

Application Note No. AP 2016/30-1

Version: 2018/18

Author: KoJ

File name: AP_2016_30-1e

Part-no.: 206610

Translation of the "Original Dokumentation"

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History:

Version	Change	Initials
2018/18	Encoder tuning added	STL
2016/30	First edition	KoJ

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A-encoder (new) part-no. 205900 as replacement for A-encoder (old)

The A-encoder is a motor encoder which is mounted on the motor shaft. The main task of the motor encoder is to report the rotor position back to the inverter. The A-encoder (old) can no longer be manufactured, and is deprecated. In case of repairs or a replacement motors an A-encoder (new) (part no. 205900) is used.

The A-encoder (new) differs for A-encoder (old) in the following 3 points:

1. Pin assignment

Pin assignment motor				Pin assignment inverter			
A-encoder (new)		A-encoder (old)		KU xx KU-R01 X31	AW 1,3/2,6 ... AW 4,5/9 X156	AW xx/yy-2 (AW-R01) X156	AW xx/yy-3 (AW-R02) X56
Pin	Signal	Pin	Signal	Pin	Pin	Pin	Pin
1	G2N	1	G2N	6	6	6	G2N
2	G2I	2	G2I	5	5	5	G2I
3	G1N	3	G1N	4	4	4	G1N
4	G1I	4	G1I	3	3	3	G1I
5	-	5	-	-	-	-	-
6	GND	6	GND (optional)	8	8	8	GND
7	-	7	-	-	-	-	-
8	-	8	-	-	-	-	-
9	G0N	9	G0N	2	2	2	G0N
10	G0I	10	G0I	1	1	1	G0I
11	+ 5V	11	+ 5V	7	7	7	05P
12	-	12	-				



If a A-encoder (new) is mounted the GND (0 V) must be connected.

As a replacement for an encoder cable without free wire for GND connection the following parts from AMK are available:

Cable / encoder connector	AMK part no.
Encoder cable (4x (2 x 0,25) + 4 x 0,5)	101709
Encoder plug straight	101763
Encoder plug angled	101764

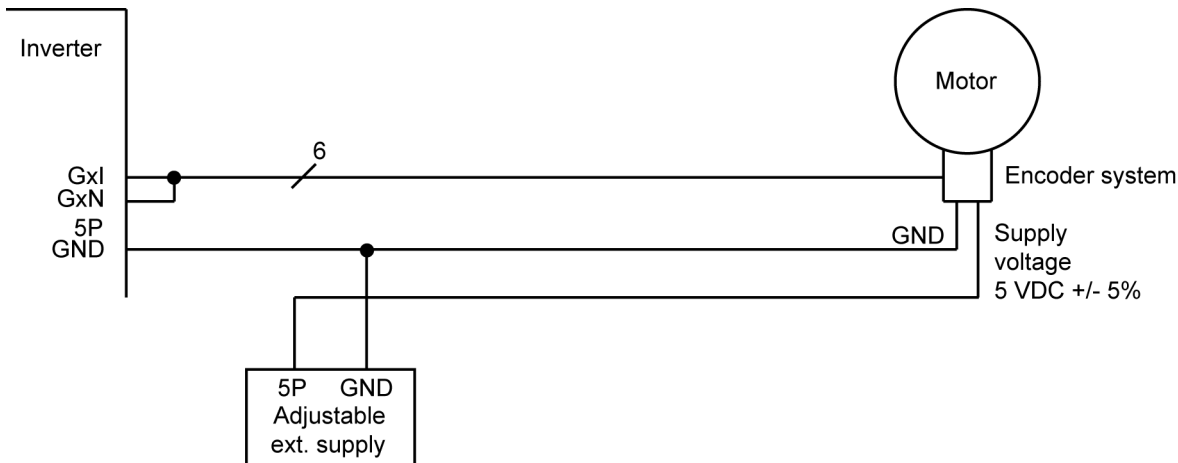
2. Maximum length of the encoder cable

A-encoder (new)	A-encoder (old)
20 m	100 m

The A-encoder (new) requires a supply voltage of 5 VDC \pm 5 %. The A-encoder (new) has a higher power requirement than the A-encoder (old). Characterized the voltage drop and the maximum length of the encoder cable is reduced.

The internal power supply of the inverter supplies an A-encoder (new) up to 20 m cable length. For a cable length > 20 m an external encoder power supply must be used.

Example with adjustable external power supply:



3. Vibration resistance

Vibration resistance is for the A-encoder (new): 200 m/s², according to DIN EN 60068-2-6.

For the A-encoder (old) has no detailed measurement data. However, it is assumed that the vibration resistance at A-encoder (old) is higher.

4. Encoder tuning

When using the system AMKASYN AZ/AW and AMKASYN KU with controller card KU-R01, encoder tuning must be carried out after replacing the A-encoder (old versus new).

In systems with 'hard' speed controller setting, there may be control oscillations during the encoder tuning and lead to incorrect encoder tuning. In order to avoid an error, the two speed control parameters ID100 'Speed control proportional gain KP' and ID101 'Integral-action time speed control TN' must be set 'softer'.

As a rule of thumb: ID100 'Speed control proportional gain KP' - halve value, ID101 'Integral-action time speed control TN' - double value.

After successful encoder tuning, the changed values must be reset.