

Compact Servo Drive ECOMPACT® 23E

Integrated Servo Technology - Motor & Amplifier as one unit



CANopen
EtherCAT



Significantly smaller cabinet

Decentralized compact servo drive



Freedom in machine design

Customer-specific realization



Simplified installation

Linear wiring



Cost-efficient solution

Implemented sequences replace smaller controllers



High connectivity

Drive profile DS402 via CANopen / EtherCAT



Easy commissioning

Intuitive parameterization and commissioning via JAT engineering software ECOSTUDIO®

Flange size:
NEMA 23 (56,2 mm)

Installed load:
Up to 150 W

Peak torque:
Up to 3,2 Nm

Power supply:
24 ... 60 V_{DC}

I/O:
5 digital inputs
2 digital outputs

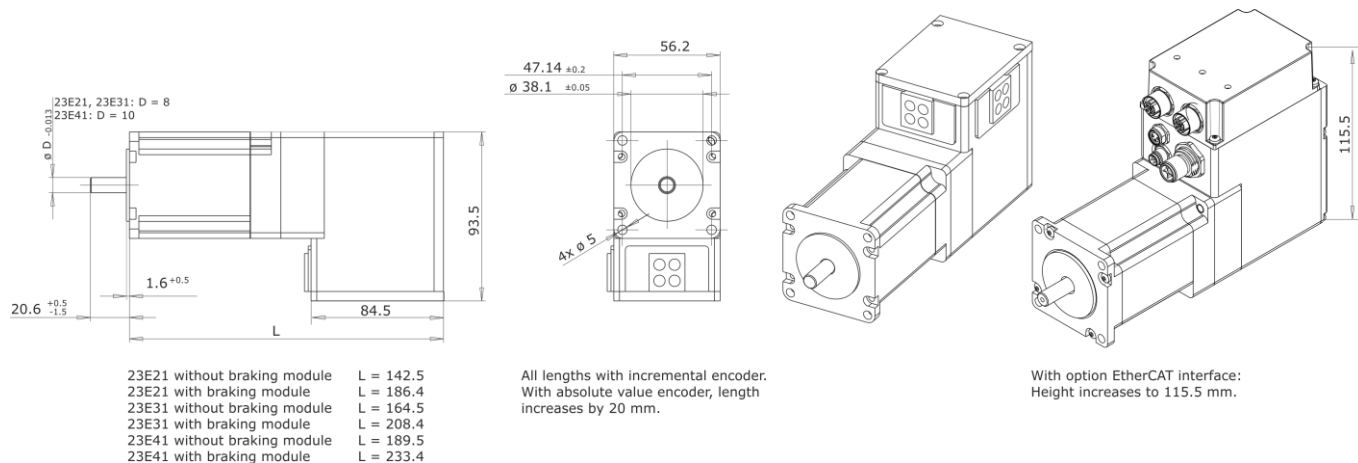
Encoder:
Incremental encoder
Absolute value encoder (multiturn or singleturn)

Connectors:
M8 / M12 plug connectors
Customer-specific electrical connectors

Mechanical options:
Braking module 1,5 Nm
Multiple shaft designs
Gear

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→ Motor specifications



Rated values		23E21	23E31	23E41
Peak torque*	[Nm]	1,10	2,15	3,20
Stall torque*	[Nm]	0,72	1,20	2,20
Rated torque*	[Nm]	0,45	0,67	0,98
Rated speed	[min ⁻¹]	750	1000	1000
Stall current*	[A _{eff}]	3,20	4,40	3,70
Rated current*	[A _{eff}]	2,40	3,40	1,80

*) Mounting flange ∅ 110 mm / thickness 10 mm.

Technical motor data		23E21	23E31	23E41
Torque constant (measurement)	[Nm/A]	0,19	0,34	0,54
Voltage constant (EMK, 25 °C)	[V/1000min ⁻¹]	11,70	20,80	33,50
Motor inertia (without brake)	[kgm ² · 10 ⁻³]	0,026	0,046	0,069
Insulation class		B, 130°C	B, 130°C	B, 130°C
Axial load (maximum)	[N]	80	80	80
Radial load (maximum)	[N]	100	100	100
Axial load assembly (maximum)	[N]	150	150	150

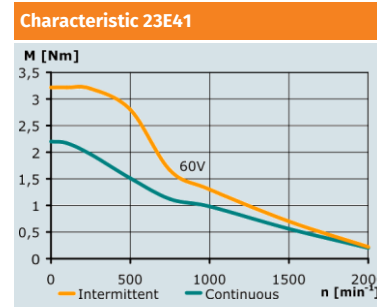
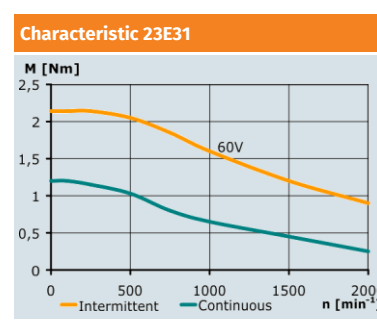
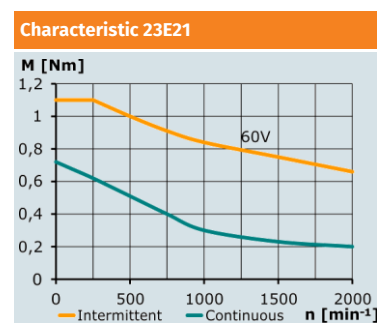
Dimensions and weights		23E21	23E31	23E41
Total length L**	[mm]	142,5	164,5	189,5
Weight device***	[kg]	1,55	1,75	2,50
Shaft diameter D	[mm]	8	8	10

***) With braking module additional 0,8 kg

Technical data incremental encoder (SinCos)		
Resolution	[inc/rev]	128 000

Technical data multiturn absolute value encoder		
Resolution	[Bit/rev]	17 and 12 Bit revolutions

Technical data singleturn absolute value encoder		
Resolution	[Bit/rev]	17



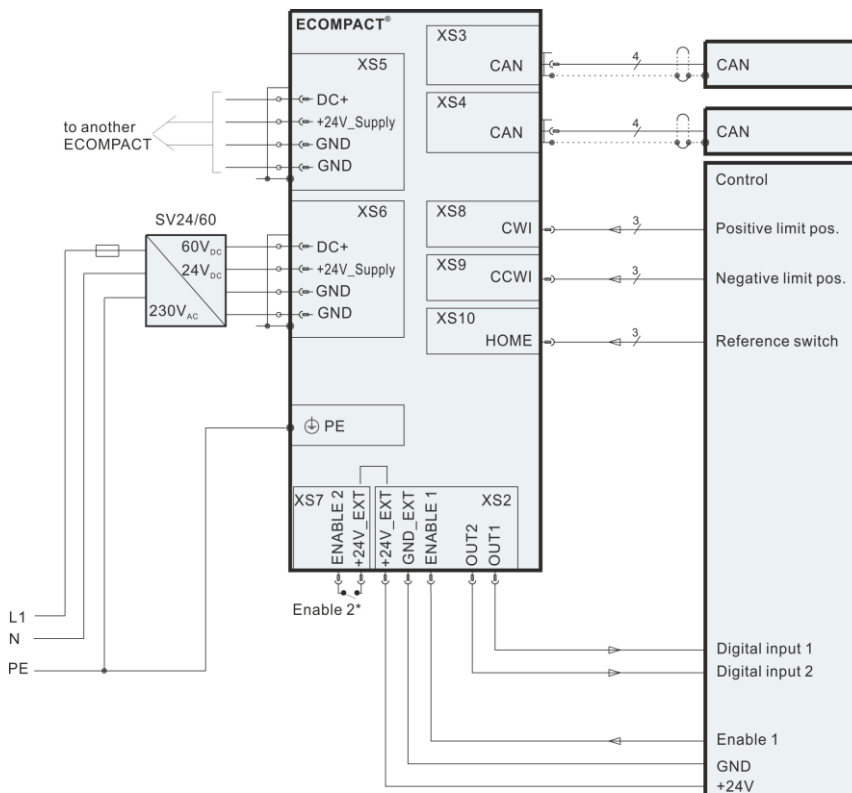
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→ Technical data

DC supply		Logic Supply			
Power supply	[V _{dc}]	24 ... 60	Logic supply	[V]	24 ± 10 %
Rated installed load	[W]	150	Input current (maximum) @ 24 V _{dc}	[A]	0,8*
Rated losses	[W]	20	*) without external loads, e.g. I/O or encoder		
Ambient conditions		Digital I/O			
Storage: Class	1K4 acc. to EN 61800-2		5 digital control signal inputs (2 insulated)	[V]	LOW 0 ... 5, HIGH 15 ... 30
Storage temperature	[°C]	-25 ... +55		[mA]	2 (@ 24 V)
Operation: Class	3K3 acc. to EN 61800-2		2 digital control signal outputs (2 insulated)	[V]	24
Ambient operation temperature	[°C]	+5 ... +40		[A]	0.2
Humidity (non-condensing)	[% rel. h.]	max. 85	Standards		
Installation altitude	[m]	< 1000 *	Applied standards for CE certification	EMC according to EN 61800-3, safety according to EN 61800-5-1	
Mounting position	any		Customs tariff number		
Protection class	IP40		Customs tariff number	85013100	
Cooling	via motor flange and convection				
*) without power loss					

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
- ✓ Evaluation of limit switches and reference sensor, multiple homing modes
- ✓ Output stage enable via digital inputs. Ready status communication by digital output.
- ✓ Restart lock via second enable input



ECOSTUDIO® - Easy Commissioning

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

*) Optionally, XS7 can be implemented as a free configurable digital input (ECOMPACT-23Exx-xxx-xxx-BB-...)

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→ Ordering key

ECOMPACT® 23E21/31/41 - pqq - rst - uv - wx - yyy - zzz

pqq		rst		uv		wx		yyy-zzz
o: Brake		r: Cables, connectors		u: Supply		w: Field bus type		yyy: firmware number (3 digits)
0	Without brake	0	Cable feed-through – standard device without modifications	A	1 or 3 phases, AC or DC	C	CAN	zzz: Parameter set number (3 digits)
B	Braking module 1,5 Nm mounted	A	Cable gland	B	DC	P	EtherCAT®	
qq: Encoder type		C	Connector M8/M12	v: Options		x: Approvals		
8X	Incremental encoder, max. resolution 128.000 inc/rev	K	customer version (replaces nomenclature for options)	A	2 x restart lock (redundant, standard), 1 x free usable digital output	A	CE, standard design	
DS	Absolute value encoder, resolution 17 Bit singleturn	s: Mechanical options		B	1 x restart lock, 1 x free usable digital input 2 x free usable digital output (option)	B-I	CE, special design	
7W	Absolute value encoder, resolution 17 Bit singleturn, 12 Bit multiturn	0	No further option – standard device without mechanical modifications	C	2 x restart lock (redundant), 2 x free usable digital outputs			
		B	Drilling					
		G	Gear*					
		K	Short shaft (< 20.6 mm)					
		L	Long shaft (> 20.6 mm)					
		P	Feather key according to DIN 6885					
		S	Special feather key					
t: Specialties, mountings, customer versions		W	Other shaft machining**					
		Consecutive numbers or letters						

*) Exact specifications at the end of the ordering key, for example PLE60-5

***) Special diameter, surface, internal thread, etc.

→ Accessories

Supplementary parts

DKK10	Molex mating connector set
DKH76	Cable sleeve 2 x Ø 4 mm - 6 mm 2 x Ø 5,5 mm - 7,5 mm

Power supply

SV24	1-phase power supply 24 V _{DC} / 5 A
SV24/60	1-phase power supply 24 V _{DC} / 2 A, 60 V _{DC} / 5 A
SV60	1-phase power supply 60 V _{DC} / 5 A

Further details regarding the power supplies can be found in the separate data sheet *Power supplies*.

ECOMPACT® standard pre-assembled cables (Molex plug connectors)

DAT36-833-100-003-000	Digital outputs OUT1, OUT2, Enable 1	Ø 5,5 mm; bending radius > 28 mm	customer side: connector sleeves
DAT30-832-832-003-000	Bridging cable CAN bus / terminating resistor	Ø 6,1 mm; bending radius > 46 mm	
DAT30-832-412-003-000	CAN bus	Ø 6,1 mm; bending radius > 46 mm	customer side: Sub-D, 9-pol. M
NET43-820-820-003-000	Bridging cable power and logic supply	Ø 6,4 mm; bending radius > 46 mm	
NET43-820-100-003-000	Power and logic supply	Ø 6,4 mm; bending radius > 35 mm	customer side: connector sleeves
DAT35-830-100-003-000	Enable 2 / Digital input 1	Ø 4,7 mm; bending radius > 24 mm	customer side: connector sleeves
SNS35-831-100-003-000	Digital input, 1 x limit position or reference switch	Ø 4,7 mm; bending radius > 24 mm	customer side: connector sleeves