

Frequency converter EFC 3610



Frequency converter

EFC 3610

Documentation



- Power range 1 x AC 230 V 0.4 kW to 3 x AC 400 V 22.0 kW
- Use in HD (heavy duty) or ND (normal duty) mode
- Integrated brake chopper and mains filter
- Integrated operating panel for simple, fast commissioning
- Expandability through I/O and fieldbus modules

EFC3610 is a universal, low-cost frequency converter for reliable speed control and demand-oriented energy supply. V/f control, easy installation and commissioning as well as an increased power range enable a wide range of applications.

Technical data

		EFC3610-0K40-1P2	EFC3610-0K75-1P2	EFC3610-1K50-1P2	EFC3610-2K20-1P2	EFC3610-0K40-3P4	EFC3610-0K75-3P4	EFC3610-1K50-3P4	EFC3610-2K20-3P4
Performance data									
Rated output HD operation	[kW]	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2
Continuous rated current HD operation	[A]	2.4	4.1	7.3	10.1	1.3	2.3	4	5.6
Motor rated voltage	Three phase, 0 V ... mains voltage								
Output frequency	0 ... 400 Hz								
Mains voltage	1 AC	1 AC 200 ... 240 V (-10 % / +10 %)				3 AC 380 ... 480 V (-15 % / +10 %)			
	3 AC								
Frequency	50 ... 60 Hz (±5 %)								
Overload capacity HD operation	150 % for 60 s, 200 % for 1 s								
Brake chopper / resistor									
Braking resistance	External								
Brake chopper	Internal up to 22 kW								
Ambient conditions									
Permissible temperature (operation)	-10 ... +45 °C (Derating 1.5 % of the output power per 1 °C from 45 ... 55 °C)								
Permissible relative humidity (operation)	< 90 % (no condensation)								
Max. installation height	1000 m (> 1000 m Derating 1 % of the output power pro 100 m)								
Protection category	IP 20								
Functions									
Control technology	V/f								

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Pulse width modulation (PWM), adjustable in 1 kHz steps	[kHz]	1 ... 15				
Speed control range	Without pulse generator	1 : 50				
Start-up torque	V/f	100% at 1.5 Hz; 150% at 3 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 PWM frequency adjustment				
Integrated control		Integrated sequential circuit				
Frequency setting tolerance	Analog	0.4 %				
	Digital	0.04 %				
Controller		PID				
Bus systems		Modbus RTU (with Multi-Ethernet Modbus TCP)				
		PROFIBUS, CANopen, Multi-Ethernet (ext. options)				
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						
Weight	[kg]	1.5	1.9	2.6	1.5	1.9
Norms and Standards						
Certification		CE UL cUL EAC C-Tick (RCM)				

	EFC3610-3K00-3P4	EFC3610-4K00-3P4	EFC3610-5K50-3P4	EFC3610-7K50-3P4	EFC3610-11K0-3P4	EFC3610-15K0-3P4	EFC3610-18K5-3P4	EFC3610-22K0-3P4
Performance data								

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Rated output HD operation	[kW]	3	4	5.5	7.5	11	15	18.5	22
Rated output ND operation	[kW]	0		7.5	11	15	18.5	22	30
Continuous rated current HD operation	[A]	7.4	9.7	12.7	16.8	24.3	32.4	39.2	45
Continuous rated current ND operation	[A]	0		16.8	24.3	32.4	39.2	45	60.8
Motor rated voltage	Three phase, 0 V ... mains voltage								
Output frequency	0 ... 400 Hz								
Mains voltage	3 AC	3 AC 380 ... 480 V (-15 % / +10 %)							
Frequency	50 ... 60 Hz (± 5 %)								
Overload capacity HD operation	150 % for 60 s, 200 % for 1 s								
Brake chopper / resistor									
Braking resistance	External								
Brake chopper	Internal up to 22 kW								
Ambient conditions									
Permissible temperature (operation)	-10 ... +45 °C (Derating 1.5 % of the output power per 1 °C from 45 ... 55 °C)								
Permissible relative humidity (operation)	< 90 % (no condensation)								
Max. installation height	1000 m (> 1000 m Derating 1 % of the output power pro 100 m)								
Protection category	IP 20								
Functions									
Control technology	V/f								
Pulse width modulation (PWM), adjustable in 1 kHz steps	[kHz]	1 ... 15							
Speed control range	Without pulse generator	1 : 50							
Start-up torque	V/f	100% at 1.5 Hz; 150% at 3 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 PWM frequency adjustment								
Integrated control	Integrated sequential circuit								
Frequency setting tolerance	Analog	0.4 %							
	Digital	0.04 %							
Controller	PID								
Bus systems	Modbus RTU (with Multi-Ethernet Modbus TCP)								
	PROFIBUS, CANopen, Multi-Ethernet (ext. options)								

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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								
Weight	[kg]	2.6	3.9	4.3	5.7	6.4	8	8.5
Norms and Standards								
Certification	CE UL cUL EAC C-Tick (RCM)							

Dimensions**Dimensions**

Type	A	B	C	D	F	G	ØH
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
EFC3610-0K40-1P2	95	66	166	156	167	159	4.5
EFC3610-0K75-1P2			206	196	170	162	
EFC3610-1K50-1P2			231	221	175	167	
EFC3610-2K20-1P2	120	80	231	221	175	167	
EFC3610-0K40-3P4	95	66	166	156	167	159	
EFC3610-0K75-3P4			206	196	170	162	
EFC3610-1K50-3P4			231	221	175	167	
EFC3610-2K20-3P4			120	80	231	221	
EFC3610-3K00-3P4	130	106	243	228	233	225	
EFC3610-4K00-3P4			283	265			
EFC3610-5K50-3P4			313	295			
EFC3610-7K50-3P4	150	125	283	265	233	225	
EFC3610-11K0-3P4			313	295			
EFC3610-15K0-3P4	165	140	313	295	241	233	
EFC3610-18K5-3P4			313	295			
EFC3610-22K0-3P4	165	140	313	295	241	233	

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Order details

Type code	Description	Material number:
EFC3610-0K40-1P2-MDA-7P-NNNNN-NNNN	0.4 kW, 1 AC 200 ... 240 V, 50/60 Hz, 2.4 A, LED Display	R912005713
EFC3610-0K40-1P2-MDA-NN-NNNNN-NNNN	0.4 kW, 1 AC 200 ... 240 V, 50/60 Hz, 2.4 A, Dust cover	R912005698
EFC3610-0K75-1P2-MDA-7P-NNNNN-NNNN	0.75 kW, 1 AC 200 ... 240 V, 50/60 Hz, 4.1 A, LED Display	R912005714
EFC3610-0K75-1P2-MDA-NN-NNNNN-NNNN	0.75 kW, 1 AC 200 ... 240 V, 50/60 Hz, 4.1 A, Dust cover	R912005699
EFC3610-1K50-1P2-MDA-7P-NNNNN-NNNN	1.5 kW, 1 AC 200 ... 240 V, 50/60 Hz, 7.3 A, LED Display	R912005715
EFC3610-1K50-1P2-MDA-NN-NNNNN-NNNN	1.5 kW, 1 AC 200 ... 240 V, 50/60 Hz, 7.3 A, Dust cover	R912005700
EFC3610-2K20-1P2-MDA-7P-NNNNN-NNNN	2.2 kW, 1 AC 200 ... 240 V, 50/60 Hz, 10.1 A, LED Display	R912005716
EFC3610-2K20-1P2-MDA-NN-NNNNN-NNNN	2.2 kW, 1 AC 200 ... 240 V, 50/60 Hz, 10.1 A, Dust cover	R912005701
EFC3610-0K40-3P4-MDA-7P-NNNNN-NNNN	0.4 kW, 3 AC 380 ... 480 V, 50/60 Hz, 1.3 A, LED Display	R912005717
EFC3610-0K40-3P4-MDA-NN-NNNNN-NNNN	0.4 kW, 3 AC 380 ... 480 V, 50/60 Hz, 1.3 A, Dust cover	R912005702
EFC3610-0K75-3P4-MDA-7P-NNNNN-NNNN	0.75 kW, 3 AC 380 ... 480 V, 50/60 Hz, 2.3 A, LED Display	R912005718
EFC3610-0K75-3P4-MDA-NN-NNNNN-NNNN	0.75 kW, 3 AC 380 ... 480 V, 50/60 Hz, 2.3 A, Dust cover	R912005703
EFC3610-1K50-3P4-MDA-7P-NNNNN-NNNN	1.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 4.0 A, LED Display	R912005719
EFC3610-1K50-3P4-MDA-NN-NNNNN-NNNN	1.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 4.0 A, Dust cover	R912005704
EFC3610-2K20-3P4-MDA-7P-NNNNN-NNNN	2.2 kW, 3 AC 380 ... 480 V, 50/60 Hz, 5.6 A, LED Display	R912005720
EFC3610-2K20-3P4-MDA-NN-NNNNN-NNNN	2.2 kW, 3 AC 380 ... 480 V, 50/60 Hz, 5.6 A, Dust cover	R912005705
EFC3610-3K00-3P4-MDA-7P-NNNNN-NNNN	3.0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 7.4 A, LED Display	R912005721
EFC3610-3K00-3P4-MDA-NN-NNNNN-NNNN	3.0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 7.4 A, Staubschutzkappe	R912005706
EFC3610-4K00-3P4-MDA-7P-NNNNN-NNNN	4.0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 9.7 A, LED Display	R912005722
EFC3610-4K00-3P4-MDA-NN-NNNNN-NNNN	4.0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 9.7 A, Dust cover	R912005707
EFC3610-5K50-3P4-MDA-7P-NNNNN-NNNN	5.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 12.7 A, LED Display	R912005091
EFC3610-5K50-3P4-MDA-NN-NNNNN-NNNN	5.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 12.7 A, Dust cover	R912005708
EFC3610-7K50-3P4-MDA-7P-NNNNN-NNNN	7.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 16.8 A, LED Display	R912005092
EFC3610-7K50-3P4-MDA-NN-NNNNN-NNNN	7.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 16.8 A, Dust cover	R912005709
EFC3610-11K0-3P4-MDA-7P-NNNNN-NNNN	11 kW, 3 AC 380 ... 480 V, 50/60 Hz, 24.3 A, LED Display	R912005093
EFC3610-11K0-3P4-MDA-NN-NNNNN-NNNN	11 kW, 3 AC 380 ... 480 V, 50/60 Hz, 24.3 A, Dust cover	R912005710
EFC3610-15K0-3P4-MDA-7P-NNNNN-NNNN	15 kW, 3 AC 380 ... 480 V, 50/60 Hz, 32.4 A, LED Display	R912005094

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Type code	Description	Material number:
EFC3610-15K0-3P4-MDA-NN-NNNNN-NNNN	15 kW, 3 AC 380 ... 480 V, 50/60 Hz, 32.4 A, Dust cover	R912005711
EFC3610-18K5-3P4-MDA-7P-NNNNN-NNNN	18.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 39.2 A, LED Display	R912005723
EFC3610-18K5-3P4-MDA-NN-NNNNN-NNNN	18.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 39.2 A, Dust cover	R912005712
EFC3610-22K0-3P4-MDA-7P-NNNNN-NNNN	22,0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 45,2 A, LED Display	R912006279
EFC3610-22K0-3P4-MDA-NN-NNNNN-NNNN	22.0 kW, 3 AC 380 ... 480 V, 50/60 Hz, 45.2 A, Dust cover	R912006278