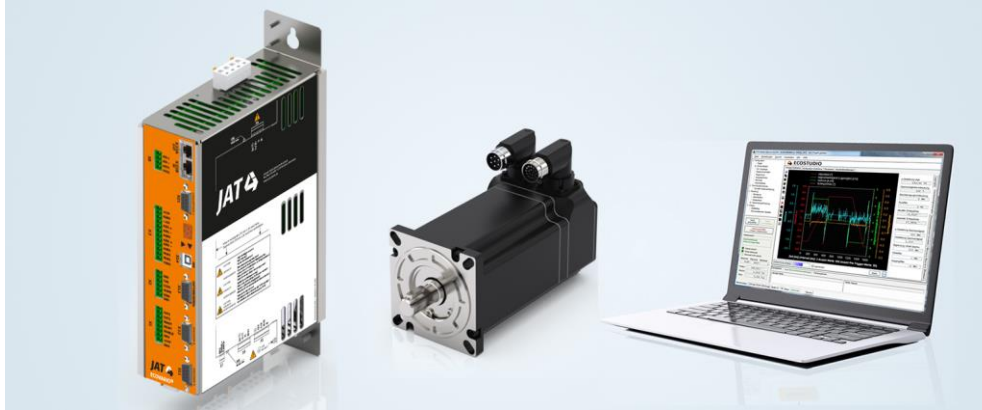


Servo Amplifier ECOVARIO® 414

The all-rounder in the power range up to 7,1 kW



CANopen
EtherCAT
PROFI
BUS

UL
LISTED



High connectivity

Multiple interfaces - CANopen, EtherCAT, PROFIBUS, Ethernet, RS485, RS232



Integrated safety

Safety function STO (Safe Torque Off) according to EN 61800-5-2



Cost-efficient solution

Implemented sequences replace smaller controllers



Easy commissioning

Intuitive parameterization and commissioning via JAT engineering software ECOSTUDIO®



Diverse drive applications

Numerous technology functions for application-specific drive solutions, no time-consuming programming

Power supply:

48 ... 325 V_{DC} or

48 ... 240 V_{AC}

Control of:

2- and 3-phase brushless synchronous motors or synchronous linear motors

DC servo motors with brushes

2 encoder interfaces:

Position feedback via incremental encoder: RS422, SINCOS

Position feedback via absolute encoder: BISS® or HIPERFACE® interface

Encoder output for master-slave operation

Concurrent processing of multiple feedback signals

Interpolating operation via EtherCAT or CANopen

I/O:

6 digital inputs

3 digital outputs

2 analog inputs

2 analog monitor outputs

Servo Amplifier ECOVARIO® 414

→ Technical data

1-phase AC supply

Rated supply voltage	V _{AC}	230
Rated input current	A _{RMS}	8
Mains frequency	Hz	48-62
Rated installed load	kVA	1,84
Rated power loss	W	70
Rated output voltage (AC)	V _{AC}	205

3-phase AC supply

Rated supply voltage	V _{AC}	230
Rated input current	A _{RMS}	8
Mains frequency	Hz	48-62
Rated installed load	kVA	3,0
Rated power loss	W	106
Rated output voltage (AC)	V _{AC}	205

DC supply

Rated supply voltage	V _{DC}	325
Rated installed load	kW	3,25
Rated power loss	W	92

Power output stage

Effective phase current (maximum)	A _{eff}	14
Phase current (maximum)	A _{DC}	20
Rated output current 2-phase motor (with 3-phase AC or DC input)	A _{eff}	5,3
Rated output current 2-phase motor (with 1-phase AC input)	A _{eff}	2,7
Rated output current 3-phase motor (with 3-phase AC or DC input)	A _{eff}	7,1
Rated output current 3-phase motor (with 3-phase AC or DC input)	A _{eff}	3,5
Output voltage (maximum)	V _{DC}	360
Rated output voltage	V _{DC}	325
Overvoltage shutdown	V _{DC}	400
Installed load (maximum)	kW	7,1
Rated installed load	kW	3,5
AC / DC link capacity	μF	660 / 330
AC / DC energy feedback	Ws	13 / 6,5

Standards

Applied standards for CE certification	EMC according to EN IEC 61800-3, Electrical safety acc. to EN 61800-5-1, RoHS according to EN IEC 63000
	Devices with the safety function STO: Functional safety according to EN 61800-5-2
UL	UL 61800-5-1

Logic Supply

Logic supply	V	24 ± 10 %
Input current (maximum) @ 24 V _{DC}	A	0,8*
*) without external loads, e.g. I/O or encoder		

Digital inputs/outputs

6 digital control signal inputs	V	LOW 0 .. 5, HIGH 15 .. 30
	mA	5 (@ 24 V)
3 digital control signal outputs	V	24
	A	0,5

Analog inputs/outputs

2 analog inputs	V	-10 ... +10, 10 Bit
2 analog monitor output	V	-10 ... +10, 10 Bit

Safety function STO

2 STO inputs
1 STO feedback signal (output)
SIL-2 (acc. to EN 61800-5-2); PL d (ISO EN 13849-1)

Dimensions and weight

Dimensions W x H x D	mm	62 x 279 x 167
Weight	kg	2,1

Ambient conditions

Class	Operation: 3K3 according to EN 61800-2 Storage, transport: 1K4 according to EN 61800-2	
Storage temperature	°C	-25 ... +55
Ambient temperature during operation	°C	+5 ... +40
Degree of humidity, non-condensing	% rel. F.	85 (maximum)
Installation altitude above sea level	m	< 1500
Mounting position	The technical data refer to a vertical position.	
Protection class	IP20	
Pollution degree	2	
Cooling	In a closed cabinet, sufficient circulating air movement must be provided.	

Miscellaneous

Mean Time to Failure (MTTF, typ. operation)	134 years
Customs tariff number	85371091

Basic functions

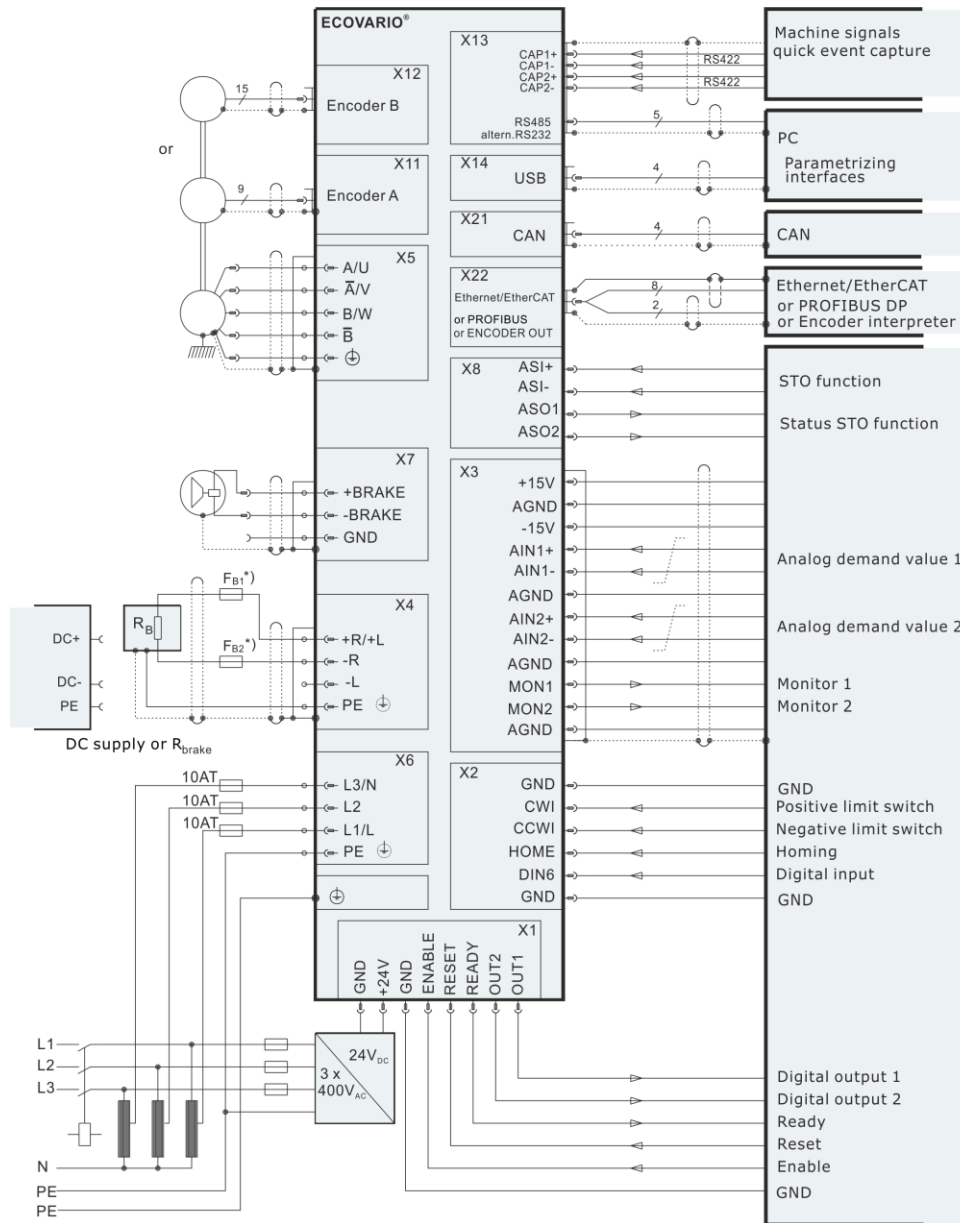
- ✓ Digital current, speed and position control with position, speed and torque limits
- ✓ Digital filtering functions to dampen vibrations in the overall system
- ✓ Parameterizable jerk filters optimize the motion profiles and improve the machine's longevity
- ✓ Short circuit, voltage, temperature, encoder, following error and i²t monitoring
- ✓ Scalable analog inputs for arbitrary target values
- ✓ Scalable analog monitor outputs for arbitrary actual values
- ✓ Intelligent holding brake control with automatic voltage reduction
- ✓ Evaluation of limit switches and reference sensor, multiple homing modes
- ✓ Status display and configuration of fieldbus node address and baud rate via 7 segment display and 2 keys on the device's front side
- ✓ Connector for external ballast resistor

ECOSTUDIO® - Easy commissioning

- ✓ Intuitive user interface, parameter setting via wizards
- ✓ Displays actual performance parameters
- ✓ Integrated motor, encoder and axis database
- ✓ Extensive oscilloscope function for analysis and diagnosis
- ✓ Easy graphical sequence programming

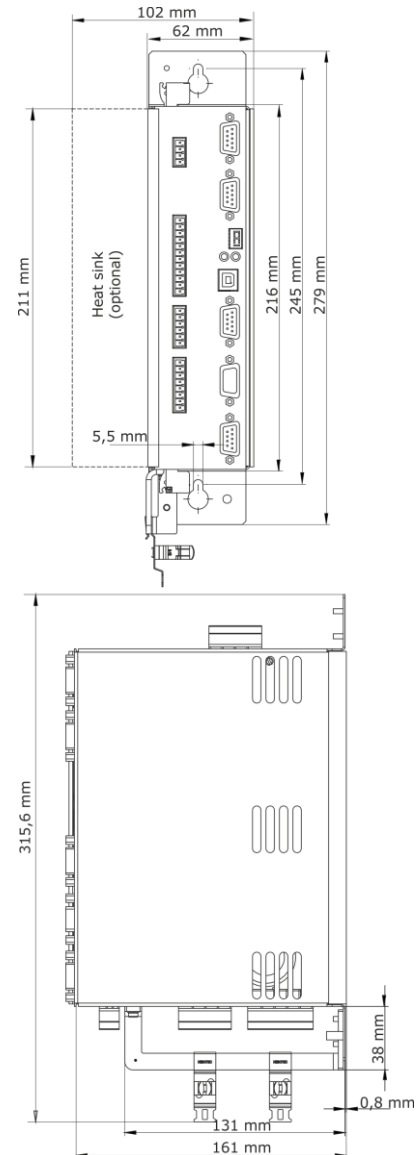
Servo Amplifier ECOVARIO® 414

→ Connection diagram



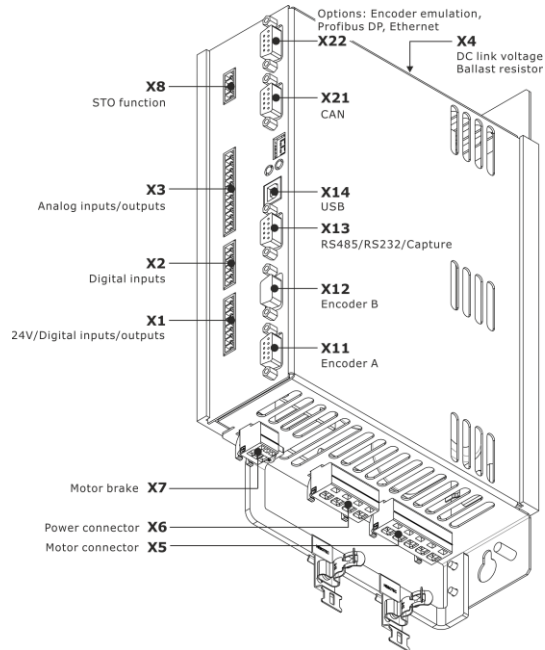
*) not necessary if ballast resistor DPRxx is used

→ Dimensions



Servo Amplifier ECOVARIO® 414

→ Interfaces



→ Ordering key

ECOVARIO® 414 uv - wx - yyy - zzz

u	v	w	x	yyy	zzz
Supply	Option	Field bus	Approval	Firmware number (three digits)	Parameter set number (three digits)
A 1- or 3-phase, AC or DC	R Safety function "Safe Torque Off" (STO)	A CAN + RS485 + encoder emulation	A CE, standard design		
	N No option	B CAN + RS232 + encoder emulation	B-I CE, custom design		
		F CAN + RS485 + PROFibus®	J CE, UL, standard design		
		G CAN + RS232 + PROFibus®	K-R CE, UL, custom design		
		K CAN + Ethernet + RS485	S, T CE, UL, custom design without USB interface		
		L CAN + Ethernet + RS232	U CE, UL, standard design without USB interface		
		P CAN + EtherCAT® + RS485	V-Z CE, UL, custom design		
		Q CAN + EtherCAT® + RS232			

→ Accessories

Accessories

DPZ20	Standard shield set (1 shield bracket, 2 cable clamps, mounting parts)
DPK10	Mating connector set ECOVARIO® 214/414

External ballast resistors

DPR24-100	Ballast resistor 24 Ω/100 W (250 W cooled)
DPR22-200	Ballast resistor 22 Ω/200 W (500 W cooled)

Power supply

SV24	1-phase power supply 24 V _{DC} / 5 A
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Further details regarding the power supplies can be found in the separate data sheet *Power supplies*.