

## MINIMAT-EC-Servo Screwdriver handheld

straight handle design - torque ranges between 0.01 - 2.0 Nm

The flexible EC-Servo screwdriver for low torque applications

- sensor controlled
- flexible
- data recording
- highly accurate

The EC-Servo screwdriver with highly dynamic drive technology combined with the AST5-S series controller offers maximum flexibility and control. The integrated torque and angle measurement system enables precise control of the screw assembly process and guarantees the highest accuracy and reliable documentation of process parameters.

Through the combination of different screwdriving strategies with flexible tightening parameters, multi-step screw run-down sequences can be realized in one assembly cycle.

### Handheld Screwdriver electric



**Main Menu**

- Process Data
- System
- Screwdriving Sequence
- Test

**Setup 2/10**

**Language**

- English
- Deutsch
- Français
- Svenska
- Português
- Español
- Slovenščina
- Polski

**Statistics**

Program:	1	P: 1
Sample size:	50	All
Average:	5.080 N·cm	
Standard dev.:	0.067 N·cm	1.32 %
CP/CPK value:	3.78 /	3.78

Torque    Angle    Limits CP

**Screwdriving System consisting of the components:**

- EC-Servo Screwdriver
- Sequence Controller
- Power supply cable




## ADVANTAGES

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### DEPRAG EC-SERVO SCREWDRIVER – flexible for the highest standards

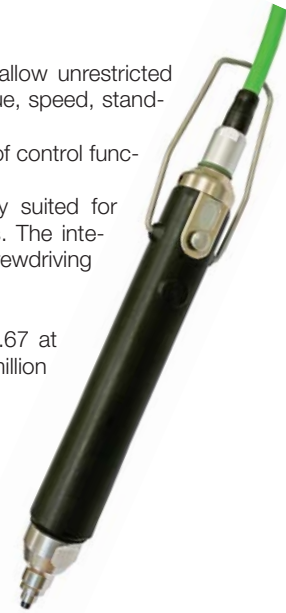
The DEPRAG EC-Servo screwdrivers with matched AST5-S programmable sequence controllers allow unrestricted programming of the screw tightening process. Within the power range of the selected tool; the torque, speed, stand-by time and direction of rotation can be adjusted individually to the assembly requirement.

The outstanding features of handheld EC-Servo screwdrivers are torque precision and flexible range of control functions – perfect conditions for process reliability and precise control.

The permanent magnet DC electric motors ensure low maintenance operation. They are ideally suited for screwdriving applications due to their outstanding dynamics and an wide achievable torque values. The integrated torque transducer as well as angle measurement, allows precise control of multistage screwdriving processes and documentation of the resulting values.

With these screwdrivers a torque accuracy of < 1% standard deviation \*) and a Cmk value of  $\geq 1.67$  at a tolerance of  $\pm 5\%$  is possible. A Cmk value of 1.67 equates to an error rate of just 0.6 per one million assemblies.

\*) standard deviation of the types 325EGA22-00005 and 325EGA22-00012: <2%



### DEPRAG SEQUENCE CONTROLLER AST5-S – compact size for torque up to 2 Nm



- highest precision for lowest torque ranges
- small size for confined spaces
- color touch screen with 4.3" TFT display
- torque control/angle monitoring
- angle control/torque monitoring
- friction-torque testing and friction-controlled fastening to torque
- 100 freely programmable sequence programs

The DEPRAG sequence controller AST5-S is the ideal controller for manual screw assemblies in combination with the tried and tested DEPRAG EC-Servo screwdrivers of the MINIMAT-EC-Servo (size 22) series within a torque range of 0.01 Nm – 2.0 Nm.

**Operator friendly:** The sequence controller is standard screwdriving programs for tightening to torque and loosening to angle. Parameters can be directly altered to suit screwdriving tasks using the touch screen. The AST5-S allows free programming of your manual screwdriving sequences for hand-held screwdriving tools. If required, further screwdriving programs can quickly and easily be set-up modifying the existing standard program.

**High number of programs:** The colour TFT touch screen allows fast access to and programming of up to 100 user defined screwdriving sequences.

**Web browser based interface:** Alternatively, to set parameters and access additional control functions, simply use any common web browser. Additional software is not required.

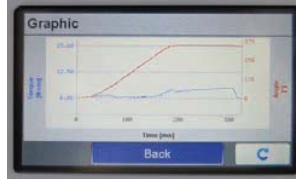
**Small size:** Due to its small size the controller is particularly suitable for use in manual work stations with confined spaces.

**Storage, documentation and evaluation:** The AST5-S records the screwdriving results for the last 7 production days. Additional features include the graphic display of screwdriving graphs, integrated PLC functions and comprehensive analysis options. A firm-ware update service and comprehensive software packages for screw joint analysis, documentation and process data collection are optionally available.

## EXAMPLES OF THE FUNCTIONS DISPLAY ON THE AST5-S



Main menu



Graphic display of screwdriving graphs



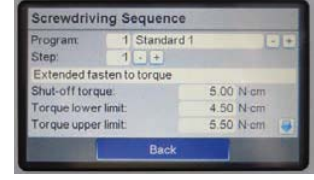
Statistics display



Web interface and controller display  
(available in 13 languages)



Program selection



Program set-up

## SYSTEM COMPONENTS

### MINIMAT-EC-Servo Screwdriver handheld, Straight handle design, size 22

Screwdriver	Type	325EGA22-00005	325EGA22-00012	325EGA22-00025	325EGA22-00050	325EGA22-00080
Push-to-start	Part no.	104400A	104400B	104400C	104400D	104400E
Torque min.	Nm / in.lbs	0.01 / 0.09	0.03 / 0.27	0.05 / 0.45	0.1 / 0.9	0.16 / 1.42
Torque max. *)	Nm / in.lbs	0.05 / 0.45	0.12 / 1.06	0.25 / 2.21	0.5 / 4.42	0.8 / 7.08
Speed min.	rpm	120	120	100	80	60
Speed max. *)	rpm	1500	1500	2000	1600	1200
Diameter	mm / in.	30.5 / 1.2	30.5 / 1.2	30.5 / 1.2	30.5 / 1.2	30.5 / 1.2
Length	mm / in.	230.5 / 9	230.5 / 9	230.5 / 9	230.5 / 9	230.5 / 9
Weight	kg / lbs.	0.6 / 1.32	0.6 / 1.32	0.6 / 1.32	0.6 / 1.32	0.6 / 1.32
Noise level	dB (A)	60	60	60	60	60
Line voltage (DC)	V	24	24	24	24	24
Internal hex drive DIN ISO 1173		B3 (3mm)	B3 (3mm)	B3 (3mm)	B3 (3mm)	B3 (3mm)
Suitable inserting tools and connection parts with inserting end DIN ISO 1173		A3 (3mm)	A3 (3mm)	A3 (3mm)	A3 (3mm)	A3 (3mm)
<b>Optional equipment:</b>						
Spring sleeve cpl., without screw suction	Part no.			403280K		
Spring sleeve cpl., with screw suction	Part no.			403280L		
Screwdriver adapter	Part no.			4008331W		
Support ring	Part no.			389775C		
Screwdriver	Type	325EGA22-00120	325EGA22-00200			
Push-to-start	Part no.	104400F	104400G			
Torque min.	Nm / in.lbs	0.24 / 2.12	0.4 / 3.54			
Torque max. *)	Nm / in.lbs	1.2 / 10.6	2.0 / 17.7			
Speed min.	rpm	50	30			
Speed max. *)	rpm	900	550			
Diameter	mm / in.	30.5 / 1.2	30.5 / 1.2			
Length	mm / in.	229.5 / 8.95	229.5 / 8.95			
Weight	kg / lbs.	0.6 / 1.32	0.6 / 1.32			
Noise level	dB (A)	60	60			
Line voltage (DC)	V	24	24			
Internal hex drive DIN ISO 1173		F6.3 (¼")	F6.3 (¼")			
Suitable inserting tools and connection parts with inserting end DIN ISO 1173		E6.3 (¼")	E6.3 (¼")			
<b>Optional equipment:</b>						
Spring sleeve cpl., without screw suction	Part no.		364672A			
Spring sleeve cpl., with screw suction	Part no.		364672C			
Screwdriver adapter	Part no.		4008331W			
Support ring	Part no.		389775C			

The motor cable, 2.5-meters long, is solidly connected to the screwdriver

## SYSTEM COMPONENTS

### SEQUENCE CONTROLLER AST5-S

Sequence controller	Type	AST5-S
with integrated performance electronics	Part no.	104449A
Power connection (AC)	V / Hz	100 - 240 / 50 / 60
Power input	VA	150
Display		TFT-colour display 4.3"
24V input/output interface		-
Ethernet		yes
Number of connectable screwdriver		1
Dimensions (W x H x D)	mm / in.	162 x 143 x 65 / 6 <sup>3</sup> / <sub>8</sub> x 5 <sup>9</sup> / <sub>8</sub> x 2 <sup>9</sup> / <sub>16</sub>
Weight	kg / lbs	1.5 / 3.3
Power supply unit	Part no.	2041061 (included in delivery)

### Required Accessories

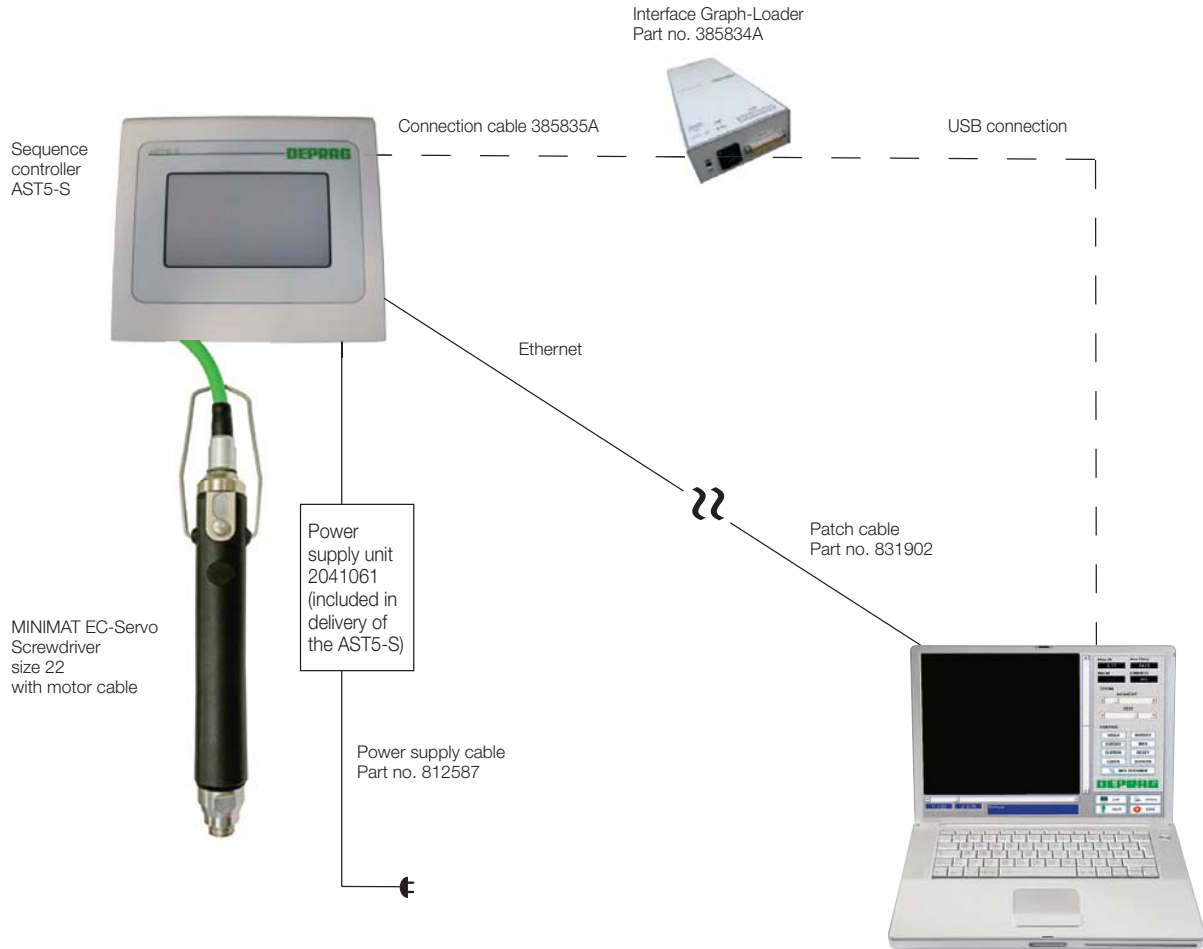
<b>Power supply cable</b> 230 V length 1.8 m / 5.9 ft.	Part no.	812587
<b>Power supply cable</b> 115 V length 1.8 m / 5.9 ft.	Part no.	812295

### Optional Accessories

Patch cable (2m) (connection AST5-PC)	Part no.	831902
Base	Part no.	416004A
Touch pen	Part no.	832190
Software Graph 10E (release code)	Part no.	202698
Software statistic (release code)	Part no.	206081
Software datalogger (release code)	Part no.	202699
Software Friction value screwdriving (release code)	Part no.	201820
<b>Interface Graph Loader</b> (hardware and software)	Part no.	385834A
Connection cable (AST5 - Graph-Loader)	Part no.	385835A

The storage of screwdriving graphs and end value data sets (e.g. torque, angle etc.) for manual work stations and screwdriving stations can be carried out automatically using the Interface Graph-Loader. The corresponding software enables immediate display on the computer screen of the current screwdriving graph, the screw assembly can be evaluated straight after completion and \*.csv and \*.bin files can be saved in individual directories.

# EXAMPLE



# DEPRAG

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