



## DEPRAG Apps

## Software Solutions and Updates

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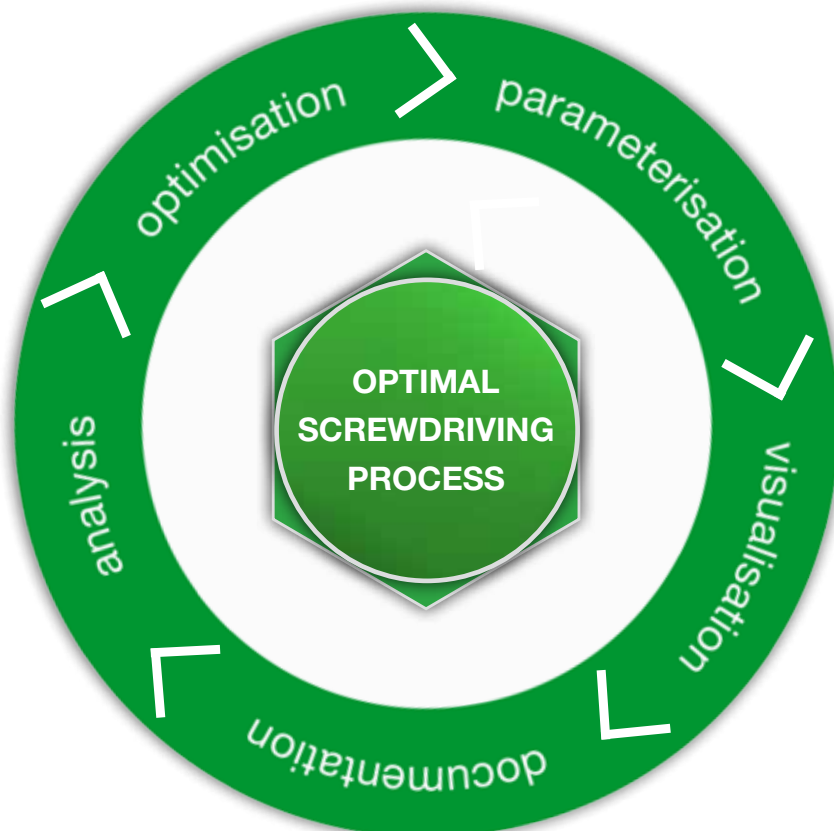
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# DEPRAG Cockpit Software for the Networked Factory!

## Advantages

- **Central platform for screwdriving and assembly technology**
- **Reliable processing data acquisition**
- **Detailed capacity and usage statistics**
- **Process monitoring and notifications**
- **Analysis and recognition of trends from system messages**



# DEPRAG Cockpit

## the Digital Platform for Screwdriving Technology

Software to reduce costs and save time through the ...



of your process.

### Parameterisation

- Central platform
  - One software for a wide range of hardware
  - Web-based solution → worldwide availability
  - Device specific documentation: Central management of documents, e.g. operating manuals, factory certificates, machine capability study certificates,...
  - Automatic reminder function, e.g. for alignment or maintenance → Minimising downtime, increasing processing reliability, increasing system availability, raising productivity levels, planning convenient maintenance schedules

### Visualisation

- Top processing reliability (OK/NOT OK feedback)
- Fast error analysis
- Minimal training requirements
- Error avoidance
- Quality assurance

### Documentation

- Automatic processing data acquisition → eliminates time-consuming manual data collection
- Minimises complaints and product recalls
- Prepares all processing data for analysis as Big Data → eliminates manual marrying of different data sets

### Analysis

- User-oriented, individualised and clear display of processing data
- Development of expertise
- Quick detection of NOT OK processes
- Analysis of trends

### Optimisation

- Detection of optimisation potentials, such as cycle time, capacity, standstill, improved quality of the process

## DEPRAG Cockpit – Summary

- **Continuous processing optimisation**
- **Maximum availability due to analysis of trends and detection of anomalies**
- **Entire process and device documentation in one place – available worldwide**
- **Ultimate cost savings due to recognition of potentials and early detection of possible problems**
- **Intelligent software: 80 % data saving**
- **Responsive design**
- **Integration of multi-brand products**



## DEPRAG Cockpit

As part of the screwdriving system DEPRAG Plus you also receive DEPRAG Cockpit Basic **your central user interface** in respons

### - for parameterisation

- administration of global settings
- creation and organisation of screwdriving programs
- activation of additional features under DEPRAG Apps
- creation of back-ups and logic functions

### - for visualisation

- processing data acquisition for single user

### - for documentation

- automatic processing data acquisition of end values and screwdriving curves



## Organizer

Organize screwdriving programs > create program groups:

- Simple structuring of screwdriving programs according to component version or product
- Fast change of screwdriving programs for different product versions > saves assembly time
- Easy retrieval of screwdriving programs relating to a specific product

## Back-up function

Convenient back-up of system settings, screwdriving parameters, screwdriving results and screwdriving curves

**We now have the software packages Professional and Advanced available** to augment the software package Cockpit Basic.

The software is available as a download. To activate this software, proceed as described on page 35.



visualisation



documentation



optimisation

## The software packages and their features

Basic 1 license	Advanced 5, 10, 20, 50 licenses	Professional 5, 10, 20, 50 licenses
<b>PARAMETERISATION</b> <ul style="list-style-type: none"> <li>• Web-based parameterisation interface in responsive design</li> <li>• Management of global settings</li> <li>• Creation and organisation of screwdriving programs</li> <li>• Activation of screwdriving strategies and Industry 4.0 interfaces</li> <li>• Creation of backups</li> </ul>	<b>PARAMETERISATION</b> <ul style="list-style-type: none"> <li>• Basic features</li> <li>• Preventive maintenance: reminder function for realignment / maintenance or other tasks relating to your screwdriving tools</li> <li>• Central management of documents, e.g. machine capability certificates, factory certificates, repair reports, operating manuals</li> </ul>	<b>PARAMETERISATION</b> <ul style="list-style-type: none"> <li>• Basic features</li> <li>• Central creation and parameterisation of screwdriving programs for all devices logged in</li> </ul>
<b>VISUALISATION</b> <ul style="list-style-type: none"> <li>• Intuitive processing data display</li> </ul>	<b>VISUALISATION</b> <ul style="list-style-type: none"> <li>• Basic features</li> <li>• System overview: Structured overview of all screwdriving tools – digital twin</li> <li>• System monitoring: automatic notification if anomalies occur with your screwdriving tools</li> </ul>	<b>VISUALISATION</b> <ul style="list-style-type: none"> <li>• Basic &amp; Advanced features</li> <li>• Process supervision and recognition of trends: automatic messaging function if anomalies occur in your process</li> </ul>
<b>DOCUMENTATION</b> <ul style="list-style-type: none"> <li>• Process data acquisition: automatic process data acquisition of final values and screwdriving curves</li> </ul>	<b>DOCUMENTATION</b> <ul style="list-style-type: none"> <li>• Basic features</li> <li>• Automatic process data acquisition =&gt; no need for complex manual data collection</li> <li>• Preparation of all process data (final values + screwdriving curves) for additional analysis tools</li> </ul>	<b>DOCUMENTATION</b> <ul style="list-style-type: none"> <li>• Basic &amp; Advanced features</li> </ul>
<b>ANALYSIS</b> <ul style="list-style-type: none"> <li>-</li> </ul>	<b>ANALYSIS</b> <ul style="list-style-type: none"> <li>-</li> </ul>	<b>ANALYSIS</b> <ul style="list-style-type: none"> <li>• User-oriented, individualised and clear display of process data =&gt; recognition of optimisation potentials such as cycle time, capacity, downtime, processing quality</li> <li>• Fast development of expertise</li> <li>• Fast detection of NOT OK processes</li> <li>• Execution of machine capability studies (MFU)</li> <li>• Analysis of shift models</li> <li>• Creation of digital quality control charts</li> </ul>
<b>OPTIMISATION</b> <ul style="list-style-type: none"> <li>-</li> </ul>	<b>OPTIMISATION</b> <ul style="list-style-type: none"> <li>-</li> </ul>	<b>OPTIMISATION</b> <ul style="list-style-type: none"> <li>• Predictive maintenance: The software determines the status of your screwdriving tools using various parameters and gives an early warning of potential breakdowns</li> </ul>

## Part numbers

DEPRAG Cockpit   Activation key	Part no.	Number of licenses	Comment
DEPRAG Cockpit Basic	145806	1	included in delivery of the screwdriving system DEPRAG Plus and pre-installed on the AST12
DEPRAG Cockpit Advanced1	145795	1	
DEPRAG Cockpit Advanced5	145796	5	
DEPRAG Cockpit Advanced10	145797	10	
DEPRAG Cockpit Advanced20	145798	20	
DEPRAG Cockpit Advanced50	145799	50	
DEPRAG Cockpit Professional1	145440	1	
DEPRAG Cockpit Professional5	142967	5	
DEPRAG Cockpit Professional10	142968	10	
DEPRAG Cockpit Professional20	142978	20	
DEPRAG Cockpit Professional50	142979	50	





# Software Solutions for Screwdriving System DEPRAG Plus with sequence controller AST12 as well as for the Sequence Controllers AST5/AST6/AST11/AST40

## Possible combinations with AST controllers

Which software is suitable for the screwdriving system?

Hardware including software	Part no.	AST5	AST5-S	AST(i)6	AST11	AST(i)40
Interface Graph Loader	385834A	✓	✓	✓	✓	✓
Interface Graph Loader activation key	118742	✓	✓	✓	✓	✓
Module WEB-IO 12E/12A	383978A	✓	✗	✗	✗	✗
WEB-IO 12E/12A activation key *)	116995	✓	✗	✗	✗	✗

\*) no PC is required for this software

Software	Part no.	AST5	AST5-S	AST(i)6	AST11	AST(i)40	AST12
Datalogger activation key	202699	✓	✓	✓	✓	✓	✗
Statistics activation key	206081	✓	✓	✓	✓	✓	✗
ASTxx Serial Remote activation key	206565	✓	✓	✓	✓	✓	✗
ASTxx TimeSync	122728	✓	✓	✓	✓	✓	✗
AST-CSV-Import	122724	✓	✓	✓	✓	✓	✗
DEPRAG Clamp Force Control activation key		✗	✗	✗	✗	109108	142961
DEPRAG Friction Value Process activation key		201820	201820	201820	201820	201820	142959
DEPRAG Graph Viewer activation key	128901	✓	✓	✓	✓	✓	✓
DEPRAG Data eXchange activation key	132680	✓	✓	✓	✓	✓	✓
TIA Link activation key	135839	✗	✗	✓	✓	✓	✓
TwinCAT Link activation key	140996	✗	✗	✓	✓	✓	✓
DEPRAG Operator Guidance activation key	146536	✓	✓	✗	✓	✗	✓
Visualisation of the process activation key	144248	✗	✗	✗	✗	✗	✓
Safety & Change tracking activation key	144251	✗	✗	✗	✗	✗	✓

## Interface Graph Loader

the hardware with installed software for EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers AST5, AST6, AST11 and AST40

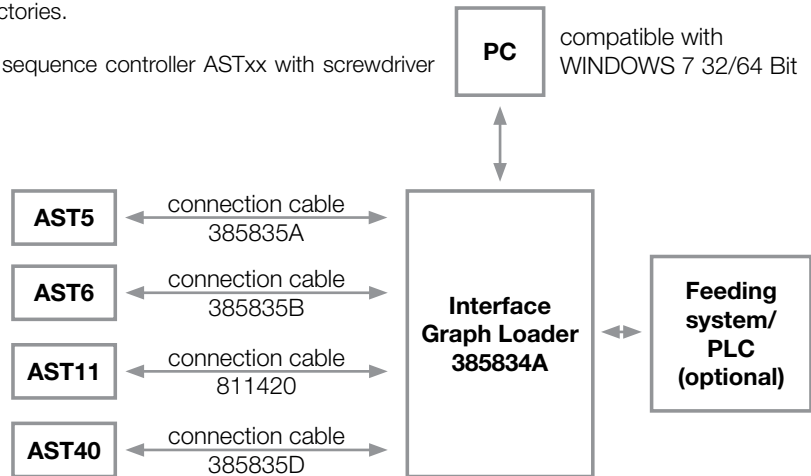
The Interface Graph Loader is an optional accessory for the automatic transfer of screwdriving curves and final value data sets from DEPRAG screwdriving controllers. The Interface can be used with EC and EC servo screwdriving systems in combination with screwdriving controllers AST5, AST6, AST11 and AST40.

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.

The device requires a suitable adapter cable, a sequence controller ASTxx with screwdriver and a PC to save the data.

The software requires a free activation (118742).  
A description of the procedure can be found on page 39.



▶ Part no. 385834A

▶ Activation key 118742

## Datalogger

the software for EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers AST5, AST6, AST11 und AST40

The software datalogger can be used to record and archive the final-values of up to 10 sequence controllers. This storage format corresponds with the required format of the software statistics, so that the data sets can be analyzed with the software statistics. Select whether the data is collected automatically while the program is running, or whether the data reading should be triggered manually. The connection to the controllers is done by Ethernet and TCP/IP. The software is available in the following languages:

German, English, French, Italian, Spanish

To activate this pre-installed software, proceed as described on page 35.

▶ Activation key 202699

## Statistics

the software for EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers AST5, AST6, AST11 and AST40

The software statistics can be used to produce statistical evaluations of the screwdriving results, that are made available by the software datalogger.

When using the software statistics, we also recommend the installation of the software datalogger.

To activate this pre-installed software, proceed as described on page 35.

▶ Activation key 206081

## ASTxx Serial Remote

the software for EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers AST5, AST6, AST11 and AST40

The program ASTxx Serial Remote is started on a PC and is controlled by commands over a serial interface (COM-Port). With this program, screwdriving curves and result-data can be transferred quickly and simply onto a PC. The PLC controls when and which data should be stored. The storage location (also the directory) on the PC is determined by the PLC as well. The directory is setup automatically on the PC.

To activate this pre-installed software, proceed as described on page 35.

▶ Activation key 206565

## ASTxx TimeSync

the software for EC- and EC-Servo screwdriving systems

in combination with the sequence controllers AST5, AST6, AST11 and AST40

ASTxx TimeSync is a PC software designed for simple synchronisation of date and time between a PC and any number of sequence controllers.

If end values from a sequence controller and data from a PC need to be linked with one another for further evaluation, then the date and time must match exactly in order for correct assign-

ment of the data to take place. The program ASTxx TimeSync is responsible for time synchronisation.

ASTxx TimeSync can run as a batch program on a server or a PC in the network and can be accessed for any number of sequence controllers. The software runs in the background, establishes the date and time of the PC on which it is running and transmits these values to the specified sequence controller. The sequence controller type and IP address must be specified in order to access the program. The use of this software is free of charge.

▶ Part no. 122728

## AST-CSV-Import

the software for EC- and EC-Servo screwdriving systems

in combination with the sequence controllers AST5, AST6, AST11 and AST40

Free add-on: Add-In for Microsoft Excel for easy import of end-value csv files into Excel (download via website of the controller).

▶ Part no. 122724

## DEPRAG Clamp Force Control

the software for screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems

in combination with the sequence controller AST12/AST40

This patented, reliable and adaptive screwdriving procedure provides excellent constancy in the pre-load force even with fluctuating torque. The complete screw assembly consists of the screwdriving template seating point detection and a screw assembly to difference torque or angle.

▶ Activation key  
109108 / 142961

The main element is the seating point detection. On the basis of a torque procedure a mathematical evaluation function is continuously formed. If the trend line reached exceeds a specifically defined limit value, the seating point is considered detected and the torque and angle values at the time of the seating point are saved. The evaluation procedure combines two essential advantages. It is robust in relation to coincidental fluctuations and increases during the torque procedure which do not arise from the actual seating point. Furthermore, the algorithm is universally valid so the user does not need to set any parameters specific to the evaluation. The parameters listed in the following table must be set. Torque upper limit is the abort criterion for the screwdriving step. The OK window for the seating point detection can optionally be monitored by seating point torque lower/upper limit and angle lower/upper level. Either the torque or angle values at the seating point or at the end of the program step can be stored as the end values.

The end values of the screwdriving template seating point detection portray the reference for the follow-on program step. Instead of screw assembly to difference torque the other option is screw assembly to angle.

Tab.: Parameters for screwdriving template seating point detection

Parameter	Function
Monitoring time	Monitoring time for screwdriving step
Speed	Speed for screwdriving step
Seating point torque lower/upper limit	Monitoring criterion for seating point detection
Torque upper limit	Abort criterion for screwdriving step
Angle lower limit	Monitoring criterion in relation to seating point, min. 720°
Angle upper limit	Monitoring criterion in relation to seating point
End value generation	Values for seating point / end program step, basis for sequential step

The new adaptive screwdriving procedure DEPRAG Clamp Force Control ensures uniform output for the follow-on end tightening due to the reliable detection of the seating point. Consequently, there is a better constancy in the pre-load force. Typical application examples are direct screw assemblies in plastic or metal.

The procedure DEPRAG Clamp Force Control does not replace the friction value measurement or the friction dependent screw assembly. The screwdriving template friction value measurement can be used if compliance with the pre-set frictional value needs to be monitored. The friction dependent torque assembly also enables a good constancy of the pre-load force for constant frictional torque procedures where the screw position varies. A screw joint analysis is recommended to determine the most suitable screwdriving procedure. To activate this pre-installed software, proceed as described on page 35.

## DEPRAG Friction Value Process

the software for screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers AST5, AST6, AST11/AST12 and AST40

With the friction-value process, it is possible to measure and compensate varying friction-values (e.g. on self-forming screw-joints). Additionally, this procedure can be used for monitoring of pre-determined friction values at verification processes.

To activate this pre-installed software, proceed as described on page 35.

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▶ Activation key  
201820 / 142959

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## Module WEB-IO 12E/12A

the hardware with installed software for EC- and EC-Servo screwdriving systems in combination with the sequence controller AST5

Input/output extension for AST5. To activate this pre-installed software, proceed as described on page 35.

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▶ Part no. 383978A

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▶ Activation key 116995

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## DEPRAG Graph Viewer for evaluation of screwdriving curves

the software for screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers ASTxx and ADAPTIVE DFS

During each screw assembly when using a sequence controller AST, the relevant measurement values are recorded in a file. There is now the DEPRAG Graph Viewer, to simply and easily evaluate and analyse these measurement values. The Graph Viewer opens the curve files of each sequence controller and can display the following visualisations:

- Visualisation of measurement values over time

In this visualisation, various measurement sizes can be shown in relation to the screwdriving procedure. All available measurement values can be displayed in chronological order.

- Visualisation of measurement values over angle

In this visualisation, the angle can be analysed in relation to the screwdriving procedure. The y-axis can be freely chosen by the user. This can e.g. enable analysis of angle in relation to torque or angle in relation to motor current, etc. In order to precisely analyse the screw assembly, a video can be played in visualisation over angle. Use the "start" and "pause" buttons in the same way as a video player to visualise the curve sequence of the screwdriving process. Individual sequences can be selected and displayed using the time bar.

- Superposition of measurement values over time / over angle

As well as visualisation over angle and visualisation over time, there is also an option to display several curves at the same time in order to draw correlations and recognise trends. Any number of curves can be added. It is also possible to align curves to specific synchronisation points and hide or show screwdriving steps.

As well as the screwdriving curves, the processing and parameter data is also accessible. The complete process can be analysed and evaluated using a single piece of software. The process data can be printed as documentation.

The software is available as a download. To activate this software, proceed as described on page 35.

The software is also available as free trial software in demo mode.

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▶ Activation key 128901

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## DEPRAG Data eXchange

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers ASTxx and ADAPTIVE DFS

AST sequence controllers, the adaptive screwdriving system ADAPTIVE DFS and the ComCenter document relevant processing data for every screw assembly, which is then saved in an internal format. The so-called "graphic files" contain all screw curves, end values and details relating to the screwdriving process and are only readable by DEPRAG's own software solutions. In order to use and analyse this data in other systems, it is necessary to convert the internal format into an external format.

The Software Data eXchange extracts all parameters relevant to processing, such as torque and angle values. Amongst other things, this includes the screwdriving program used, the serial number of the devices used, processing status and global settings. The new software solution allows the export of DEPRAG graphic files either as CSV or Excel files. This data can then be used in conjunction with other software solutions.

Optional areas of application include:

- integration in a databank
- analysis in Matlab
- SAP integration
- filing in customer-specific processing software

Compatibility: all Windows systems (7, 8, 10) without any need for configuration. The software configures itself and is ready to run with just one click. The software is available as a download. To activate this software, proceed as described on page 35.

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▶ Activation key 132680

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## TIA Link

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers AST11, AST12, AST40, AST6 including the i-versions, for the ComCenter 10 and for the position control stand

Integration in the Siemens programming environment (Totally Integrated Automation (TIA) Portal) is required to operate DEPRAG devices with the current SIMATIC controllers. This integration is quite time-consuming and requires expert domain knowledge of the DEPRAG devices. Therefore, the software TIA link has been created to enable simple integration of the following DEPRAG products: AST11, AST12, AST40 incl. i-versions, AST 6 incl. i-versions, ComCenter 10, position control stand. The software not only includes integration in the TIA portal for the above products but also several Quick-Start projects in the "structured text" programming language without first setting up communication using the user manual. The Software TIA Link presents a significant time saving due to considerably reduced programming efforts. As well as the fieldbus connection, there are additional examples provided for controlling the screwdriving system. The following SIMATIC controllers are supported: SIMATIC S7-1200, SIMATIC S7-1500 and SIMATIC ET 200SP (CPU). The software is available as a download. To activate this software, proceed as described on page 35.

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▶ Activation key 135839

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## TwinCAT Link

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers AST11, AST12, AST40, AST6 including the i-versions, for the ComCenter 10 and for the position control stand

Integration in the Beckhoff programming environment is required to operate DEPRAG devices with the current Beckhoff controllers. The software TwinCAT Link has been created to enable simple integration of the following DEPRAG products: AST11, AST12, AST40 incl. i-versions, AST 6 incl. i-versions, ComCenter 10, position control stand. The software not only includes integration for the above products but also several Quick-Start projects in the "structured text" programming language which enable immediate execution of screw assemblies without first setting up communication using the user manual. The Quick-Start projects are available for version TwinCAT 2 as well as version TwinCAT 3. The software TwinCAT Link presents a significant time saving due to considerably reduced programming efforts. As well as the fieldbus connection, there are additional examples provided for controlling the screwdriving system. The following Beckhoff software systems are supported: TwinCAT 2 and TwinCAT 3. The software is available as a download. To activate this software, proceed as described on page 35.

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▶ Activation key 140996

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## DEPRAG Operator Guidance

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers AST5, AST5-S, AST11 und AST12 and for the ComCenter ED

The software allows for the creation of as many digital assembly instructions as required without the need for knowledge of a high-level language. The App guides the operator step by step through the assembly process. New employees can therefore be trained up quickly and efficiently. Productivity and processing quality increase as unnecessary assembly errors are avoided. Time and cost savings are attained due to the automatic documentation of processing data. Positioning data, screwdriving results and the component's serial number are matched together and automatically stored on the selected drive. There is also the option for automatic saving of screwdriving curves. In user management you can determine which parameters can be created or altered and by whom. System requirements:  
Operating system: From Windows 7 (64 Bit)  
The software is available as a download. To activate this software, proceed as described on page 35.  
The software is also available as free trial software in demo mode.

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▶ Activation key 146536

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## Visualisation of the Process

the software for the screwdriving system DEPRAG Plus in combination with the sequence controller AST12

The user receives detailed feedback relating to the screwdriving process. There is a visualisation of relevant parameters, such as end values and error messages for each phase of the screwdriving process. The AST12 sequence controller screen can be projected onto another device, e.g. tablet, touch screen, PC screen or the AST12 display can be integrated into your HMI project. The remote function even enables external operation of your screwdriving system. The software is available as a download. To activate this software, proceed as described on page 35.

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▶ Activation key 144248

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## Safety & Change Tracking

the software for the screwdriving system DEPRAG Plus in combination with the sequence controller AST12



**Processing reliability and traceability** – Protect your process! With this software can you track any changes made. Unauthorised alterations to the processing parameters can be traced quickly. The software is available as a download. To activate this software, proceed as described on page 35.

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▶ Activation key 144251

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# Software Solutions for MINIMAT-EC Cordless Screwdriver

## Possible combinations with MINIMAT-EC cordless screwdriver

Which software is suitable for the screwdriving system?

Hardware including software	Part no.	Base station ComCenter10
Programming kit ComCenter PC	385597A	✓

Software	Part no.	Base station ComCenter10
Datalogger activation key	202699	✓
Statistics activation key	206081	✓
ASTxx TimeSync	122728	✓
AST-CSV-Import	122724	✓
DEPRAG Graph Viewer activation key	128901	✓
DEPRAG Data eXchange activation key	132680	✓
TIA Link activation key	135839	✓
TwinCAT Link activation key	140996	✓

**Base station ComCenter 10** the hardware with integrated software  
**Programming kit ComCenter PC** the software  
 for MINIMAT-EC Cordless Screwdriver, wireless and battery operated EC Screwdriver

Bluetooth can be used to connect the screwdriver to the optional base station ComCenter 10. The convenient operator interface offers a comprehensive range of functions and using a standard integrated web server screw processes can be generated and adjusted quickly and simply.

The process integration for exchange of screw specifications and results data for documentation and archiving is also possible. The base station can be used to control four tools.

This creates the best framework for successful quality management and documentation. The base station ComCenter 10 provides temporary storage and easy access all daily results data over a whole week. The software datalogger can be used to transfer the measurement data of several base stations (up to 10 devices) automatically via Ethernet onto a PC. Data evaluation can be carried out using the software statistics.

Up to eight multi-stage screw processes, each with appropriate loosening program, can be adjusted and transferred to the screwdriver using the base station ComCenter 10 or alternatively the programming kit of the ComCenter PC.

The keypad on the screwdriver itself is used to select screwdriving programs. At just the press of a button additional loosening programs can be selected at any time for any screwdriving program.

The programming kit ComCenter PC is a PC software used to adjust parameters on the EC cordless screwdrivers independently from the base station ComCenter 10. The licence key for the software is saved on the Bluetooth adaptor and a release code is also provided. The settings on as many EC cordless screwdrivers as required can be managed using the ComCenter PC software, just select the screwdriver required when starting the software.

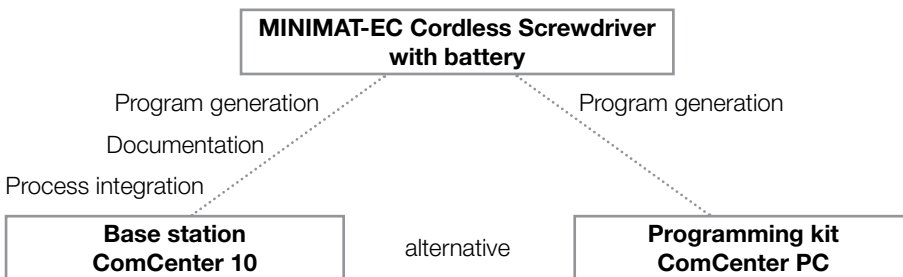
Range of functions:

Screwdriving programs can be generated and adjusted using the ComCenter PC software. Graphs can be displayed and transferred using the software module Graph Viewer. This is included and automatically installed with the ComCenter PC software.

All settings for the EC cordless screwdrivers can also be managed via the menus on the web interface of the base station ComCenter 10. There are 12 languages available for the ComCenter PC software and for the user interface of the base station ComCenter 10.

▶ Part no. 385582A

▶ Part no. 385597A



**Datalogger**  
 the software for EC- and EC-Servo screwdriving systems  
 in combination with the sequence controllers AST5, AST6, AST11 and AST40

See page 10 for details.

▶ Activation key 202699



## Statistics

the software for EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers AST5, AST6, AST11 and AST40

See page 10 for details.

---

▶ Activation key 206081

---

## ASTxx TimeSync

the software for EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers AST5, AST6, AST11 and AST40

See page 11 for details.

---

▶ Part no. 122728

---

## AST-CSV-Import

the software for EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers AST5, AST6, AST11 and AST40

See page 11 for details.

---

▶ Part no. 122724

---

## DEPRAG Graph Viewer for evaluation of screwdriving curves

the software for screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers ASTxx and ADAPTIVE DFS

See page 12 for details.

---

▶ Activation key 128901

---

## DEPRAG Data eXchange

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers ASTxx and ADAPTIVE DFS

See page 12 for details.

---

▶ Activation key 132680

---

## TIA Link

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers AST11, AST12, AST40, AST6 including the i-versions, for the ComCenter 10  
and for the position control stand

See page 13 for details.

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▶ Activation key 135839

---

## TwinCAT Link

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems  
in combination with the sequence controllers AST11, AST12, AST40, AST6 including the i-versions, for the ComCenter 10  
and for the position control stand

See page 13 for details.

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▶ Activation key 140996

---

# Software Solutions for MINIMAT-ED Digital Electric Screwdriver, handheld



## Possible combinations with MINIMAT-ED, the digital electric screwdriver

Which software is suitable for the screwdriving system?

Software	Part no.	MINIMAT-ED
ComCenter ED with software OS BASIC	103196A	✓
Upgrade to software OS ADVANCED activation key	160491	✓
ComCenter ED with software OS ADVANCED	103196B	✓
DEPRAG Friction Value Process activation key	201820	✓

### ComCenter ED with software OS BASIC

the hardware with integrated software for the handheld, digital electric screwdriver MINIMAT-ED

There are five screwdriving programs (PG1 to PG5) available on the screwdriver for implementing individual screwdriving procedures; the process consists of a search run, torque, and angle screw assembly. There are also five loosening programs available (PG6 to PG10). Enhanced functionality is always available by activating software OS ADVANCED (part no. 160491).

► Part no. 103196A

### ComCenter ED with software OS ADVANCED

the hardware with integrated software for the handheld, digital electric screwdriver MINIMAT-ED

With the software OS ADVANCED the range of functions of the BASIC software and additional an extended range of functions is available:

- 16 different screwdriving programs can be stored
- Screwdriving programs can be freely compiled using the following screwdriving templates and commands:
  - assembly to torque
  - extended assembly to torque
  - assembly to angle / loosening to angle
  - DEPRAG friction value process (optional, the part no. is 201820, see page 12 for details)
  - search run / save values / waiting time
- Statistics
- Speed reduction setting
- Extended end values

► Part no. 103196B

# Software Solutions for MINIMAT-ED Digital Electric Screwdriver, stationary



## Possible combinations with MINIMAT-ED, the digital electric screwdriver

Which software is suitable for the screwdriving system?

Software	Part no.	MINIMAT-ED
Interface 330E with software 330 OS BASIC	106744B	✓
Upgrade to software 330 OSADVANCED activation key	117244	✓
Interface 330E with software 330 OS ADVANCED	106744C	✓
DEPRAG Friction Value Process activation key	201820	✓

### Interface 330E with software 330 OS BASIC

the hardware with integrated software for the stationary, digital electric screwdriver MINIMAT-ED

There are five screwdriving programs (PG1 to PG5) available on the screwdriver for implementing individual screwdriving procedures; the process consists of a search run, torque, and angle screw assembly. There are also five loosening programs available (PG6 to PG10). Enhanced functionality is always available by activating software 330 OS ADVANCED.

▶ Part no. 106744B

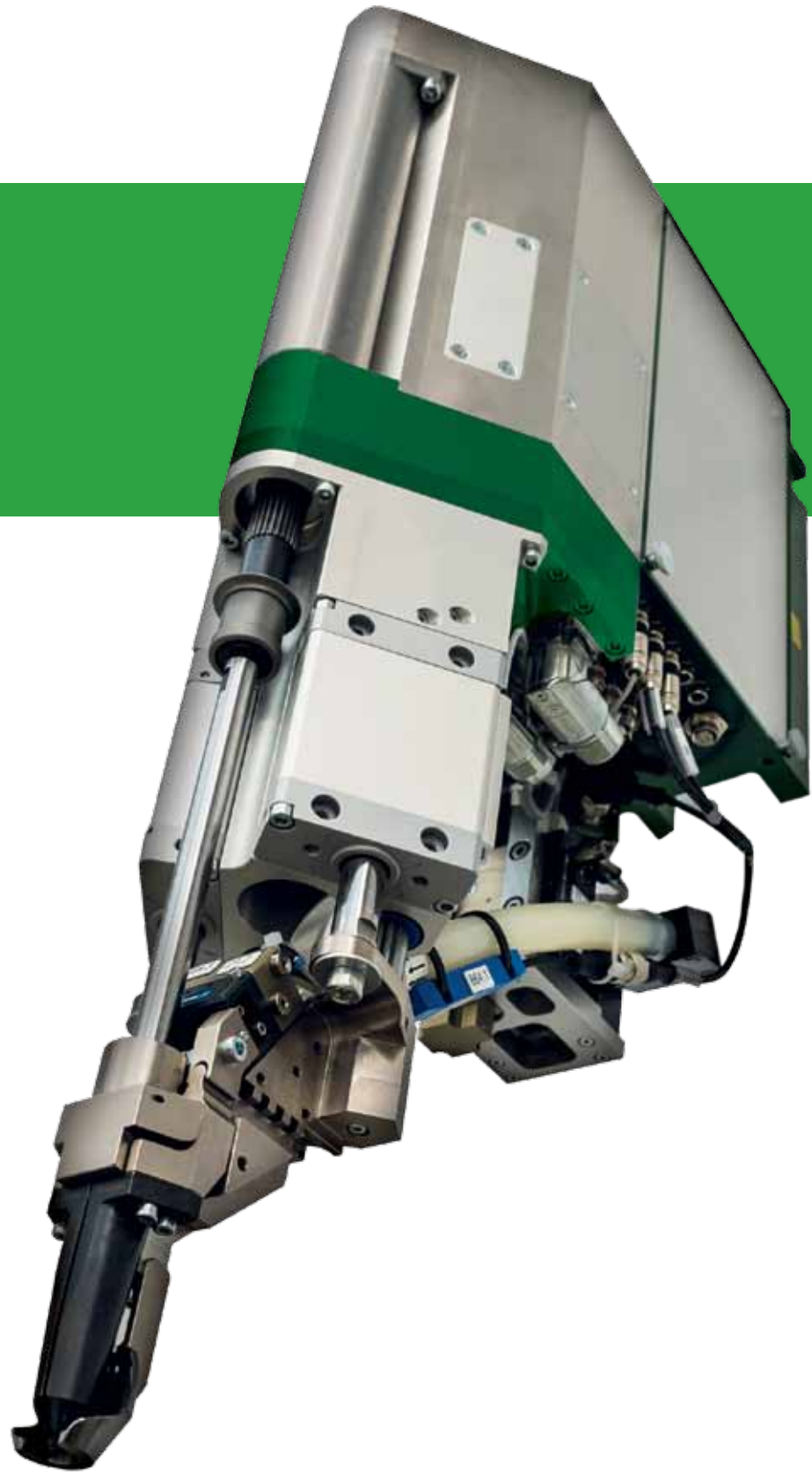
### Interface 330E with software 330 OS ADVANCED

the hardware with integrated software for the stationary, digital electric screwdriver MINIMAT-ED

With the software 330 OS ADVANCED the range of functions of the BASIC software and additional an extended range of functions is available:

- 15 different screwdriving programs can be stored
- Screwdriving programs can be freely compiled using the following screwdriving templates and commands:
  - assembly to torque
  - extended assembly to torque
  - assembly to angle / loosening to angle
  - DEPRAG friction value process (optional, the part no. is 201820, see page 12 for details)
  - search run / save values / waiting time
- Statistics
- Speed reduction setting
- Extended end values

▶ Part no. 106744C



# Software Solutions for ADAPTIVE DFS DEPRAG FASTENING SYSTEM

## Possible combinations with ADAPTIVE DFS, the DEPRAG FASTENING SYSTEM

Which software is suitable for the screwdriving system?

Software	Part no.	ADAPTIVE DFS
DEPRAG Graph Viewer activation key	128901	✓
ADFS Threaded Fastener activation key	111914	✓
ADFS Push Fastener activation key	111915	✓
ADFS Push Plus Fastener activation key	1119151	✓
ADFS Calibration activation key	135894	✓
DEPRAG Data eXchange activation key	132680	✓
ADFS OPC UA activation key	131142	✓
ADAPTIVE DFS Two Step Penetration activation key	138918	✓

## DEPRAG Graph Viewer for evaluation of screwdriving curves

the software for screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers ASTxx and ADAPTIVE DFS

See page 12 for details.

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▶ Activation key 128901

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## ADFS Threaded Fastener

the software for ADAPTIVE DFS

Process software for flow forming screws.

To activate this pre-installed software, proceed as described on page 35.

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▶ Activation key 111914

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## ADFS Push Fastener

the software for ADAPTIVE DFS

Process software for flow push elements.

To activate this pre-installed software, proceed as described on page 35.

---

▶ Activation key 111915

---

## ADFS Push Plus Fastener

the software for ADAPTIVE DFS

Process software for the processing of FlowPush elements without entering a shut-off torque. The shut-off is based on the parameterised torque target range. The parameterisation can be used to adjust whether the screwdriving process should be optimised to short cycle times or high shut-off accuracy.

To activate this pre-installed software, proceed as described on page 35.

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▶ Activation key  
1119151

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## ADFS Calibration

the software for ADAPTIVE DFS

Software for automatic execution of necessary calibration or adjustment procedures.

The advantages of using this software:

- significant cost and time savings
- effective avoidance of errors when transferring data
- intuitive user handling
- automatic generation of calibration certificate

To activate this pre-installed software, proceed as described on page 35.

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▶ Activation key 135894

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## DEPRAG Data eXchange

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers ASTxx and ADAPTIVE DFS

See page 12 for details.

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▶ Activation key 132680

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## ADFS OPC UA

the software for ADAPTIVE DFS

OPC UA is a collection of standards for communication and data exchange within the field of industrial automation. The OPC UA is used to depict the transport of machine-to-machine data as well as interfaces and data.

The ADAPTIVE DFS OPC UA software enables retrieval of final values, statuses and system information. The OPC UA software provides the basis for the realisation of Industry 4.0 relevant content and is a unique selling point of the ADAPTIVE DFS.

To activate this pre-installed software, proceed as described on page 35.

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▶ Activation key 131142

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## ADAPTIVE DFS Two Step Penetration

the software for ADAPTIVE DFS

This innovative screwdriving procedure provides the user with even more flexibility when it comes to parameterisation of the ADAPTIVE DFS.

After activation, the relevant parameters are displayed in the processing step "Penetration". This enables independent adjustment of the drive speed and/or feed rate.

The start and end of the ramp for the speed and/or feed rate is configured over two set positions. Due to the unique drive concept of the ADAPTIVE DFS, the precise time that the position will be reached can be calculated in advance. Thus, ensuring that the essential parameters relating to speed and feed rate have been applied.

The new screwdriving procedure can be used in conjunction with:

- Die-cast aluminium, to optimise flow in combination with the shortest possible cycle time
- High tensile steel, to optimise the energy transfer of fasteners in the material

To activate this pre-installed software, proceed as described on page 35.

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▶ Activation key 138918

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# Software Solutions for Position Control Stand PKS

## WEB-VISU-POSI

the software for the position control stand

Enables additional control and parameterisation of the PKS via an intuitive web interface. The position control stand can be directly integrated into the existing system environment.

To activate this pre-installed software, proceed as described on page 35.

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▶ Activation key 101890

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## TIA Link

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers AST11, AST12, AST40, AST6 including the i-versions, for the ComCenter 10 and for the position control stand

See page 13 for details.

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▶ Activation key 135839

---

## TwinCAT Link

the software for the screwdriving system DEPRAG Plus as well as EC- and EC-Servo screwdriving systems in combination with the sequence controllers AST11, AST12, AST40, AST6 including the i-versions, for the ComCenter 10 and for the position control stand

See page 13 for details.

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▶ Activation key 140996

---



Feeding systems eacy feed guarantee optimal assembly conditions with ergonomic and comfortable operation.

**The controller PFC100 enables customised settings without mechanical alterations.**

- clear and easy operation via controller
- option of frequency and amplitude regulation via controller
- works to the individual working rhythm of the operator, with storage of up to 10 separate data sets

# Software Solutions for DEPRAG Feeding Technology

## PFC100 Manager

the parameterization software for PFC100 controllers

### Read, save and transfer parameters

The PFC100 Manager facilitates the reading and saving of parameters as text files for every PFC100 controller. Saved parameters can be transferred to any PFC100 controller quickly and simply using the PFC100 Manager.

The software is supplied on CD. The connection cable 385520B required to connect PC and PFC100 controller is supplied.

Available languages: German and English

Part no. 121759  
(including connection  
cable 385520B)

Activation key 122000





# Software Solutions for DEPRAG Automation

## Software packages for DCOS processing and system controllers

Intelligent software packages									
DFUN		DVIP		DPRO		DAST		DSPEC	DCON
	Part no.		Part no.		Part no.		Part no.		
DFUN10	815454			DPRO10	815632			Part no. based upon order.	Part no. 136244
DFUN50	815455	DVIP50	815629	DPRO50	815633				
DFUN100	815456	DVIP100	815630	DPRO100	815634	DAST100	815641		
DFUN200	815457	DVIP200	815631	DPRO200	815635	DAST200	815642		

## Software packages for DCOS processing and system controllers

Intelligent software packages combined with standardised hardware based on an industrial PC allow for individual solutions customised to your application.

Perfectly coordinated interfaces between standard components and intuitive user handling guarantee superior user comfort. Our technical advisors are happy to help with configuration.

Further information can be found in the product catalogues D3390 and D3350.

**DFUN** – DEPRAG **FUN**ction – combines and controls all standard functions on the manual work station.

**DPRO** – DEPRAG **PRO**cess – process control and data processing (BDE, MDE, MES, Industry 4.0).

**DVIP** – DEPRAG **VI**sion and **P**osition – position control and visualisation of assembly tasks.

**DAST** – DEPRAG **A**blauf**ST**euerung – central operation of all EC screwdriver controllers via a DCOS operating panel.

**DSPEC** – DEPRAG customer **SPEC**ification – the software solution customised to your application.

**DCON** – DEPRAG **CON**nect – Simple, fast connection of DEPRAG devices in the Beckhoff TwinCAT programming.

**Supported by your DEPRAG consultant, select the modules most suitable for your purposes from our standard software packages.**

# Software Updates

## for the screwdriving system DEPRAG Plus

UPDATE for		screwdriving system DEPRAG Plus	
One-time	Part no.	142966	
Annual license	Part no.	142965	

## for AST sequence controllers

UPDATE for	controller	AST5	AST5-S	AST6	ASTi6	AST11	AST40	ASTi40
	Part no.	114268	117217	114269	114270	114271	114254	114261

## for AST sequence controllers (no longer in the current sales program)

UPDATE for	controller	AST10	AST30-31
	Part no.	117340	117343

## for EC screwdriver, EC-Servo screwdriver, electric screwdriver

UPDATE for	Screwdriver	MINIMAT-EC cordless screwdriver	NANOMAT-EC, MICROMAT-EC, MINIMAT-EC	MINIMAT-ED digital electric screwdriver	MINIMAT-ED digital electric screwdriver	MINIMAT-E	MINIMAT-EC- Servo
		318Axx-.. handheld	320E-.. stationary	330E36-.. stationary	330EG36-.. handheld	342Ex36-.. stationary	311Exx-.. stationary
	Part no.	117263	117238	117267	117270	117272	117273
Update for handle	Part no.	-	-	-	-	-	137484

## for the ADAPTIVE DFS

UPDATE for	ADAPTIVE DFS
	Part no. 117276

## for part feeder control and position control stand

UPDATE for	SZG Controller 6	PFC100	PFCi100	Position control stand
	Part no. 137482	117288	117290	119657

## for measurement devices

UPDATE for	BME	ME1000DMS	ME1000PE	ME5000	ME5400	ME5500	ME5600	ME6000	ME6000F	ME6100
	Part no. 137354	137355	137500	117294	117295	117253	117296	117297	137362	137361

## for battery, charger and programming kit

UPDATE for	Battery Li-Ion 36V 54Wh	Charger	Programming kit ComCenter PC
	Part no. 117285	117284	117287

## for function control, ComCenter and Interface 330E

UPDATE for	fc10	fc11	fc20	ComCenter ED	ComCenter ED-S	ComCenter 10	ComCenter PC	Interface 330E
	Part no. 137480	117280	117283	117234	117252	117232	117287	117246



# Software Updates

**We recommend updating your software regularly so that you always have the most up-to-date drivers, enhanced features and security updates.**

**Protect your device from any possible threats or security issues by installing the most up-to-date software versions.**

**For optimal use and a full scope of features we recommend installing the most up-to-date version of the controller.**

## Process description for a software update

1. If your controller is connected to the internet, you will receive a message via the controller's website that there is an update available.

Click on this message for more detailed information regarding the update.  
The next step is to place the order for the update.

2. If your controller is not connected to the internet, you can also check the availability of updates here:

<http://software.deprag.com>

3. Of course, you can also contact us directly if you have any questions concerning the availability of updates or about the update itself. The contact details are found below.

### Process:

We will send you the download link for the update along with the invoice. The update can then simply be installed on your controller. This process is very quick, and your controller is ready for operation after just a few minutes.

## Your contact for questions about our software products:

Sales department                      E-Mail: [verkauf@deprag.de](mailto:verkauf@deprag.de)

Export department                    E-Mail: [export@deprag.de](mailto:export@deprag.de)

Service department                  E-Mail: [service@deprag.de](mailto:service@deprag.de)

Further contact details can be found on our website at [www.deprag.com](http://www.deprag.com).

# Part number index

Part no.	Cat-egory	Designation	Description
101890	SFS	Activation key WEB-VISU-POSI	
103196A		ComCenter ED	with Software OS BASIC
103196B		ComCenter ED	with Software OS ADVANCED
106744B	-	Interface 330E with OS BASIC	
106744C	-	Interface 330E with OS ADVANCED	
109108	SFS	DEPRAG Clamp Force Control	Activation key
111914	SFS	Activation key ADFS Threaded Fastener	Process software for flow forming screws
111915	SFS	Activation key ADFS Push Fastener	Process software for flow push elements
1119151	SFS	Activation key ADFS Push Plus Fastener	Process software for flow push elements
114254	SDL	Update	Sequence controller AST40
114261	SDL	Update	Sequence controller ASTi40
114268	SDL	Update	Sequence controller AST5
114269	SDL	Update	Sequence controller AST6
114270	SDL	Update	Sequence controller ASTi6
114271	SDL	Update	Sequence controller AST11
115460	SAT	Connection PFCi-DPU050/100	Driver and visualisation for DPU
115461	SAT	Connection PFCi-DPU200	Driver and visualisation for DPU
116995	SFS	Activation key WEB-IO 12E/12A	Input/output extension for AST5 (the activation key is free of charge)
117217	SDL	Update	Sequence controller AST5-S
117232	SDL	Update	Base station ComCenter 10
117234	SDL	Update	ComCenter ED
117238	SIN	Update	EC Screwdriver 320E-..
117244	SFS	Upgrade	upgrade from software 330 OS BASIC to software 330 OS ADVANCED
117246	SDL	Upgrade	upgrade from software OS BASIC to software OS ADVANCED
117252	SDL	Update	ComCenter ED-S
117253	SDL	Update	Measurement device ME5500
117259	SIN	Update	AST30-31
117263	SIN	Update	MINIMAT-EC Cordless screwdriver, 318Axx-..
117267	SIN	Update	MINIMAT-ED stationary, 330E36-..
117270	SIN	Update	MINIMAT-ED handheld, 330E36-..
117272	SIN	Update	MINIMAT-E stationary, 342Ex36-..
117273	SIN	Update	MINIMAT-EC-Servo stationary, 311Exx-..
117276	SFS	Update	ADAPTIVE DFS
117280	SIN	Update	Function control fc11
117283	SIN	Update	Function control fc20
117284	SIN	Update	Charger 833881 (MINIMAT-EC cordless screwdriver)
117285	SIN	Update	Battery Li-Ion 367V 54Wh 833880 (MINIMAT-EC cordless screwdriver)
117287	SDL	Update	Programming kit ComCenter PC (MINIMAT-EC cordless screwdriver)
117288	SIN	Update	Controller PFC100
117290	SIN	Update	Controller PFCi100
117294	SIN	Update	Measurement device ME5000
117295	SDL	Update	Measurement device ME5400
117296	SIN	Update	Measurement device ME5600
117297	SDL	Update	Measurement device ME6000
117340	SDL	Update	AST10
117343	SDL	Update	AST30-31
118742	SFS	Activation key	for Interface Graph Loader 385834A
119657	SDL	Update	Position control stand
121759	SDT	PFC100 Manager	
122000	SFS	Activation key of 121759	



# Part number index

Part no.	Cat-egory	Designation	Description
122724	SDL	AST-CSV-Import	Free of charge
122728	SDL	ASTxx Time-Sync	Free of charge
125134	SDL	DEPRAG Datalogger	
125135	SFS	ASTxx Serial Remote	Activation key
128901	SFS	Graph Viewer activation key	For sequence controller AST (software requires activation)
131142	SFS	ADFS OPC UA activation key	
132680	SFS	Deprag Data eXchange activation key	Software requires activation
135839	SFS	TIA Link activation key	
135894	SFS	ADFS Calibration	Activation key
136244	SFS	DEPRAG Connect	Activation key
137354	SIN	Update	Measurement device BME
137355	SIN	Update	Measurement device ME1000DMS
137361	SDL	Update	Measurement device ME6100
137362	SDL	Update	Measurement device ME6000F
137480	SIN	Update	Function control fc10
137482	SIN	Update	SZG Controller 6
137484	SIN	Update for handle	311Exx screwdriver
137500	SIN	Update	Measurement device ME1000PE
138918	SFS	ADAPTIVE DFS Two Step Penetration	Activation key
139522	SFS	Update	Graph Viewer
140996	SFS	TwinCAT Link activation key	
142959	SFS	DEPRAG Friction value process	Activation key
142961	SFS	DEPRAG Clamp Force Control	Activation key / for AST12
142965	SFS	Update annual license	AST12
142966	SFS	Update one-time	AST12
142967	SCO	DEPRAG Cockpit Professional5	Activation key
142968	SCO	DEPRAG Cockpit Professional10	Activation key
142978	SCO	DEPRAG Cockpit Professional20	Activation key
142979	SCO	DEPRAG Cockpit Professional50	Activation key
144248	SFS	Visualisation of the Process	Activation key
144251	SFS	Safety & Change tracking	Activation key
145440	SCO	DEPRAG Cockpit Professional1	Activation key
145795	SCO	DEPRAG Cockpit Advanced1	Activation key
145796	SCO	DEPRAG Cockpit Advanced5	Activation key
145797	SCO	DEPRAG Cockpit Advanced10	Activation key
145798	SCO	DEPRAG Cockpit Advanced20	Activation key
145799	SCO	DEPRAG Cockpit Advanced50	Activation key
145806	SCO	DEPRAG Cockpit Basic	Activation key
146536	SFS	DEPRAG Operator Guidance	Activation key
160491	SFS	Upgrade ComCenter ED	Activation key
201820	SFS	DEPRAG Friction value process	Activation key
202699	SFS	Datalogger	Activation key
206081	SFS	Statistics	Activation key
206565	SFS	ASTxx Serial Remote	Activation key
383978A		Module WEB-IO 12E/12A	
385834A		Interface Graph Loader	(Hardware and software)
385582A		Base station ComCenter 10	
385597A		Programming kit ComCenter PC	

# Part number index

Part no.	Cat-egory	Designation	Description
815454	SAT	Software packages DFUN	The basic software package regulates the functions of your system components. The functionality matches the performance capability of the relevant system control.
815455	SAT		
815456	SAT		
815457	SAT		
815629	SAT	Software packages DVIP	The software package for visualisation and positioning. Operator guidance on the positioning control necessitates processing and sequencing visualisation. The functionality matches the performance capability of the relevant system control.
815630	SAT		
815631	SAT		
815632	SAT	Software packages DPRO	This software package supports the process control through BDE, MDE and MES connections. The functionality matches the performance capability of the relevant system control.
815633	SAT		
815634	SAT		
815635	SAT		
815641	SAT	Software packages DAST	The software panel for EC and EC-Servo systems. DAST is used to supervise the operation and visualisation of the screwdriver sequence controller (AST series) through the system control. The functionality matches the performance capability of the relevant system control.
815642	SAT		

## The ordering process for our software products

Category	What do we need from our customer?	What do we deliver?
SDL	Purchase order / PO	Download link (printed on the invoice)
SAT	Purchase order / PO only for in-house projects (special machines): Part no. is captured internally in the customers order	Installed by DEPRAG
SIN	Purchase order / PO, installation only possible at DEPRAG - the hardware must be sent to Amberg	Return of the hardware with installed software
SDT	Purchase order / PO	Delivery on data medium (e.g. CD)
SCO/SFS	<b>Independent of a special machines project:</b> Purchase order / PO and request file	Activation key (via my deprag)
	<b>As part of a special machines project:</b> Purchase order / PO	Activation already done by DEPRAG

# The ordering process for activation key

For activation we require:

- the request key  
found to the right of the corresponding extension  
under System -> Extensions for sequence controller AST5/AST6  
under Setup -> Extensions for sequence controller AST11  
under Extras -> Extensions for sequence controller AST40
- the serial number of the sequence controller (found on the underside)
- your order number for the purchase of the extension
- a contact person with email address and telephone number in case of any queries

Send us these details via email to [export@deprag.de](mailto:export@deprag.de).

The key can either be directly copied and pasted into the email or clicked on to save in a file. In this case, attach the file to the email. In return you will receive a licence file with the corresponding activation key via email.

The activation key can be entered at the bottom of the page and confirmed by clicking on the button "Load key" (see below). Alternatively, the licence file can be loaded. Click on the button "Search..." and select the relevant file. Then, click on "Load licence key" (see below).

Once the activation key has been loaded, the extension is shown to be unlocked and can be used.

**System**   **Screwdriving Sequence**   **Process Data**   **Tools**   **DEPRAG**

### Unlocking

To unlock an extension send the corresponding request key (see below)

- with email to [export@deprag.de](mailto:export@deprag.de),
- per fax to +49 (9621) 371-120, or
- call +49 (9621) 371-0.

In the subject line write:

- "Unlock request for " and the name of the extension

In the mail body please give the following information:

- The request key. If you click on the key, you can download it as a file and attach it to the mail. Else copy it and paste it into the mail.
- The serial number of your controller. You will find it on the bottom of the device.
- The order number for the purchase of your extension.
- If available a contact with email address and phone number for potential callbacks.

You will receive a file with an unlock key from DEPRAG. Load this file with the upper text field or enter it directly into the lower text fields.

When the unlock key has been installed, you can use the extension immediately.

Currently there are no extensions available.

Fasten dependent on friction value  
(Order number 201820)   unlocked   Remove

Datei auswählen   Keine ausgewählt   Load License File

    -   -   -   -   Load License Key

Example: Order of activation key DEPRAG friction value process, part no. 201820 for AST40 sequence controller

# DEPRAG

**DEPRAG SCHULZ GMBH u. CO.**

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