EFC 3610 / EFC 5610

An open platform efficient in engineering and energy

SAFETY ON BOARD

4EE ENERGY EFFICIENCY

MULTI-ETHERNET

sercos the automation bus

Open Core Interface

i 4.0 CONNECTED INDUSTRY

DC-IA/SPC12 | 15.02.2018

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EFC 3610 / EFC 5610

Compact | easy installation

EFC 3610 V/f

- 1X AC 230V 0,4-2,2 kW
- 3X AC 400V 0,4-22 kW

EFC 5610 SVC, FOC, V/f

- 1X AC 230V 0,4-2,2 kW
- 3X AC 230V 0,4-11 kW
- 3X AC 400V 0,4-160 kW
- PM motors
- torque control
- Cold Plate Option
- 1000Hz Option
- STO (Kat. 4 SIL3 Ple)

SAFETY ON BOARD

Integrated: Mains filter (EN61800-3 C3), Brake Chopper up to 22kW, DC Choke ≥ 30kW

C1 with external filter

Coated PCB

Side by Side Mounting up to 22 kW

Heavy Duty mode: 200% for 1 s 150% for 60s /Normal Duty mode: 120% for 60s

IP20

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EFC 3610 / EFC 5610
Multiprotocol / IO extensions

- Open standards: a success factor for industry 4.0
- Less wiring effort
- Connected Automation enables a faster, more flexible production process, a more efficient use of material, a reduction of complexity and more uptime
- One Card for most common protocols

Card	DI	DO	AI	AO	Relay	Temp. Sensor
IO	4	1	1	1	1	-
Relay	-	-	-	-	4	-
IO Plus	5	1	2	1	-	1

MULTI-ETHERNET

sercos the automation bus

EtherCAT® (CoE)

Modbus TCP

PROFINET®

EtherNet/IP™

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EFC 3610 / EFC 5610

Open Core Interface
– the connection between PLC- and IT- automation

- Software Development Kits for direct access to drive options with e.g. lab view
- Less engineering time

- Field of use:
  - Commissioning
  - Machine Control
  - Data Visualization
  - Diagnose Tools

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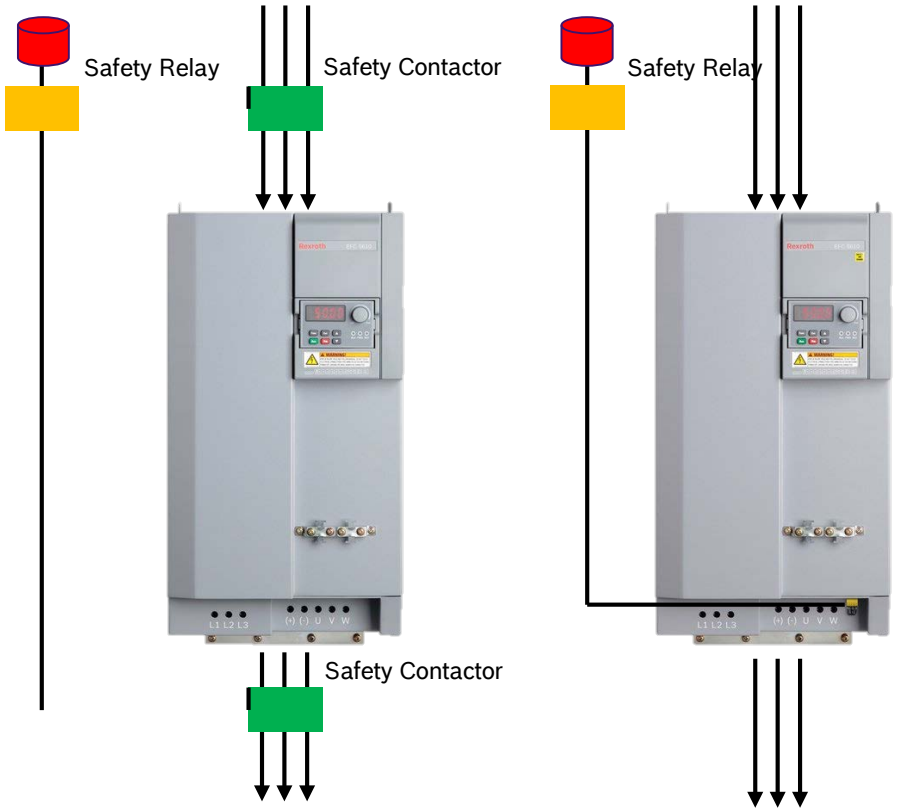
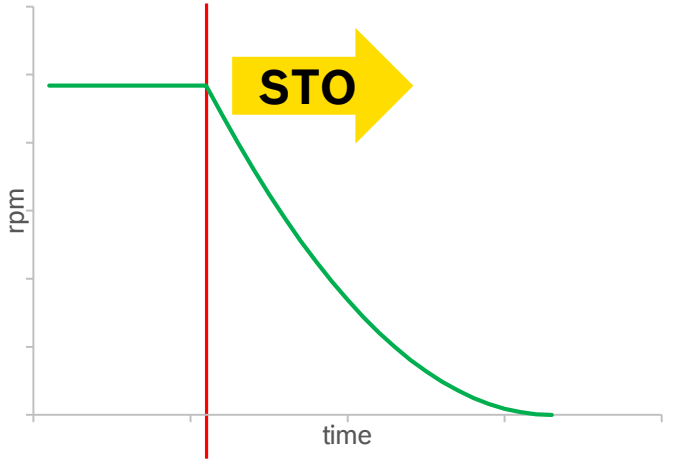
EFC 3610 / EFC 5610
EFC 5610 with Safe Torque Off CAT. 4 SIL3

SAFETY ON BOARD



- Compatible to IndraDrive
- Less components, less wring effort
- Highest safety category



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EFC 3610 / EFC 5610
Easy to use

- Free commissioning Software: Indraworks DS, IndraWorks MLC/MTX, Converter Works
- Simple firmware update via mini USB Interface
- Simple parameter Transfer with intuitive detachable Display
- Less wiring effort with pluggable connection terminals

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EFC 3610 / EFC 5610
Application specific firmeware

ASF is a loadable firmware, which enables additional tailored functionality for the application

Example CytroPac

MULTI-ETHERNET

4EE ENERGY EFFICIENCY

- Application Specific firmware for pumps
- Less wiring effort: with Multi Ethernet the EFC 5610 becomes the sensor hub
- IOT ready: e.g. condition monitoring for an optimized system and an early failure identification

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EFC 3610 / EFC 5610

Use case

Situation

- Hydraulic Power Unit with Vane Pump for pressure supply for tool machine

Measured energy consumption

- Energy 7.732 kWh/a

Rexroth 4EE Lösung

- CytroPac with FcP 5020 Sytronix (EFC 5610 witht ASF)

Measured energy consumption

- Energy 3.299 kWh/a

Further benefits:
Less cooling power required and noise reduction

Energy System Design

Efficient Components

Energy on Demand

Energy Saving	4.433 kWh/a
MonetarySavings	709 €/a *
CO_2-Reduction *	1,8 t/a

– 57 %

* Electric Power: 404 g/kWh, 0,16 €/kWh

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EFC 3610 / EFC 5610
Typische Anwendungen

- Pumps / Compressors
- HVAC
- Packaging machines
- Wood machines
- Food industry
- Transport systems
- Paper machines
- Textile machines
- Process technology
- Tool machines
- Plastic production






Integrated function examples:

- Simple PLC (16 steps)
- Energy counter
- Detection of dry running pump
- Start with speed capture
- Fan Service reminder
- Overexciting braking
- PID control
- Torque boost
- Auto adjusting PWM
- V/f separation mode
- DC braking
- 2 parameter Sets
- Power loss ride through

Application specific firmware examples:

- Hydraulic pump control
- Pump cascading
- Tension control
- Load sharing

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EFC 3610 / EFC 5610
EFC | overview

EFC Frequency Converter
An open platform efficient in engineering and energy

Higher performance and productivity

- Intelligent variable speed drive for energy savings up to 80%
- Tailored technology functions for the application and customer
- Innovative HMI: Control and visualization via smart device

Less automation components

- Less wiring effort and more flexibility with multi protocol hardware
- Safe torque off integrated

Less engineering time

- Easy Firmware and parameter update via USB or Ethernet with free system commissioning software (IndraWorks DS)
- Detachable Display for parameter transfer and commissioning
- i4.0 Ready: interface for direct access to drive functions

Characteristics

- Control: U/f, SVC, FOC
- Broad portfolio: 0,4 – 160 kW
- Team player: Sercos, EtherCat (CoE), Modbus TCP, ProfiNET, Ethernet/IP, Profibus, CANopen
- STO certified SIL3 Pl e Kat4
- HTL/ TTL, Resolver

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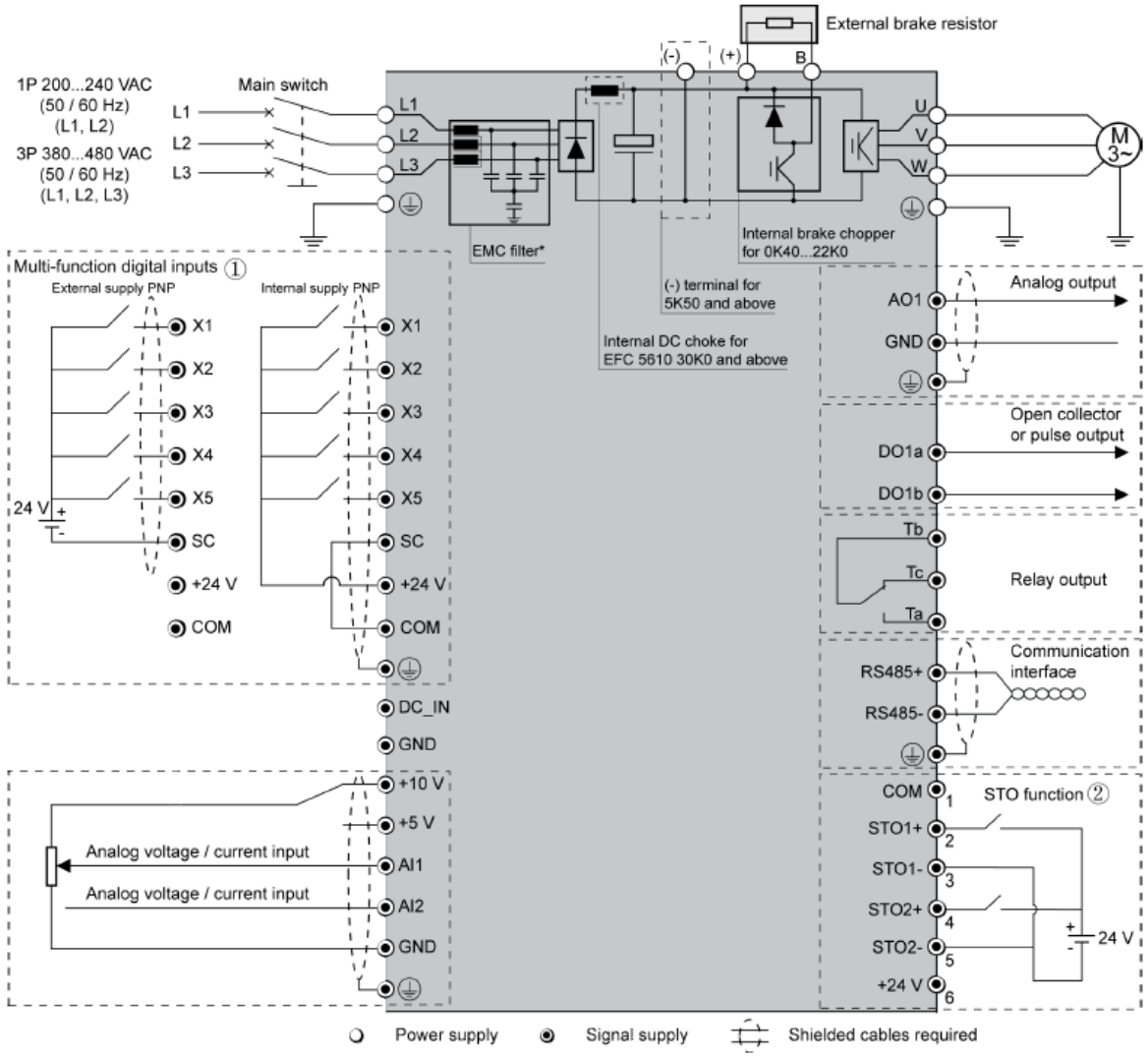
WE ARE AUTOMATION

www.boschrexroth.com

CNC | MOTION CONTROL | PLC & IOT | PROCESS CONTROL | DRIVES | SERVICES

EFC 3610 / EFC 5610
Blockdiagram



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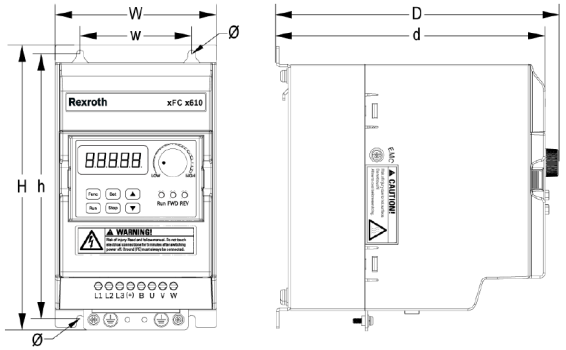
EFC 3610 / EFC 5610

Dimensions



	Motor Rating [kW] Heavy Duty / Normal Duty	Rated output current [A] Heavy Duty / Normal Duty	Housing W [mm]	H [mm]	D [mm] -MDA / -MDB		weight [kg] -MDA / -MDB	Max. motor cable length C3 [m]
EFC 3610- | EFC 5610-			Data for 1 x AC 200 V					
0K40-1P2	0,4 / -	2,4 / -	95	166	167 / 124	B	1,5 / 1	15
0K75-1P2	0,75 / -	4,1 / -						
1K50-1P2	1,5 / -	7,3 / -	95	206	170 / 124	C	1,9 / 1,2	
2K20-1P2	2,2 / -	10,1 / -	120	231	175 / 124	D	2,6 / 1,5	
EFC 5610-			Data for 3 x AC 200 V					
0K40-3P2	0,4 / -	2,4 / -	95	166	167 / -	B	1,5 / -	15
0K75-3P2	0,75 / -	4,1 / -	95	206	170 / -	C	1,9 / -	
1K50-3P2	1,5 / -	7,3 / -	120	231	175 / -	D	2,6 / -	
2K20-3P2	2,2 / -	10,1 / -						
3K00-3P2	3,0 / -	13,4 / -	130	243	233 / -	E	3,9 / -	
4K00-3P2	4,0 / -	17,5 / -					4,3 / -	30
5K50-3P2	5,5 / -	23,4 / -	150	283	233 / -	F	5,7 / -	
7K50-3P2	7,5 / -	31,1 / -					6,4 / -	
11K0-3P2	11,0 / -	44,9 / -	165	315	241 / -	G	8,5 / -	

	Motor Rating [kW] Heavy Duty / Normal Duty	Rated output current [A] Heavy Duty / Normal Duty	Housing W [mm]	H [mm]	D [mm] -MDA / -MDB		weight [kg] -MDA / -MDB	Max. motor cable length C3 [m]
EFC 3610- | EFC 5610-			Data for 3 x AC 380 V					
0K40-3P4	0,4 / -	1,3 / -	95	166	167 / 124	B	1,5 / 1,1	15
0K75-3P4	0,75 / -	2,3 / -						
1K50-3P4	1,5 / -	4,0 / -	95	206	170 / 124	C	1,9 / 1,4	
2K20-3P4	2,2 / -	5,6 / -						
3K00-3P4	3,0 / -	7,4 / -	120	231	175 / 124	D	2,6 / 1,8	
4K00-3P4	4,0 / -	9,7 / -						
5K50-3P4	5,5 / 7,5	12,7 / 18,8	130	243	233 / -	E	3,9 / -	30
7K50-3P4	7,5 / 11	16,8 / 24,3					4,3 / -	
11K0-3P4	11 / 15	24,3 / 32,4	150	283	233 / -	F	5,7 / -	
15K0-3P4	15 / 18	32,4 / 39,2					6,4 / -	
18K0-3P4	18 / 22	39,2 / 45	165	315	241 / -	G	8 / -	
22K0-3P4	22 / 30	45 / 60,8					8,5 / -	
EFC 5610-			Data for 3 x AC 380 V					
30K0-3P4	30 / 37	50,8 / 73,7	250	510	272 / -	H	27,5 / -	50
37K0-3P4	37 / 45	73,7 / 89,1					29,5 / -	
45K0-3P4	45 / 55	89 / 108	265	585	325 / -	I	39 / -	
55K0-3P4	55 / 75	109 / 147					42 / -	
75K0-3P4	75 / 90	147 / 176	325	760	342 / -	J	54 / -	
90K0-3P4	90 / 110	176 7 212					61 / -	
110K-3P4	110 / 132	212 / 253	385	923	350 / -	K	71,7 / -	75
132K-3P4	132 / 160	253 / 303					76,6 / -	
160K-3P4	160 / 200	303 / 380	480	1030	360 / -	L	108 / -	

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EFC 3610 / EFC 5610
Further features

5 Digital inputs
1 Digital output

1 Relay output

2 Analog inputs
1 Analog output

Detection motor temperature sensor
(PTC, PT100, PT1000)

Modbus RTU

24V Stand-By

IO’s

Switch between current analog in/output
voltage analog in/output
Motor temperature monitoring
Pulse train input up to 50 kHz
Pulse output up to 32 kHz

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EFC 3610 / EFC 5610
Extension Moduls

Option module
R912006052 FEAE02.1-EA-NNNN

IO extension card
R912006050 FEAE04.1-IO1-NNNN

Relay card
R912006051 FEAE04.1-IO2-NNNN

IO Plus extension card
R912007257 FEAE04.1-IO3-NNNN

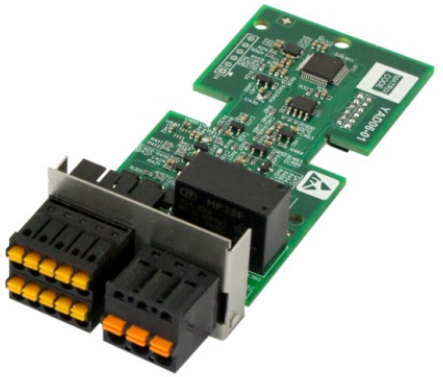
Profibus card
R912006132 FEAE03.1-PB-NNNN

CANopen card
R912006133 FEAE03.1-CO-NNNN

Multi-Ethernet card
R912006134 FEAE03.1-ET-NNNN

TTL/HTL encoder card
R912006414 FEAE04.1-EN1-NNNN

Resolver card
R912006415 FEAE04.1-EN2-NNNN



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EFC 3610 / EFC 5610
Mounting

DIN rail Installation bis 7,5 kW

Side-by-side Installation bis 22kW

Packaging with drilling template

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EFC 3610 / EFC 5610
Further accessories

Display mounting plate EFC x610
R912005787 FEAM02.1-EANN-NN-NNNN

Shield connection	FEAM03.2 ...
Line filter	FCAF01.1A ....
Brake chopper	FEAE07.1 ....
Brake resistor	FCAR01.1W....

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