitted option board is identified automatically by the inverter. The CODE NUMBER can be retrieved by way of the parameter D1(read only parameter). The CODE numbers for the Universal encoder feedback systems is:

**No. 11.**

#### Handling

The EC and FO variants can basically be handled in the same way. For the EC drive, a resolver feedback is recommended in all cases. The advantage of the resolver is that the momentary rotor position information can be

<sup>1</sup> See Parameterdescription P\_31

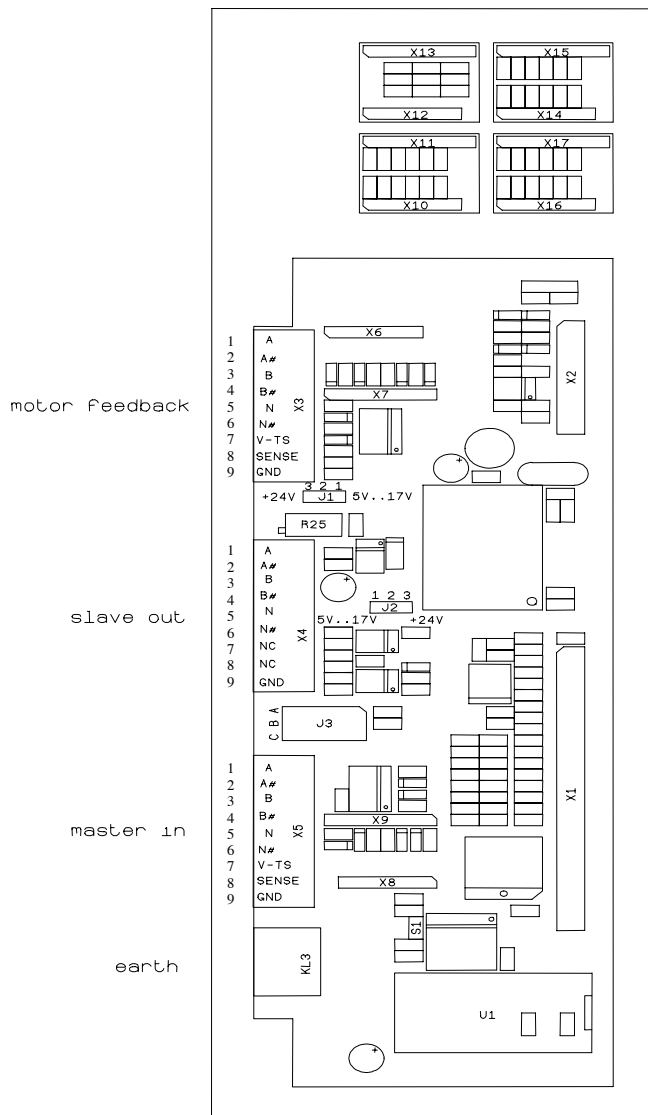
measured immediately (absolute value encoder) after Power On. It goes without saying that an encoder can be fitted on an EC motor, but the current rotor position must be determined in a test run after every Power On. This test run then determines the position of the rotor. However, this is only possible if the drive is capable of rotating absolutely freely.

## Hardware




### The ENB/II 7000 included the following components

- Optionboard
- 2 sets of mounting kits (BGII+BGIII and BGIV+BGV)
- Encoderadaptionkits, of: 2 x TTL Adapter; 1 x HCL Adapter; 1x open Collector Adapter.

### Optionskarte:



## Terminal Discription

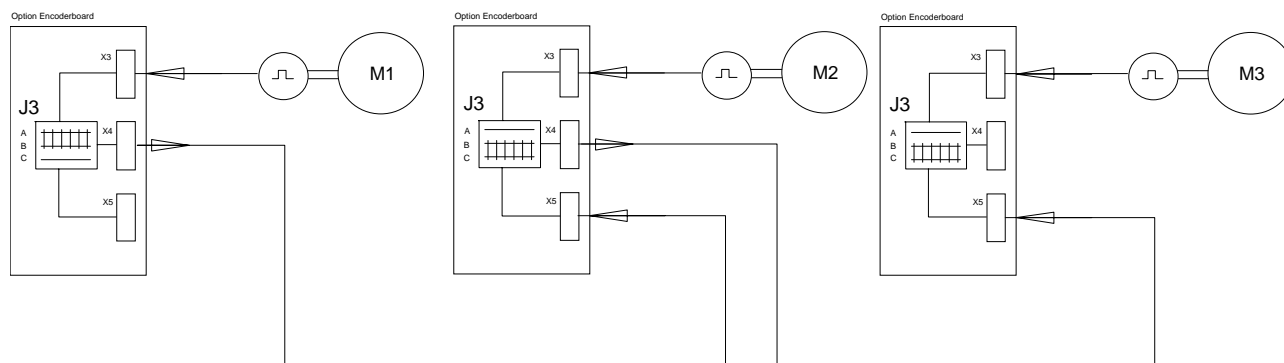
	No.	Terminal Discription
KL3 earth	1 	Connetion to earth
	2 	Connetion to earth
	3 	Connetion to earth
X5 master in	GND	Signal common, reference for input signal from the encoder
	SENSE	Testsignal for brocken cable and feedback for the varriable output voltage on V-TS. Disconnecting this Pin to V-TS occurred an Fault 14 Position senso
	V-TS	output supply voltage depend on J1: 1-2 = 5-17 VDC variable with R25; 2-3 = 24VDC
	N-	Digital input from the encoder, invert signal „Marker pulse“ one pulse per revolution.
	N+	Digital input from the encoder „Marker pulse“ one pulse per revolution
	B-	Digital input from the encoder, invert signal. The number of pulses has to be set in Paraneter 36-Pulse number LIM
	B+	Digital input from the encoder. The number of pulses has to be set in Paraneter 36-Pulse number LIM
	A-	Digital input from the encoder, invert signal. The number of pulses has to be set in Paraneter 36-Pulse number LIM
X4 slave out	A+	Digital input from the encoder. The number of pulses has to be set in Paraneter 36-Pulse number LIM
	GND	Signal common, reference for input signal from the encoder
	NC	Not connect
	NC	Not connect
	N-	Digital output from the encoder, invert signal. The „Marker pulse“ is equal to the input pulse select by J3.
	N+	Digital output from the encoder. The „Marker pulse“ is equal to the input pulse select by J3.
	B-	Digital output from the encoder, invert signal. The number of pulses is equal to the input pulses select by J3.
	B+	Digital output from the encoder. The number of pulses is equal to the input pulses select by J3.
X3 motor feedback	A-	Digital output from the encoder, invert signal. The number of pulses is equal to the input pulses select by J3.
	A+	Digital output from the encoder. The number of pulses is equal to the input pulses select by J3.
	GND	Signal common, reference for input signal from the encoder
	SENSE	Testsignal for brocken cable and feedback for the varriable output voltage on V-TS. Disconnecting this Pin to V-TS occurred an Fault 14 Position senso
	V-ST	output supply voltage depend on J1: 1-2 = 5-17 VDC variable with R25; 2-3 = 24VDC
	N-	Digital input from the encoder, invert signal „Marker pulse“ one pulse per revolution.
	N+	Digital input from the encoder „Marker pulse“ one pulse per revolution
	B-	Digital input from the encoder, invert signal. The number of pulses has to be set in Paraneter BE-Lines Encoder
B+	Digital input from the encoder. The number of pulses has to be set in Paraneter BE-Lines Encoder	
A-	Digital input from the encoder, invert signal. The number of pulses has to be set in Paraneter BE-Lines Encoder	
A+	Digital input from the encoder. The number of pulses has to be set in Paraneter BE-Lines Encoder	

## Selecting of the right Encodervoltage supply ( J1 and J2 ) and ( R25 )

1. TTL Encoder, 5V Referenzvoltage adjustable by R25 and Jumper J1 and J2 setting to position 1-2.
2. HCL Encoder, 12V Referenzvoltage adjustable by R25 and Jumper J1 and J2 setting to position 1-2.
3. Open Collector Encoder, 24V Referenzvoltage fixed by setting the Jumper J1 and J2 to position 2-3.

The Referenzvoltage is to set by the Potentiometer R25, witch is placed between the conector X3 and X4. It is to be adjustable from 5 to 17 VDC if the Jumper J1 and J2 is set to 1-2.

## Wahl der Master Slave Konfiguration ( J3 )



There are two possibilities for setting the jumper J3. Position AB or Position BC. If the jumper is selectet two AB the Input signal from the own motor encoder of X3 is switched to conector X4 (Slave output). If the jumper is selectet two BC the Input signal from the conector X5 is switched to conector X4 (Slave output).

## High resolution Input

The user of the ECB/II 7000 Option Board had another advance in using an better resolution for all analog input signals. This Option is not available in the standart ECB/II 7000 kit. If it is necessary to get these resolution, you have to plug in the IC1 (AD862AR-10) in and plug out the Jumper S1. With these modification you get an Input resolution from 12 Bit.

## Software

### Basic settings of the inverter

1. Select the required display language ⇒ [Parameter 78](#)
2. Enter the data of the motor that is connected to the inverter ⇒ [in parameter Group 1](#). **The correct data must be entered to ensure correct parameter measurement and internal processing!**
3. Enter the marked basic parameter ⇒ [in parameter Group 2](#).  
Here, attention must be paid above all to [Parameter 2C](#) because the required drive type is defined here. As soon as a mode deviating from the current mode (e.g. EC, SLV or FO variant) is selected there, the set drive type is activated after the next Power ON of the inverter (Power OFF - ON) or setting the Parameter 2D to 1 for doing an Software reset: Mode-specific parameters are added automatically to the standard parameters. From this moment on, the inverter requires that an option board and a tachometer generator are connected. Otherwise, an error message is issued immediately after Power On.  
The drive type that is activated after Power ON is shown in the second line of the display (Ver. X) during the initialisation phase and  
I stands for inverter or sensorless  
F stands for field-oriented control and  
EC stands for electronically commutated synchronous machine.
4. Select the setpoint source ⇒ [Parameter 31](#).
5. Select the required start and ramp-up/ramp-down response of the inverter ⇒ [Parameter 71 and 72](#).
6. Specify whether the inverter is to automatically restart in the event of an error occurring ⇒ [Parameter 83...85](#).
7. Check Parameter C1 to determine whether the correct option board has been installed. You will find the respective option board number in the option board description.
8. Enter the data specific to the feedback system in [Parameter BE](#).
9. Select the test mode specific to the drive type and feedback system. ⇒ [Parameter 2A](#)

After Power Off/On (hardware reset) or an Software reset, and issuing of the first start command, a test run is run through once during which the data specific to the motor and feedback system are determined. If this test run is completed successfully, the drive starts and runs up to the required nominal speed or torque. *After the test run, the parameter must be set back to 0 so that the test run will not take place after every Power On.* If an error occurs during the test mode, the test is cancelled and it is ended with an error message.

### Trouble shooting

Once all parameters have been entered, several parameters are available that contain information about the status of the inverter. The actual power-specific data such a currents and voltages on the mains and motor ends can be found in parameter Group 0-[Service data I](#). The motor model and actual inverter-specific statuses are in parameter Group E and F [Service data II and III](#). Particularly in the case of units with feedback, to some extent it is difficult to locate a source of a fault. The following approach is recommended in this case:

1. Switch on the unit and select [Parameter BB](#). Here, the mechanical rotation angle of the tachometer shaft can be read out. If the parameter setting for the tacho data (Parameter BA or BE) is correct, the display runs through an angle of  $360^\circ$  during each mechanical revolution of the tacho shaft.
2. Once the settings of the tacho-specific parameters have been checked and confirmed by the test in 1. above, you can begin testing the power section. To do this, you should first set the [Parameter 2C](#) back to U/f-controlled operation (setting 0) and you should activate it by Power Off/On. The drive should be capable of running in this mode of operation.