

Electric Drives
and Controls

Hydraulics

Linear Motion and
Assembly Technologies

Pneumatics

Service

Rexroth
Bosch Group

Frequency converter
EFC 5610

- Power range 1 x AC 230 V 0.4 kW to 3 x AC 400 V 18.5 kW
- Use with permanent magnet motors
- Integrated brake chopper and mains filter
- Integrated operating panel for simple, fast commissioning
- Expandability through I/O and fieldbus modules

EFC 5610 is a universal, low-cost frequency converter for reliable speed control and demand-oriented energy supply. V/f and vector control, easy installation and commissioning as well as a power range of 0.4 to 18.5 kW enable a wide range of applications. In a power range up to 18.5 kW the powerful SVC vector control provides an optimum torque curve and high starting torque for specific special requirements.

Technical data

	EFC5610-0K40-1P2	EFC5610-0K75-1P2	EFC5610-1K50-1P2	EFC5610-2K20-1P2	EFC5610-0K40-3P4	EFC5610-0K75-3P4	EFC5610-1K50-3P4	EFC5610-2K20-3P4				
Performance data												
Rated output HD operation	[kW]	0.4	0.75	1.5	2.2	0.4	0.75	1.5				
Continuous rated current HD operation		2.4	4.1	7.3	10.1	1.3	2.3	4				
Motor rated voltage	Three phase, 0 V ... mains voltage											
Output voltage	0 V to mains voltage											
Output frequency	0 ... 400 Hz											
Mains connection voltage	1 AC	1 AC 200 ... 240 V (-10 % / +10 %)										
	3 AC					3 AC 380 ... 480 V (-15 % / +10 %)						
Frequency	50 ... 60 Hz ($\pm 5\%$)											
Overload capacity HD operation	150 % for 60 s, 200 % for 1 s											
Brake chopper / resistor												
Braking resistance	External											
Brake chopper	Internal											
Environmental conditions												
Permissible temperature (operation)	-10 ... +45 °C (> 45 °C Derating 1.5 % of the output power per 1 °C from 45 ... 50 °C)											
Permissible humidity (operation)	< 90 % (no condensation)											
Max. operating height	1000 m (> 1000 m Derating 1 % of the output power pro 100 m)											
Protection category	IP20											
Functions												

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Control technology		V/f or SVC (sensorless vector control)				
Pulse width modulation (PWM), adjustable in 1 kHz steps	[kHz]	1 ... 15				
Type of modulation		Magnetic flux PWM modulation: SVPWM				
Speed control range	Without pulse generator	1 : 200				
Start-up torque	V/f	100% at 1.5 Hz; 150% at 3 Hz				
	SVC	200 % at 0.5 Hz				
Frequency resolution	Digital	0.01 Hz				
	Analog	1/1000 of the output frequency				
V/f curve		linear, quadratic, freely definable				
Ramps		linear, S-curve				
DC disc brake	Start frequency	0 ... 50 Hz				
	Braking time	0 ... 10 s				
Automatic PWM frequency adjustment		load-dependent adaptation of PWM frequency				
Frequency setting tolerance	Analog	0.4 %				
	Digital	0.04 %				
Controller		PID				
Bus systems		RS485				
		Modbus RTU				
		PROFIBUS (ext. option)				
Status messages via digital outputs		Operation, target value achieved, etc.				
Number of digital inputs 24 VDC		5 (of which 1x pulse train 50 kHz)				
Number of digital outputs 24 VDC / 50 mA		1 (pulse train 32 kHz)				
Number of relay outputs 230 VAC / 30 VDC / 3 A		1				
Number of analog inputs 0 ... 10 V or 0 ... 20 mA		2				
Number of analog outputs 0 ... 10 V or 0 ... 20 mA		1				
Display		Dust cover with 4 diagnostic LED				
		LED 5 digit (optional)				
		LCD (optional)				
Status LED		Rotation direction and operating status				
Weight						
Mass	[kg]	1.5	1.9	2.6	1.5	1.9
Norms and Standards						
Certification		CE cUL UL Gost R \leftrightarrow RCM				

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	EFC5610-3K00-3P4	EFC5610-4K00-3P4	EFC5610-5K50-3P4	EFC5610-7K50-3P4	EFC5610-11K0-3P4	EFC5610-15K0-3P4	EFC5610-18K5-3P4														
Performance data																					
Rated output HD operation	[kW]	3	4	5.5	7.5	11	15	18.5													
Continuous rated current HD operation	[A]	7.4	9.7	12.7	16.8	24.3	32.4	39.2													
Motor rated voltage	Three phase, 0 V ... mains voltage																				
Output voltage	0 V to mains voltage																				
Output frequency	0 ... 400 Hz																				
Mains connection voltage	3 AC	3 AC 380 ... 480 V (-15 % / +10 %)																			
	Mains connection voltage	Frequency	50 ... 60 Hz ($\pm 5\%$)																		
Overload capacity HD operation	150 % for 60 s, 200 % for 1 s																				
Brake chopper / resistor																					
Braking resistance	External																				
Brake chopper	Internal																				
Environmental conditions																					
Permissible temperature (operation)	-10 ... +45 °C (> 45 °C Derating 1.5 % of the output power per 1 °C from 45 ... 50 °C)																				
Permissible humidity (operation)	< 90 % (no condensation)																				
Max. operating height	1000 m (> 1000 m Derating 1 % of the output power pro 100 m)																				
Protection category	IP20																				
Functions																					
Control technology	V/f or SVC (sensorless vector control)																				
Pulse width modulation (PWM), adjustable in 1 kHz steps	[kHz]	1 ... 15																			
Type of modulation	Magnetic flux PWM modulation: SVPWM																				
Speed control range	Without pulse generator	1 : 200																			
Start-up torque	V/f	100% at 1.5 Hz; 150% at 3 Hz																			
	SVC	200 % at 0.5 Hz																			
Frequency resolution	Digital	0.01 Hz																			
	Analog	1/1000 of the output frequency																			
V/f curve	linear, quadratic, freely definable																				
Ramps	linear, S-curve																				
DC disc brake	Start frequency	0 ... 50 Hz																			
	Braking time	0 ... 10 s																			
Automatic PWM frequency adjustment	load-dependent adaptation of PWM frequency																				
Frequency setting tolerance	Analog	0.4 %																			
	Digital	0.04 %																			

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Controller	PID						
Bus systems	RS485						
	Modbus RTU						
	PROFIBUS (ext. option)						
Status messages via digital outputs	Operation, target value achieved, etc.						
Number of digital inputs 24 VDC	5 (of which 1x pulse train 50 kHz)						
Number of digital outputs 24 VDC / 50 mA	1 (pulse train 32 kHz)						
Number of relay outputs 230 VAC / 30 VDC / 3 A	1						
Number of analog inputs 0 ... 10 V or 0 ... 20 mA	2						
Number of analog outputs 0 ... 10 V or 0 ... 20 mA	1						
Display	Dust cover with 4 diagnostic LED						
	LED 5 digit (optional)						
	LCD (optional)						
Status LED	Rotation direction and operating status						
Weight							
Mass	[kg]	2.6	3.9	4.3	5.7	6.4	8
Norms and Standards							
Certification	CE cUL UL Gost R ↔ RCM						

Dimensions

Dimensions

Type	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	G [mm]	ØH [mm]
EFC5610-0K40-1P2	95	66	166	156	167	159	4.5
EFC5610-0K75-1P2			206	196	170	162	
EFC5610-1K50-1P2	120	80	231	221	175	167	
EFC5610-2K20-1P2			166	156	167	159	
EFC5610-0K40-3P4			206	196	170	162	
EFC5610-0K75-3P4			231	221	175	167	
EFC5610-1K50-3P4	120	80	166	156	167	159	
EFC5610-2K20-3P4			206	196	170	162	
EFC5610-3K00-3P4	120	80	231	221	175	167	
EFC5610-4K00-3P4			166	156	167	159	

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EFC 5610**Dimensions**

Type	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	G [mm]	ØH [mm]
EFC5610-5K50-3P4	130	106	243	228	233	225	6.5
EFC5610-7K50-3P4							
EFC5610-11K0-3P4		125	283	265			
EFC5610-15K0-3P4							
EFC5610-18K5-3P4	165	140	313	295	241	233	

Ordering information

Type code	Description	Material number:
EFC5610-0K40-1P2-MDA-7P-NNNNNNNNN	0.4 kW, 1 AC 200 ... 240 V, 50/60 Hz, 2.4 A, LED Display	R912005739
EFC5610-0K40-1P2-MDA-NN-NNNNNNNNN	0.4 kW, 1 AC 200 ... 240 V, 50/60 Hz, 2.4 A, Dust cover	R912005724
EFC5610-0K75-1P2-MDA-7P-NNNNNNNNN	0.75 kW, 1 AC 200 ... 240 V, 50/60 Hz, 4.1 A, LED Display	R912005740
EFC5610-0K75-1P2-MDA-NN-NNNNNNNNN	0.75 kW, 1 AC 200 ... 240 V, 50/60 Hz, 4.1 A, Dust cover	R912005725
EFC5610-1K50-1P2-MDA-7P-NNNNNNNNN	1.5 kW, 1 AC 200 ... 240 V, 50/60 Hz, 7.3 A, LED Display	R912005741
EFC5610-1K50-1P2-MDA-NN-NNNNNNNNN	1.5 kW, 1 AC 200 ... 240 V, 50/60 Hz, 7.3 A, Dust cover	R912005726
EFC5610-2K20-1P2-MDA-7P-NNNNNNNNN	2.2 kW, 1 AC 200 ... 240 V, 50/60 Hz, 10.1 A, LED Display	R912005742
EFC5610-2K20-1P2-MDA-NN-NNNNNNNNN	2.2 kW, 1 AC 200 ... 240 V, 50/60 Hz, 10.1 A, Dust cover	R912005727
EFC5610-0K40-3P4-MDA-7P-NNNNNNNNN	0.4 kW, 3 AC 380 ... 480 V, 50/60 Hz, 1.3 A, LED Display	R912005743
EFC5610-0K40-3P4-MDA-NN-NNNNNNNNN	0.4 kW, 3 AC 380 ... 480 V, 50/60 Hz, 1.3 A, Dust cover	R912005728
EFC5610-0K75-3P4-MDA-7P-NNNNNNNNN	0.75 kW, 3 AC 380 ... 480 V, 50/60 Hz, 2.3 A, LED Display	R912005744
EFC5610-0K75-3P4-MDA-NN-NNNNNNNNN	0.75 kW, 3 AC 380 ... 480 V, 50/60 Hz, 2.3 A, Dust cover	R912005729
EFC5610-1K50-3P4-MDA-7P-NNNNNNNNN	1.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 4.0 A, LED Display	R912005745
EFC5610-1K50-3P4-MDA-NN-NNNNNNNNN	1.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 4.0 A, Dust cover	R912005730
EFC5610-2K20-3P4-MDA-7P-NNNNNNNNN	2.2 kW, 3 AC 380 ... 480 V, 50/60 Hz, 5.6 A, LED Display	R912005746
EFC5610-2K20-3P4-MDA-NN-NNNNNNNNN	2.2 kW, 3 AC 380 ... 480 V, 50/60 Hz, 5.6 A, Dust cover	R912005731
EFC5610-3K00-3P4-MDA-7P-NNNNNNNNN	3.0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 7.4 A, LED Display	R912005747
EFC5610-3K00-3P4-MDA-NN-NNNNNNNNN	3.0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 7.4 A, Staubschutzkappe	R912005732
EFC5610-4K00-3P4-MDA-7P-NNNNNNNNN	4.0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 9.7 A, LED Display	R912005748
EFC5610-4K00-3P4-MDA-NN-NNNNNNNNN	4.0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 9.7 A, Dust cover	R912005733
EFC5610-5K50-3P4-MDA-7P-NNNNNNNNN	5.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 12.7 A, LED Display	R912005099

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Type code	Description	Material number:
EFC5610-5K50-3P4-MDA-NN-NNNNNN-NNNN	5.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 12.7 A, Dust cover	R912005734
EFC5610-7K50-3P4-MDA-7P-NNNNNN-NNNN	7.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 16.8 A, LED Display	R912005100
EFC5610-7K50-3P4-MDA-NN-NNNNNN-NNNN	7.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 16.8 A, Dust cover	R912005735
EFC5610-11K0-3P4-MDA-7P-NNNNNN-NNNN	11 kW, 3 AC 380 ... 480 V, 50/60 Hz, 24,3 A, LED Display	R912005101
EFC5610-11K0-3P4-MDA-NN-NNNNNN-NNNN	11 kW, 3 AC 380 ... 480 V, 50/60 Hz, 24,3 A, Staubschutzkappe	R912005736
EFC5610-15K0-3P4-MDA-7P-NNNNNN-NNNN	15 kW, 3 AC 380 ... 480 V, 50/60 Hz, 32,4 A, LED Display	R912005102
EFC5610-15K0-3P4-MDA-NN-NNNNNN-NNNN	15 kW, 3 AC 380 ... 480 V, 50/60 Hz, 32,4 A, Staubschutzkappe	R912005737
EFC5610-18K5-3P4-MDA-7P-NNNNNN-NNNN	18.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 39.2 A, LED Display	R912005749
EFC5610-18K5-3P4-MDA-NN-NNNNNN-NNNN	18.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 39.2 A, Dust cover	R912005738

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The data specified above only serve to describe the product.
As our products are constantly being further developed, no statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification.

It must be remembered that our products are subject to a natural process of wear and aging.