



Screwdriving technology

Automation

Air motors

Air tools

DEPRAG

MICROMAT-EC torque ranges between 0.03 - 0.8 Nm
MINIMAT-EC torque ranges between 0.06 - 18 Nm

EC-Screwdriver Spindles for stationary use The brushless Electric Screwdriver Spindles

The DEPRAG EC Screwdriver Spindles allow free programming of the screw tightening process. Within the power range of the selected spindle, the torque value, speed, stand-by and direction of rotation can be adjusted individually to the assembly requirement.

The new MICROMAT-EC is able to reach even the lowest possible torque ranges.

When using these spindles in Robot applications, i.e. in our assembly cell "DCAM", different screwdriving sequences on different screw

locations may be achieved within one assembly cycle.

The brushless electric motors provide nearly maintenance-free operation. They are ideally suited for the tightening of screws due to their outstanding dynamics and an achievement of high peak torque values.

Integrated monitoring of torque and angle values allow the exact control of the screw tightening process, as well as the documentation of all important process parameters.



MINIMAT-EC

MICROMAT-EC



The operation of the screwdriver spindle requires a programmable sequence controller (AST 10) with integrated amplifier and a motor cable (available in different lengths). The sequence controller offers standard screwdriving programs for tightening screws to a specific torque value respectively loosening at a specific angle value. Their parameters are adjustable directly via the controller's keyboard.

Special screwdriving sequences are easy to create: standard assembly steps, already stored in the controller, can be selected and comfortably built up to form a complete assembly process.

This happens via the integrated web-server's PC operator board. No special PC software is required – only a normal web browser (such as MS explorer) and an Ethernet port. Optionally available is an update service for the AST 10 which provides continuous update of the controller's function and control software.

The controller's integrated display and operating unit indicates the operating mode and assembly status. It also allows a direct change of parameters (speed, torque and angle values, etc..) within the assembly process and without the need of a PC connection.

In automatic mode, the AST 10 communicates with the system's PLC. Screwdriving programs can be selected and started. After completion of the assembly process, the AST 10 will report the status of the result to the PLC.

An Ethernet port allows the network of more screwdriver spindles (i.e. multi spindle systems) with centralized process monitoring (graphics, statistics, individual data sets, etc..).

TECHNICAL DATA MICROMAT-EC EC-SCREWDRIVER SPINDLES, STATIONARY



EC-Screwdriver	Type order no.	320E19-0002 405024 A	320E19-0005 405024 C	320E19-0008 405024 B
Torque min.	Nm/in.lbs	0.03 / 0.27	0.08 / 0.7	0.15 / 1.3
Torque max. *)	Nm/in.lbs	0.2 / 1.8	0.5 / 4.4	0.8 / 7.1
Speed min.	rpm	150	120	100
Speed max. *)	rpm	1500	1200	1000
Length	mm/in.	190 / 7 ³¹ / ₆₄	190 / 7 ³¹ / ₆₄	190 / 7 ³¹ / ₆₄
Weight	kg/lbs	0.25 / 0.55	0.25 / 0.55	0.27 / 0.59
Noise level	dB (A)	60	60	60
Line voltage (DC)	V	48	48	48
Internal hex drive DIN 3126		B3 (3 mm)	B3 (3 mm)	B3 (3mm)
Suitable inserting tools and connection parts wit inserting end DIN 3126		A3 (3 mm)	A3 (3 mm)	A3 (3mm)

*) as per VDI/VDE 2647 Directive

TECHNICAL DATA MINIMAT-EC EC-SCREWDRIVER SPINDLES, STATIONARY



EC-Screwdriver	Type order no.	320E27-0004 393984 A	320E27-0010 393984 B	320E27-0018 393984 H	320E27-0024 393984 C	320E27-0042 393984 D
Torque min.	Nm/in.lbs	0.06 / 0.5	0.15 / 1.3	0.4 / 3.5	0.4 / 3.5	0.7 / 6.2
Torque max. *)	Nm/in.lbs	0.4 / 3.5	1.0 / 8.85	1.8 / 15.9	2.4 / 21.2	4.2 / 37.2
Speed min.	rpm	60	50	100	50	40
Speed max. *)	rpm	1200	1000	1000	700	400
Diameter	mm/in.	27 / 1 ¹ / ₁₆	27 / 1 ¹ / ₁₆	27 / 1 ¹ / ₁₆	27 / 1 ¹ / ₁₆	27 / 1 ¹ / ₁₆
Length	mm/in.	220 / 8 ²¹ / ₃₂	232 / 9 ⁹ / ₆₄	229 / 9 ¹ / ₆₄	228 / 8 ³¹ / ₃₂	240 / 9 ²⁹ / ₆₄
Weight	kg/lbs	0.36 / 0.8	0.42 / 0.9	0.42 / 0.9	0.42 / 0.9	0.46 / 1
Noise level	dB (A)	60	60	60	60	60
Line voltage (DC)	V	48	48	48	48	48
Internal hex drive DIN 3126		B3 (3 mm)	B3 (3mm)	F6.3 (1/4")	F6.3 (1/4")	F6.3 (1/4")
Suitable inserting tools and connection parts wit inserting end DIN 3126		A3 (3 mm)	A3 (3mm)	E6.3 (1/4")	E6.3 (1/4")	E6.3 (1/4")
EC-Screwdriver	Type order no.	320E36-0040 404407 E	320E36-0060 404407 A	320E36-0120 404407 B	320E36-0180 404407 C	
Torque min.	Nm/in.lbs	0.8 / 7	1 / 8.85	2 / 17.7	3 / 26.6	
Torque max. *)	Nm/in.lbs	4 / 35.4	6 / 53.1	12 / 106.2	18 / 159.3	
Speed min.	rpm	100	70	35	25	
Speed max. *)	rpm	1000	740	380	280	
Diameter	mm/in.	36 / 1 ²⁷ / ₆₄	36 / 1 ²⁷ / ₆₄	36 / 1 ²⁷ / ₆₄	36 / 1 ²⁷ / ₆₄	
Length	mm/in.	260 / 10 ¹⁵ / ₆₄	260 / 10 ¹⁵ / ₆₄	260 / 10 ¹⁵ / ₆₄	260 / 10 ¹⁵ / ₆₄	
Weight	kg/lbs	1.12 / 2.5	1.12 / 2.5	1.12 / 2.5	1.14 / 2.5	
Noise level	dB (A)	62	62	62	62	
Line voltage (DC)	V	48	48	48	48	
Internal hex drive DIN 3126		F6.3 (1/4")	F6.3 (1/4")	F6.3 (1/4")	F6.3 (1/4")	
Suitable inserting tools and connection parts wit inserting end DIN 3126		E6.3 (1/4")	E6.3 (1/4")	E6.3 (1/4")	E6.3 (1/4")	

*) as per VDI/VDE 2647 Directive

REQUIRED ACCESSORIES

Sequence controller prepared for Profibus with integrated Profibus module for screwdriver types 320E19-.. and 320E27-..	Type order no.	AST 10-1-P 385440 B 385440 P
Sequence controller prepared for Profibus with integrated Profibus module for screwdriver Type 320E36-..	Type order no.	AST 10-2-P 385441 B 385441 P
Power unit (AC)	V	100 - 240
	Hz	50 /60
Power consumption AST 10-1	VA	350
Power consumption AST 10-2	VA	600
Insulation		IP 54
LC display		4 x 20
Membrane keyboard		yes
RS 232 interface		yes
Ethernet		yes
Amount of connectable Screwdrivers		1
Dimension (W x H x D)	mm / in.	160 x 295 x 200 / 6 ¹⁹ / ₆₄ x 11 ³⁹ / ₆₄ x 7 ⁷ / ₈
Weight (AST 10-1 / AST 10-2)	kg / lbs	5.8/6 / 12.8/13.2

Motor cable (Spindle to sequence controller)		
Length 2.5 m / 8.2 ft. (standard)	Type order no.	KMO AST10-2.5m 385442 A
Length 5 m / 16.4 ft.	Type order no.	KMO AST10-5m 385442 B
Length 8 m / 26.2 ft.	Type order no.	KMO AST10-8m 385442 C
Length 12 m / 39.4 ft.	Type order no.	KMO AST10-12m 385442 D
alternative		
Motor cable with 90° angle connection	Type order no.	KMO-AST10-2.5m-W 385442 E
Length 2.5 m / 8.2 ft.	Type order no.	KMO-AST10-5m-W 385442 F
Length 5 m / 16.4 ft.	Type order no.	KMO-AST10-8m-W 385442 G
Length 8 m / 26.2 ft.	Type order no.	KMO-AST10-12m-W 385442 H
Length 12 m / 39.4 ft.	Type order no.	

Power supply cable (Sequence controller)		
Length 1.8 m / 5.9 ft.	Type order no.	KN AST10-EU 385443 A
Length 1.8 m / 5.9 ft.	Type order no.	KN AST10-US 385443 B
Length 2.5 m / 8.2 ft.	Type order no.	KN AST10-China 385443 C

OPTIONAL EQUIPMENT

Programm. cable (PC to AST 10)	order no.	831902
Connection cable (AST 10 to PC)	order no.	380449 B
Plug RJ45-IP54	order no.	385453 A
Cable AST 10 to printer ND 100	order no.	385452 B
Printer	Type order no.	ND 100 823476
Part sensor capacitive M18	order no.	354841 C
Expansion Kit Profibus	order no.	385501 A

AST 10 SPS Remote Interface for fully automatic Screwdriving graph storing		
Interface LPT-24 V	order no.	200788
PC Software AST 10 RCPC	order no.	200790

Software		
Activation code Graph 10E	order no.	202698
Activation code AST 10 Datalogger	order no.	202699
Activation code - Friction value screw assembly	order no.	201820
Emergency stop module (E-stop without rebooting operation system)	order no.	385521 A
Module RCPC-USB (for automatic graph transmittal)	order no.	202770
Firmware Update AST10 year subscription	order no.	203184

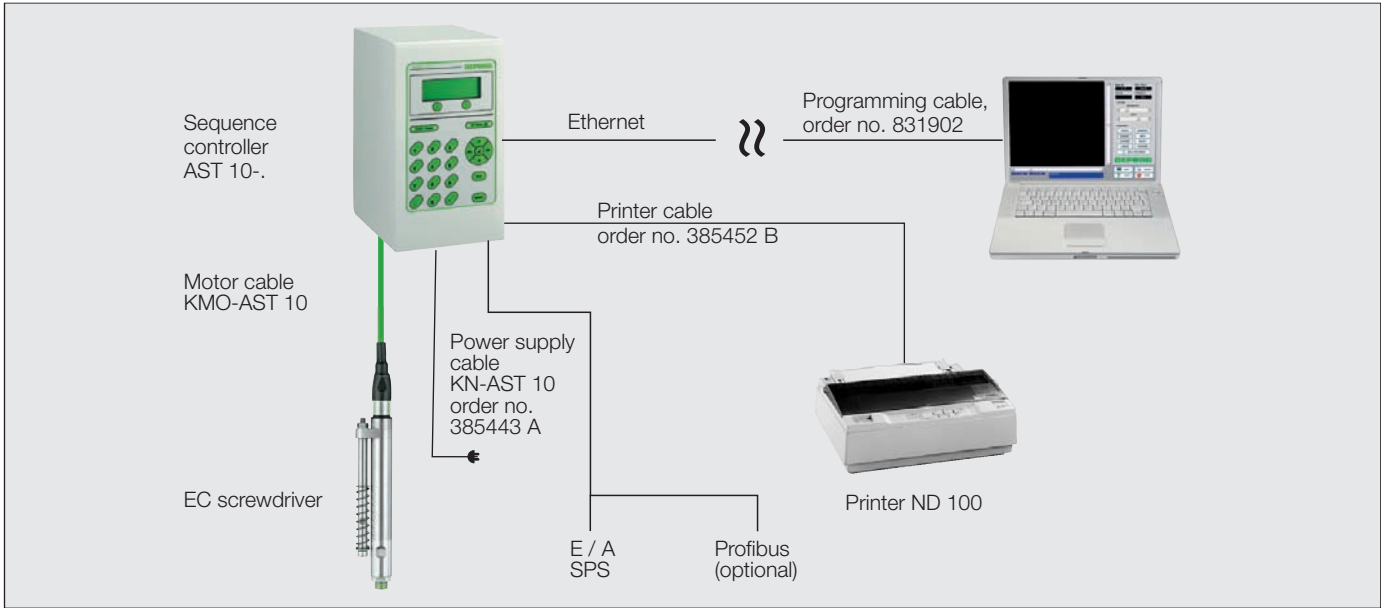


Sequence Controller AST 10-1-P



Printer ND 100

EXAMPLE



EXAMPLES OF AST 10 SOFTWARE FUNCTIONS

Graph 10 E Multiple torque graph

Software function of the web server integrated into the controller

DEPRAG

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