

The background image shows a man in a light blue shirt from the side, looking at a tablet. He is in a factory or industrial setting with various machines and equipment visible in the background. Overlaid on the image are several digital graphics: a Siemens logo in the top right, a '24/7' circular icon, a 'NEWS' section with a person icon, a 'Home' button, and a large 'Industry Online Support' text. There are also icons for a folder, a CD, and a network of people. The overall theme is digital industry support.

SIEMENS

Why are different motor data shown for my 1FK2 / 1FT2 / 1FS2 motor than on the nameplate ?

SINAMICS S210

<https://support.industry.siemens.com/cs/ww/en/view/109795772>

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1 General

SIMOTICS S-1FK2, 1FT2 and 1FS2 servomotors are suitable for converter operation on different line voltages.

The 10th position of the article number of the motor determines the range of the permissible line voltage and the rated speed depending on the line voltage:

Table 1-1

Winding identifier in the article number (10. Stelle)	Rated speed	
	for 200-240V	for 380-480V
A	500	1000
B	750	1500
C	1000	2000
F	1500	3000
H	2500	4500
K	3000	6000
G	3000	not permitted

In the data sheet of the motor and in the catalog, a rated torque, a rated current and a rated power are shown for the rated speed.

The operating parameters of the motor that are used for control are stored on the electronic nameplate and are independent of the specified rating point.

Since only one rated point is provided in the parameterization of the converter, only one data record for the nominal data can be stored in the electronic nameplate and in the motor data record.

It can happen that the displayed rated data does not match the actual connected mains voltage.

Since the rated data are not used for operation, this is not a problem. In any case, the rated data printed on the nameplate of the motor match the parameterized values.

The information about the second rated point of the motor can be found in the technical documentation or the catalog of the motor.

You can download the operating instructions at:

- SINAMICS S210/SIMOTICS S-1FK2 and S-1FT2
<https://support.industry.siemens.com/cs/ww/en/view/109801184>
- SINAMICS S210/SIMOTICS S-1FS2
<https://support.industry.siemens.com/cs/ww/en/view/109796333>

Note

These data of the rating point are informative and are not used by the control-loop!
The operating parameters of the motor in the electronic nameplate are used for control.

2 Example for a servo motor 1FK2204-5AK with two rating points

2.1 Rating data

Table 2-1

Three-phase servo motor 1FK2104-5AK			
technical specifications for use with SINAMICS S210	symbol	unit	value
stall torque	M_0	Nm	2,4
stall current	I_0	A	4,4
max. permissible speed	$n_{\max \text{ Inv}}$	rpm	8000
maximum torque	$M_{\max}$	Nm	7,6
maximum current	$I_{\max}$	A	16
thermal time constant	T_{th}	min	35
moment of inertia	J_{Mot}	kg cm ²	0,56
moment of inertia (with brake)	$J_{\text{Mot+Br}}$	kg cm ²	0,65
weight	m_{Mot}	kg	2,85
weight (with brake)	$m_{\text{Mot+Br}}$	kg	3,7
rated data with S210 at 1AC 230V, 3AC240V			
rated speed	n_N	rpm	3000
rated torque	M_N	Nm	2,4
rated current	I_N	A	4,4
rated power	P_N	kW	0,75
rated data with S210 at 3AC 400V, 3AC 480V			
rated speed	n_N	rpm	6000
rated torque	M_N	Nm	1,7
rated current	I_N	A	3,2
rated power	P_N	kW	1,07

2.2 Characteristics diagrams

Figure 2-1 Diagram for motor at 1AC 230V / 3AC 240V inverter

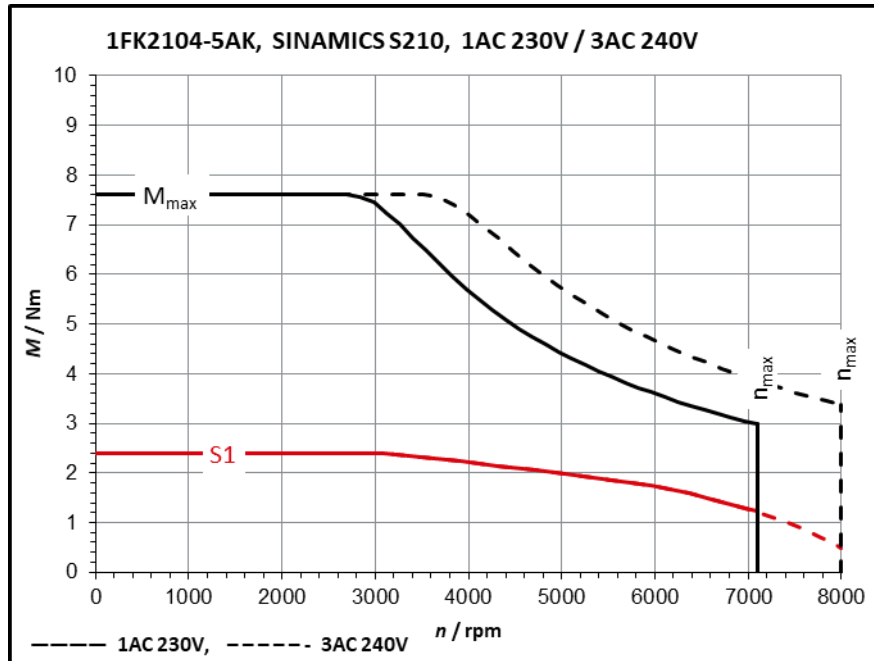
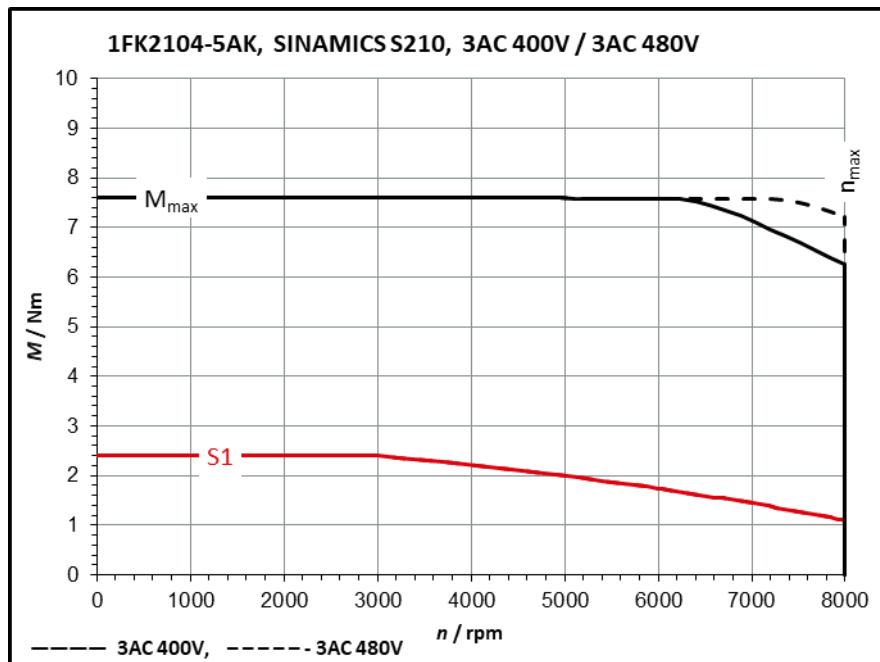


Figure 2-2 Diagram for motor at 3AC 400V inverter



2.3 Representation of the motor in Startdrive

If you select the motor with order number 1FK2104-5AK * in a Startdrive project, you will see the following values in the motor selection table:

Figure 2-3 Motor data in the motor selection table

Motor - selection - 1FK2						
Basic parameterization:						
Selection	Article number	Rated speed	Rated power	Encoder	Holding brake	
	<Filter>	<Filter>	<Filter>	<Filter>	<Filter>	
	1FK2104-5AF0x-xMxx	3,000.0rpm	0.75kW	DRIVE-CLiQ encoder AM22, Multiturn 4096	Without holding brake	
	1FK2104-5AF1x-xMxx	3,000.0rpm	0.75kW	DRIVE-CLiQ encoder AM22, Multiturn 4096	Standard holding brake	
	1FK2104-5AK0x-xCxx	3,000.0rpm	0.75kW	DRIVE-CLiQ encoder AS22, Singleturn	Without holding brake	
	1FK2104-5AK1x-xCxx	3,000.0rpm	0.75kW	DRIVE-CLiQ encoder AS22, Singleturn	Standard holding brake	
	1FK2104-5AK0x-xSxx	3,000.0rpm	0.75kW	DRIVE-CLiQ encoder AS22, Singleturn	Without holding brake	
	1FK2104-5AK1x-xSxx	3,000.0rpm	0.75kW	DRIVE-CLiQ encoder AS22, Singleturn	Standard holding brake	
	1FK2104-5AK0x-xDxx	3,000.0rpm	0.75kW	DRIVE-CLiQ encoder AM22, Multiturn 4096	Without holding brake	

Figure 2-4 Motor data in the detailed motor view

Motor_1 [Drive control] Properties

General IO tags System constants Texts

General

Motor - selection - 1FK2

Motor details

Rating plate values

Optional motor data

Motor brake

Measuring system_1 [ENC]

Rating plate values

Basic parameterization:

Rated motor voltage: 127 Vrms

Rated motor current: 4.40 Arms

Rated motor speed: 3,000.0 rpm

Maximum motor speed: 8,000.0 rpm

Maximum motor current: 16.00 Arms

Figure 2-5 Motor data in the basic parameterization

Basic parameterization

Safety Integrated

Digital inputs

Basic parameterization

Motor

Article number: 1FK2104-5AK0x-xCxx

Encoder: DRIVE-CLiQ encoder AS22, Singleturn

Brake: Without holding brake

Rated voltage: 127 Vrms

Rated current: 4.40 Arms

Rated power: 0.75 kW

Rated speed: 3,000.0 rpm

Rated torque: 2.40 Nm

Drive unit line supply voltage: 400 V

Motor ambient temperature: 40 °C

Direction of rotation: [0] Clockwise

Figure 2-6 Motor data in the parameter list

r304[0]	Rated motor voltage	127	Vrms
r305[0]	Rated motor current	4.40	Arms
r307[0]	Rated motor power	0.75	kW
r311[0]	Rated motor speed	3,000.0	rpm
r312[0]	Rated motor torque	2.40	Nm

The displayed data is the same, regardless of whether you plan the 1FK2104-5AK on a S210 1AC 230V or 3AC 400V!

The data agree with the data in [Table 1-1](#) for "Rated data with S210 at 1AC 230V, 3AC240V", but apparently not for "Rated data with S210 at 3AC 400V, 3AC 480V".

However, operation is possible on a S210 3AC 400V too, as long as operation is maintained according to the characteristics (see [Figure 2-1](#) / [Figure 2-2](#))

2.4 Representation of the motor in the web server

When using the integrated Web server of the S210, the motor data is displayed on the overview page.

Note

The following screenshot shows a different device configuration than the one described so far! The data for 1AC 230V / 3AC 240V of the example motor would be displayed here.

Figure 2-7 Motor data in the overview page

