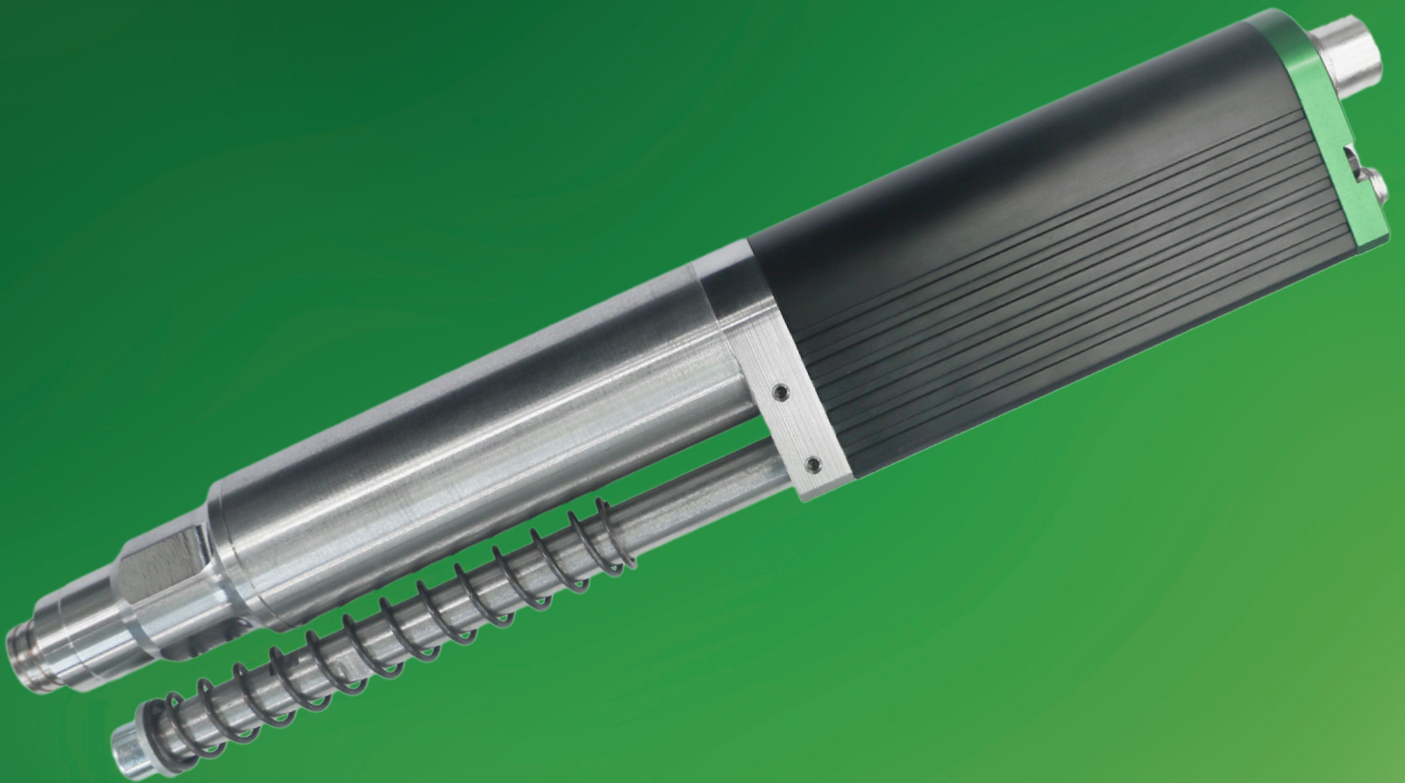


Screwdriver Spindles electric



MINIMAT-EDS Digital Electric Screwdriver

The screwdriving spindle with integrated screwdriving controller!

ADVANTAGES



> **New control concept**

The control functionality of the screwdriving system is implemented by integrating intelligent power electronics into the screwdriver and incorporating screwdriving-specific software modules into the system control unit (PLC).

> **Known range of functions without sequence controller**

The familiar range of functions of DEPRAG EC screwdriving systems is available. However, no sequence controller is required to operate the MINIMAT-EDS screwdriver.

> **Hot plug**

The screwdriver can be plugged in or unplugged without switching off the system (hot-plug, e.g. during realignment).

> **Use in screwdriving stations**

The screwdrivers are designed for use in screwdriving stations with a central system control unit (PLC). They include intelligent power electronics with an electronic type plate and a communication interface for data exchange with the system controller via EtherCAT.

> **Intelligent software products**

A PLC function block for the Beckhoff TwinCAT III development environment is available to integrate the screwdrivers into the system software. The creation of screwdriving programs is made possible by the DEPRAG Cockpit software. The Quick start application software is provided to support the commissioning and integration of the screwdrivers.

> **Simple commissioning**

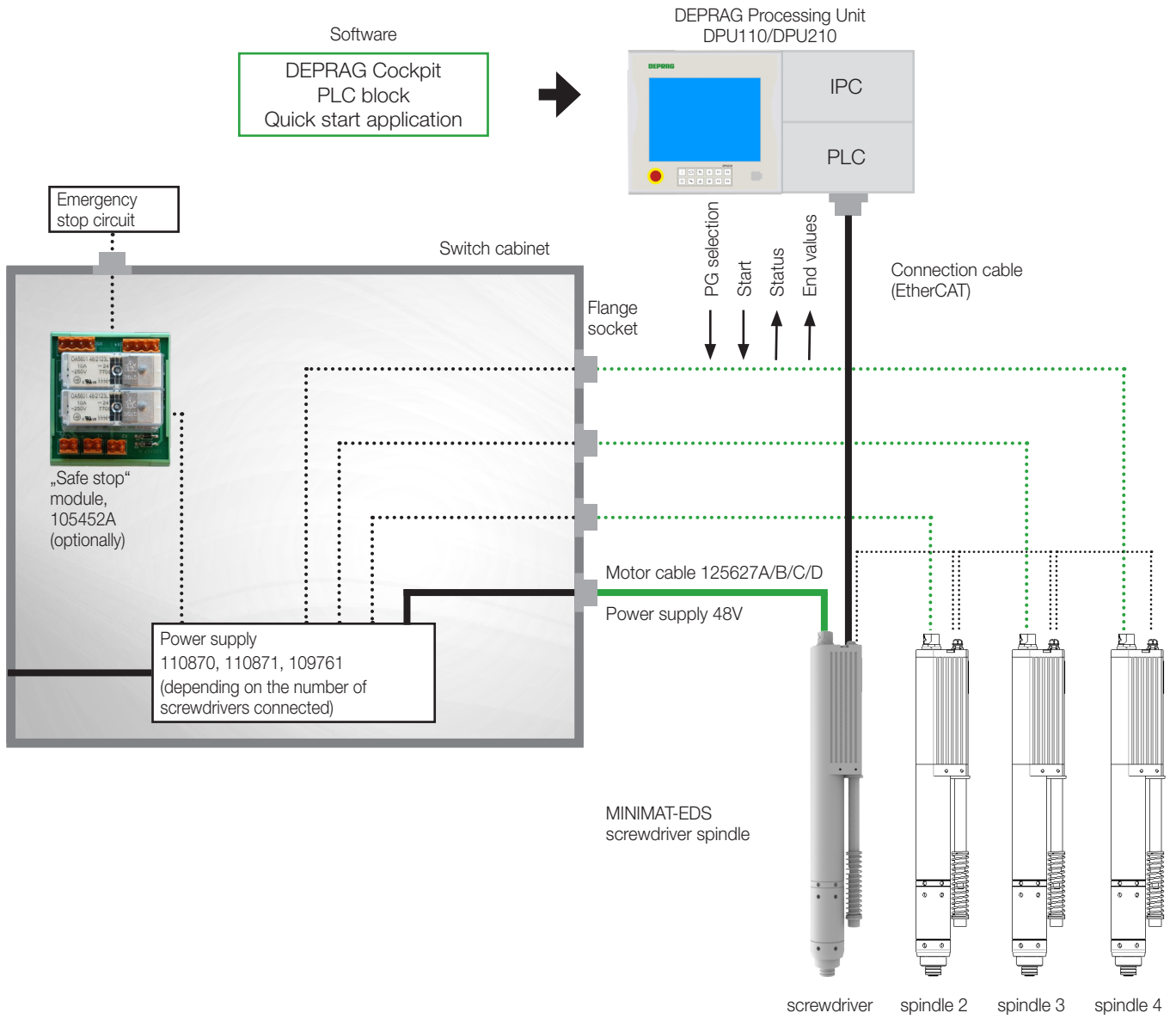
Graphic data can be transferred to support commissioning and diagnostics.

> **Precise**

The screwdriver meets the requirements of screw category B. Torque accuracies of < 3% standard deviation and thus Cmk values of ≥ 1.67 with a tolerance of $\pm 15\%$ can be reached * with MINIMAT-EDS stationary screwdrivers. Statistically speaking, the error rate is less than 0.6 per one million screw assemblies.

*) under suitable process conditions

SYSTEM SET UP AND COMPONENTS



SYSTEM COMPONENTS

MINIMAT-EDS Screwdriver spindle straight handle design	Type Part no.	330EDS36-0012 460000A	330EDS36-0018 460000B	330EDS36-0032 460000C	330EDS36-0048 460000D
Torque min.	Nm/in.lbs	0.24/2.1	0.36/3.2	0.64/5.66	1/8.85
Torque max.	Nm/in.lbs	1.2/10.6	1.8/15.9	3.2/28.3	4.8/42.5
Speed min.	rpm	150	150	120	90
Speed max.	rpm	1500	1500	1200	900
Diameter	mm/in.	36/1.4	36/1.4	36/1.4	36/1.4
Length	mm/in.	319/12.44	319/12.44	319/12.44	319/12.44
Weight	kg/lbs	1.2/2.6	1.2/2.6	1.2/2.6	1.2/2.6
Line voltage (DC)	V	48	48	48	48
Internal hex drive DIN ISO 1173		F6.3 (1/4")	F6.3 (1/4")	F6.3 (1/4")	F6.3 (1/4")
Suitable inserting tools and connection parts with inserting end DIN ISO 1173		E6.3 (1/4")	E6.3 (1/4")	E6.3 (1/4")	E6.3 (1/4")

MINIMAT-EDS Screwdriver spindle straight handle design	Type Part no.	330EDS36-0075 460000F	330EDS36-0110 460000G	330EDS36-0140 460000H	330EDS36-0180 460000I
Torque min.	Nm/in.lbs	1.5/13.3	2.2/19.5	2.8/24.8	3.6/31.9
Torque max.	Nm/in.lbs	7.5/66.4	11/97.4	14/123.9	18/159.3
Speed min.	rpm	50	40	25	20
Speed max.	rpm	560	390	290	220
Diameter	mm/in.	36/1.4	36/1.4	36/1.4	36/1.4
Length	mm/in.	361/14.1	361/14.1	361/14.1	361/14.1
Weight	kg/lbs	1.5/3.3	1.5/3.3	1.5/3.3	1.5/3.3
Line voltage (DC)	V	48	48	48	48
Internal hex drive DIN ISO 1173		F6.3 (1/4")	F6.3 (1/4")	F6.3 (1/4")	F6.3 (1/4")
Suitable inserting tools and connection parts with inserting end DIN ISO 1173		E6.3 (1/4")	E6.3 (1/4")	E6.3 (1/4")	E6.3 (1/4")

Optional accessories for the screwdriver spindles

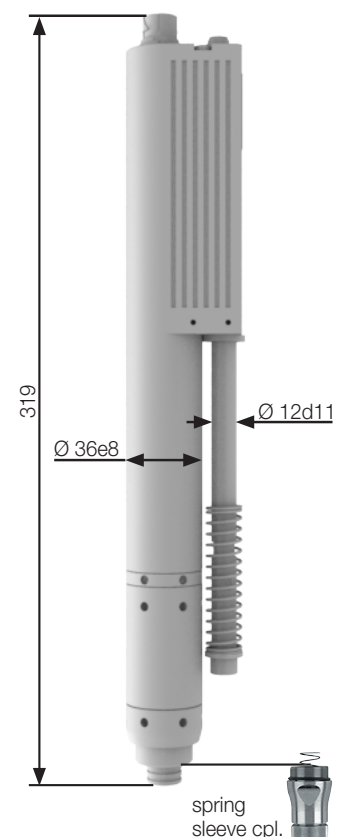
Spring sleeve cpl.	Part no.	364672A
Spring sleeve cpl., with vacuum connection (in connection with finder, see catalog; Inserting tools D3320E)	Part no.	364672C

Optional component for the installation into a switch cabinet

„Safe stop“ module
part no. 105452A



The “safe stop” module disconnects the power supply to the screwdriver. The power supply is retained. Disconnection is carried out on two channels with monitoring contacts, so that Performance Level e in accordance with EN ISO 13849-1 is fulfilled (functional safety). Each “safe stop” module can be used to protect up to three screwdrivers. After triggering the safety-cut off around 10s is needed for the screwdriver to return to operational readiness.



SYSTEM COMPONENTS

Required components for the installation into a switch cabinet

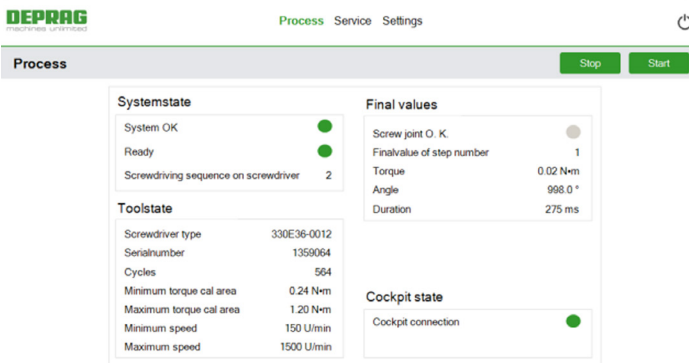
Motor cable length 2 m	Type Part no.	KMO-330EDS-2M 125627A	To connect the screwdriver with the power supply.
alternative: Motor cable length 5 m	Type Part no.	KMO-330EDS-5M 125627B	
Motor cable length 7.5 m	Type Part no.	KMO-330EDS-7.5M 125627C	
Motor cable length 10 m	Type Part no.	KMO-330EDS-10M 125627D	
Power supply single 240W-48V 2-fold 480W-48V 4-fold 960W-48V	Part no. Part no. Part no.	110870 110871 109761	Selection depends on the number of screwdrivers used. The different power supply options can be combined with one another.
Flange socket	Part no.	128635A	
Connection cable length 2m	Part no.	164078	EtherCAT M8 2m, robot application
alternative:			
Connection cable length 5m	Part no.	164079	EtherCAT M8 5m, robot application
Connection cable length 7.5m	Part no.	164429	EtherCAT M8 7.5m, robot application
Connection cable length 10m	Part no.	164430	EtherCAT M8 10m, robot application
Connection cable length 0.1m	Part no.	813895	EtherCAT M8 0.1m
alternative:			
Connection cable length 0.2m	Part no.	816576	EtherCAT M8 0.2m
Connection cable length 0.5m	Part no.	813896	EtherCAT M8 0.5m
Connection cable length 2m	Part no.	813898	EtherCAT M8 2m
Connection cable length 5m	Part no.	813899	EtherCAT M8 5m
Connection cable length 7.5m	Part no.	142931	EtherCAT M8 7.5m
Connection cable length 10m	Part no.	122951	EtherCAT M8 10m
Connection cable length 2m	Part no.	813905	EtherCAT RJ45 2m
alternative:			
Connection cable length 5m	Part no.	813906	EtherCAT RJ45 5m
Connection cable length 7.5m	Part no.	164433	EtherCAT RJ45 7.5m
Connection cable length 10m	Part no.	164434	EtherCAT RJ45 10m

SYSTEM COMPONENTS

Optional additional software

330EDS Application Programming Interface API (activation key)	Part no.	185130	PLC block, Quick start - for easy integration into the Beckhoff TwinCAT III development environment.
DEPRAG Friction Value Process (activation key)	Part no.	201820	License for 1 screwdriving system
DEPRAG Cockpit Professional 1	Part no.	145440	License for 1 screwdriving system
DEPRAG Cockpit Professional 5	Part no.	142967	License for 5 screwdriving systems
DEPRAG Cockpit Professional 10	Part no.	142968	License for 10 screwdriving systems
DEPRAG Cockpit Professional 20	Part no.	142978	License for 20 screwdriving systems
DEPRAG Cockpit Professional 50	Part no.	142979	License for 50 screwdriving systems

Please find details of our software products in our product [catalog D3900E](#).



Application Programming Interface (API)

The Quick start application enables commissioning and testing the screwdriving system quickly and easily.

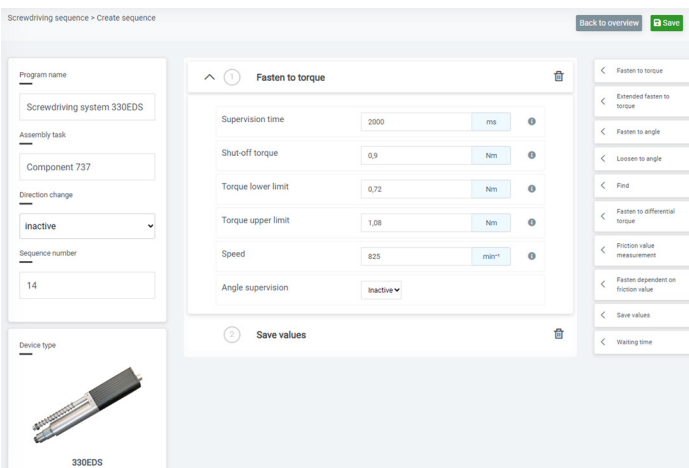
By accessing the Application Programming Interface (API) of the PLC module, selected functions can be used without programming knowledge.

This supports initial commissioning, diagnostics during servicing and product presentations.

Commissioning the system

The following steps are required to commission the system (details can be found in the operating instructions):

- Installing the 330EDS software components
Programming API (PLC module, Quick start application) and DEPRAG Cockpit on the DPU
- Create screwdriving tools with serial number
- Creating screwdriving programs with the DEPRAG Cockpit



DEPRAG Cockpit

The 330EDS screwdriving system integrates seamlessly into the DEPRAG Cockpit. The DEPRAG Cockpit analyzes and manages any number of different screwdriving technology controls and their parameters.

In conjunction with the 330EDS screwdriving system, the DEPRAG Cockpit offers the following options:

- Creation and transfer of screwdriving sequences
- Audit-proof storage of screwdriving programs
- Persistence of final values
- Linking screwdriving results with serial numbers
- Linking used screwdriving program with the performed screw fastening

Screwdriving sequences for the 330EDS screwdriving system are created in the DEPRAG Cockpit and transferred to the system controller. This constellation enables an unlimited number of screwdriving programs.

The decentralized storage of the screwdriving program on the system controller ensures a high cycle time and a resilient connection. This means that if the connection between the system controller and the DEPRAG Cockpit is lost (e.g. maintenance work), the screwdriving programs can still be executed. Any screwdriving results are stored decentrally on the system controller and transferred when the connection is restored.

COMPARISON OF SCREWDRIVING SYSTEMS – MINIMAT-ED vs. MINIMAT-EDS

			NEW
	MINIMAT-ED		MINIMAT-EDS
	the electronic screwdriving system with no external screwdriving sequence controller		the electronic screwdriving system with integrated screwdriving sequence controller → Control functionality of the screwdriving system through the intelligent power electronics in the screwdriver
	<p>The DEPRAG DPU series controllers can be used to control the MINIMAT-ED screwdriver in combination with the Interface 330E for signal and data exchange between the system controller (PLC) and the control electronics of the screwdriver.</p> <p>In combination with a DPU, single and multi-channel EC screwdriving solutions can be integrated into the controller concept of complete systems at low cost.</p>		<p>All components and functions of the sequence controller required for other systems (AST, ComCenterED, Interface 330E) are integrated in the screwdriver or transferred to the system control.</p> <p>The screwdrivers are designed for use in screwdriving stations with a central system control unit (DPU). They contain intelligent power electronics and a communication interface for data exchange with the system controller via EtherCAT.</p> <p>A PLC block for the Beckhoff TwinCAT III development environment is available for integrating the screwdrivers into the system software.</p> <p>The creation of screwdriving programs is made possible by the DEPRAG Cockpit software. The Quickstart application software is provided to support the commissioning and integration of the screwdrivers.</p>
Characteristics	in combination with Interface 330E and standard software 330 OS BASIC	in combination with Interface 330E and software 330 OS ADVANCED	
Tightening and shut-off via torque	✓	✓	✓
Tightening and shut-off via torque with angle control	✗	✓	✓
Tightening and shut-off via angle	✓	✓	✓
Tightening and shut-off via angle with torque control	✗	✓	✓
Loosening and shut-off via angle	✓	✓	✓
Extended screwdriving strategies, e.g., friction dependent screw assembly	✗	✓	✓
Parameter adjustment of screwdriving sequences	✓	✓	✓
Creation of screwdriving sequences	✗	✓	✓
Graphic recording	✗	✗	✓
Communication interfaces	✓	✓	✓
Storage / documentation / analysis	✓	✓	✓

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