

Servo drive E°Darc S



Functional characteristics

- Low-voltage servo drive (up to 60 V DC), with 5 A_{RMS}/12 A_{RMS} rated current respectively
- Fieldbus communication via CAN (CiA402) or EtherCAT® (CoE)
- External braking resistor
- Digital current, speed und position control
- Position feedback: absolute encoders, singleturn/multiturn (battery-buffered)
- Monitors short circuits, voltage, temperature, encoders, lag error and I²t
- Digital inputs for limit switches and homing switch
- Digital output to control the motor brake
- Evaluation of limit position switches, various homing methods available

Product designation

Item no.	Designation
121631	E°Darc S05 (for CAN)
121632	E°Darc S05E (for EtherCAT®)
121635	E°Darc S12 (for CAN)
121636	E°Darc S12E (for EtherCAT®)

Dimensions

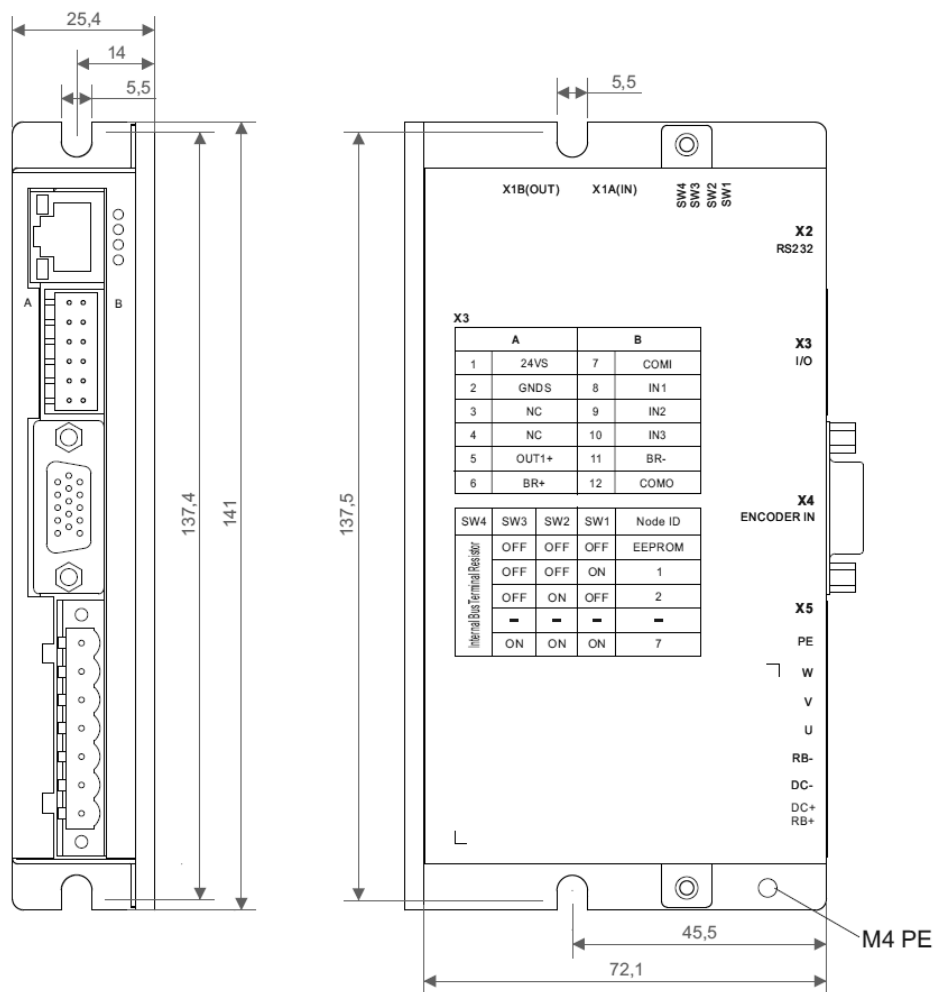


Fig. 1: Dimensions in mm (front and side, E°Darc S05/12)

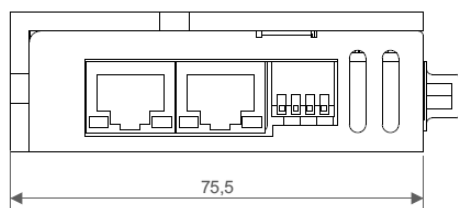


Fig. 2: Dimensions in mm (top, E°Darc S05/12)

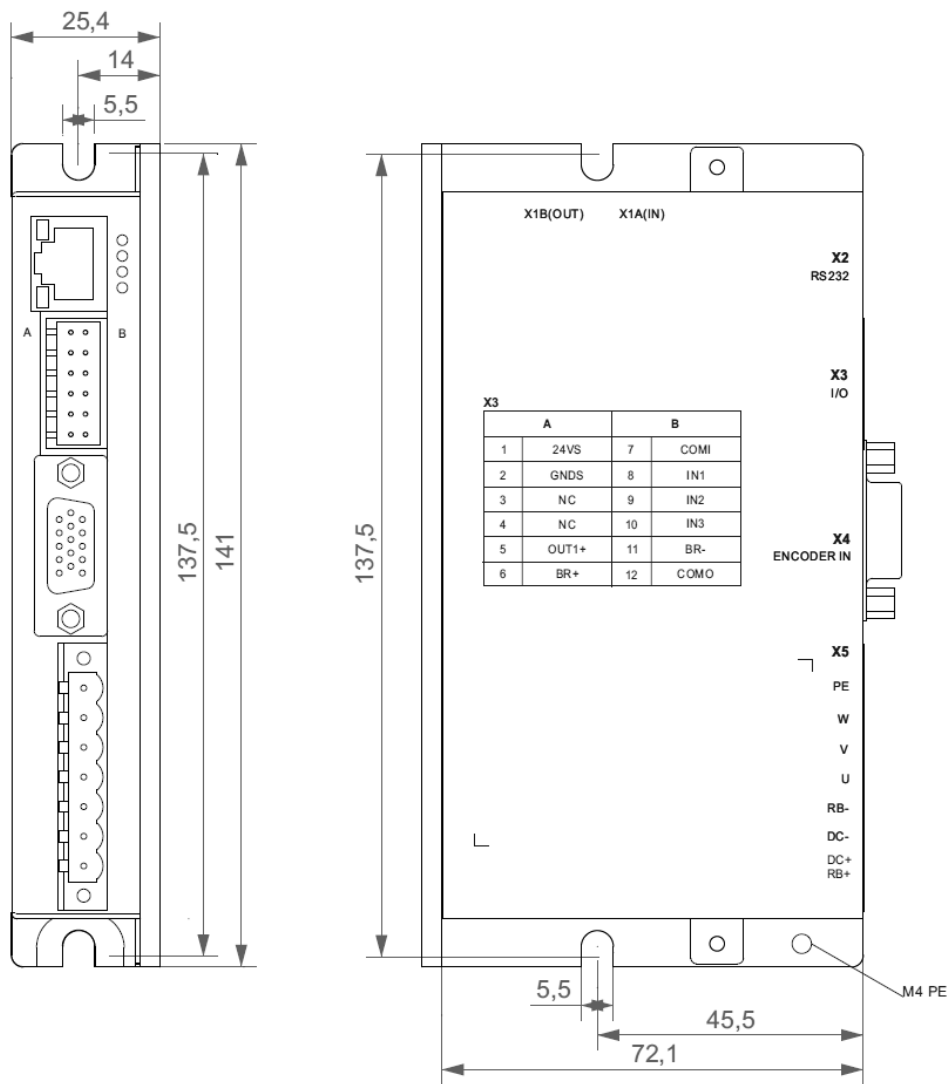


Fig. 3: Dimensions in mm (front and side, E°Darc S05E/12E)

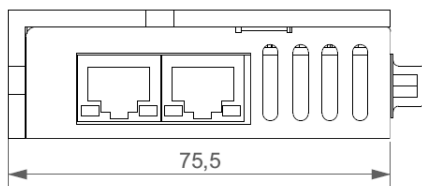


Fig. 4: Dimensions in mm (top, E°Darc S05E/12E)

Settings for CAN bus communication

- Set node number 1–7 using DIP switches SW1–3 on the top of the device
- Set node number 1–127 using software tool via RS-232 interface (with DIP switches SW1–3 = OFF)
- Bus termination using DIP switch SW4
- Bit rate: Standard setting 1 Mbit/s; can be changed using the software tool

Connections

Front side

Slot X2: RS-232

Pin	Assignment	Pin	Assignment
1	NC	5	NC
2	NC	6	RXD (receive data)
3	TXD (transmit data)	7	NC
4	GND (ground)	8	NC

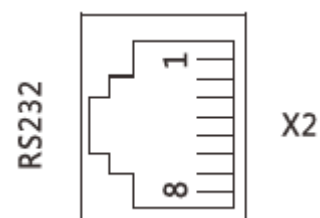


Fig. 5: Slot X2: RS-232

Slot X3: Inputs/outputs

Pin	Assignment	Electrical data
1	24VS	+ 24 V (operating voltage*)
2	GNDS	0 V (operating voltage*)
3	NC	---
4	NC	---
5	OUT1+	Max. output current 100 mA
6	BR+ (motor brake)	Output current 0.5 A
7	COMI	Ground reference for IN1–3
8	IN1	High level: 12.5–30 V DC Low level: 0–5 V DC
9	IN2	Input current 4–20 mA Max. frequency 1 kHz Impedance 5 kΩ
10	IN3	
11	BR- (motor brake)	Output current 0.5 A
12	COMO	Ground reference for OUT1+ Max. output current 100 mA

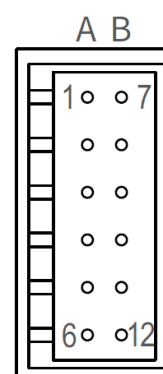


Fig. 6: Slot X3: Inputs/outputs

* The operating voltage is also redundantly supplied via X5 (DC link voltage, see below). Connection X3.1+2 is the designated connection for the operating voltage so that the operating voltage is maintained even if the DC link voltage is switched off.

Slot X4: Encoder

Pin	Assignment	Pin	Assignment	Pin	Assignment
1	VDD	6	NC	11	NC
2	GND	7	NC	12	NC
3	NC	8	NC	13	NC
4	NC	9	SD (Serial data)	14	/SD (Serial Data)
5	NC	10	NC	15	NC

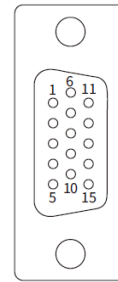


Fig. 7: Slot X4: Encoder

Slot X5: Power supply

Designation	Connection
U/V/W/PE	Motor cable connection
RB-/RB+	Braking resistor
DC-/DC+	DC link supply voltage*

* The operating voltage is supplied redundantly via X5. Connection X3.1+2 is the designated connection for the operating voltage so that the operating voltage is maintained even if the DC link voltage is switched off.

Top side

Slot X1A/B: Fieldbus (CAN/EtherCAT®)

Pin	Assignment (CAN)	Assignment (EtherCAT®)
1	CAN high	TD+
2	CAN low	TD-
3	GND	RD+
4	NC	NC
5	NC	NC
6	NC	RD-
7	NC	NC
8	NC	NC

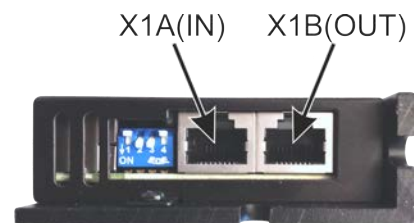


Fig. 8: Slots X1A/B

Technical data

		E°Darc S05/S05E	E°Darc S12/S12E
Power supply	Main power supply	24 V DC to 60 V DC	
	Control voltage	24 V (18 to 30 V) DC, 1 A DC	
Motor output	Rated current $I_{N(RMS)}$	5 A _{RMS}	12 A _{RMS}
	Peak current $I_{S(PEAK)}$	12 A	48 A
	Output voltage	3 x 0 to 42 V AC 0 to 400 Hz	
Feedback	Absolute encoder	16-bit multiturn (battery-buffered)	
Digital inputs	3 digital inputs	Ground reference for all inputs: COMI	
Digital outputs	OUT1	Ground reference COMO	
	BR+/BR-	Motor brake connection	
Miscellaneous	Cooling type	Convection	
	Overvoltage threshold	83 V DC +/- 2 V	
	Undervoltage threshold	18 V DC +/- 2 V	
	Weight	0.3 kg	
Ambient conditions	Ambient temperature (operational)	0 °C to +40 °C	
	Ambient temperature (storage)	-10 °C to +70 °C	
	Permitted air humidity	< 90% at 40 °C (non-condensing)	
	IP code of case	IP20	
	Mounting orientation	vertical	
	Permitted operating altitude	Typ. 1000 m a. s. l.	

Accessories

Product group	Designation	Item no.	Additional specifications
Motors	E°SCX-020-.../-030-...	(on request)	50 to 400 W see Eckelmann E°EDP
Motor cables	Motor cable E°Darc S	121559	L=3 m/4x16AWG
	Motor cable E°Darc S	121231	L=5 m/4x16AWG
	Motor cable E°Darc S	121753	L=7.5m/4x16AWG
	Motor cable E°Darc S	121658	L=10 m/4x16AWG
Brake cables	Brake cable E°Darc S	121560	L=3 m/2x20AWG
	Brake cable E°Darc S	121561	L=5 m/2x20AWG
	Brake cable E°Darc S	121660	L=10 m/2x20AWG
Encoder cables (multiturn)	Encoder cable MT E°Darc S – part 1	121563	L=0.4 m/battery holder incl. battery
	Encoder cable MT E°Darc S – part 2	121562	L=3 m/2x20AWG + 4x24AWG
	Encoder cable MT E°Darc S – part 2	121233	L=5 m/2x20AWG + 4x24AWG
	Encoder cable MT E°Darc S – part 2	121754	L=7.5 m/2x20AWG + 4x24AWG
	Encoder cable MT E°Darc S – part 2	121659	L=10 m/2x20AWG + 4x24AWG
Battery (spare part)	Buffer battery MT	119733	3.6 V/1800 mAh
Braking resistor	Flat braking resistor 68 Ω	119174	100 W
Fieldbus cable	Patch cable RJ45/RJ45	118110	L=0.5 m
	Patch cable RJ45/RJ45	121879	L=0.3 m
	Patch cable RJ45/RJ45	121880	L=1.5 m
	Patch cable RJ45/RJ45	121881	90° L=1.5 m