



Software



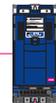
HMI



Control



Drives



Motors

# APPLICATION WOODWORKING

AND HIGHSPEED SPINDLES

EN

**KEB**

**AUTOMATION**

**SYSTEM**

**SOLUTIONS**



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**KEB**



### HIGHLIGHTS

- Reliable long-term quality, tested under the harshest conditions
- More than 30 years of experience in Woodworking machinery
- With SAFETY to the future-oriented wood-processing machine
- System solutions for your application – also for highspeed or special machines

## FOR WOOD PROCESSING MACHINES AND SPECIAL MACHINES

KEB has been developing and manufacturing drive and control systems for woodworking machines for more than 30 years.

The current portfolio includes highly integrated and powerful hardware and software for system solutions from the human-machine interface with integrated remote control down to the drive shaft in the motion axis.

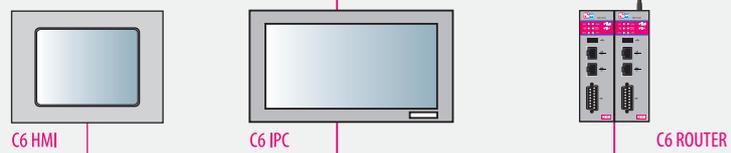
Core applications in woodworking machines are all the tasks of edge and surface machining, drilling and milling technology as well as the complete processing of solid wood.

More than 500,000 systems confirm reliability and functionality every day in the field - a testament to the successful industry work.

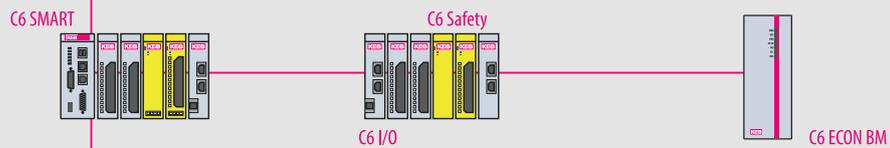
### SOFTWARE



### HMI



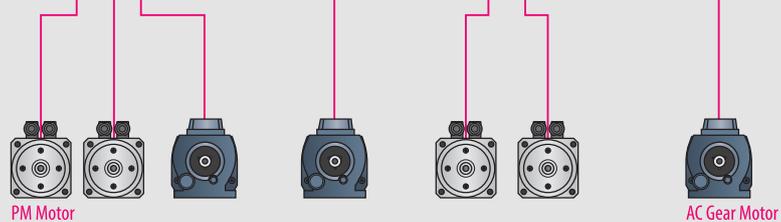
### CONTROL



### DRIVES



### MOTORS



### HIGHSPEED SPINDLES, HIGH TORQUE MOTORS, SYNCHRONOUS RELUCTANCE MACHINES AND SEVERAL MORE...

KEB has established itself in the field of drive technology for special motors and highspeed spindles. The technical know-how of our specialists, the test measurement and the simulation technology, as well as the hardware and software of the DriveController is specially prepared for the operation of special motors.

With the drive controller generations COMBIVERT S6, H6 and F6 KEB sets this competence to a new performance level. Hardware resources and the control cards were improved again and the computing power increased. These measures now allow all operating modes and all different motor model variants in one single software.

The KEB „Generation 6“ is thus becoming a multitalent, which serves all applications via a basic platform. With the exact motor data the behavior of the drive controller and the motor can be calculated in critical working points and implemented using real-time simulation in the HIL system (Hardware In the Loop) verifiable.

In cooperation with the motor manufacturer we can combine drive and engine models, and lead the interplay of the complete function-chain and the design and / or design of the DriveController and the motor from the outset, without complex prototyping, in the direction.



### HIGHLIGHTS

- Extremely precise positioning and speed stiffness up to 128.000 rpm
- Safe field weakening operation and utilization of the reluctance torque in synchronous machines with asymmetrical reactance (e.g., IPM motors)
- Multi-encoder interface and all operating modes in standard



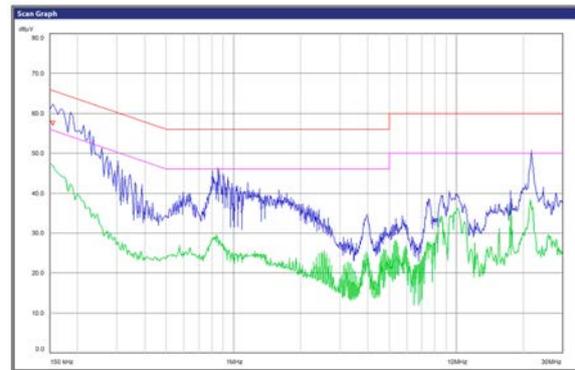
## EVEN 300 mA LEAKAGE CURRENT CAN BE ENOUGH TO IGNITE A DANGEROUS FIRE!

KEB focuses specifically on the regulations and guidelines for reducing the risk of fire in industrial plants in the wood processing industry.

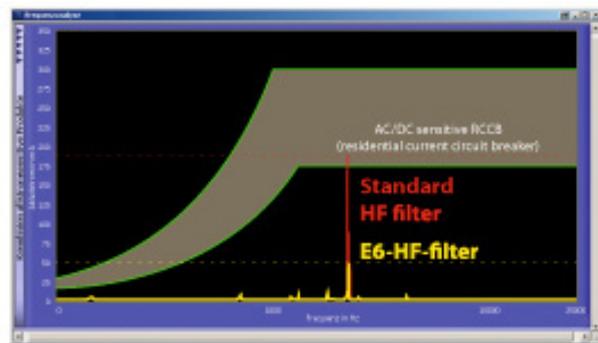
In VDE 0100-530 and VdS 3501, an RCD of type B (or B+) is required to ensure protection of persons and property. Due to the pulse width modulation, frequency converters generate leakage currents in the kHz-range with the multiples of the switching frequency, which can lead to a fault current protection device being triggered unintentionally.

The use of COMBILINE E6 filter technology drastically reduces leakage currents, so that residual current devices can be used without any problem.

COMBILINE E6 filters are available separately in all performance classes and are already integrated as standard in the COMBIVERT G6 and COMBIVERT S6.



— QP Limit in accordance to EN61800-3 C1  
 — AV Limit in accordance to EN61800-3 C1  
 — QP Measurement  
 — AV Measurement



## EDGE PROCESSING



## WITH KEB FULL SOLUTION AND INTEGRATED FUNCTIONAL SAFETY ...

### ... FUTURE-PROVENED SOLUTIONS IN EDGE WORKING CAN BE DEVELOPED

KEB Application Woodworking offers you the highest level of industry know-how for edge processing machines of all kinds and supports you in the implementation of your SAFE and future-oriented machine. Benefit from integrated functional SAFETY – from PLC to drive technology.

Functional SAFETY is modular, for instance with the functions „SS1 (Safe Stop 1)“, „SLS (Safely Limited Speed)“ or „SLP (Safely Limited Position)“.

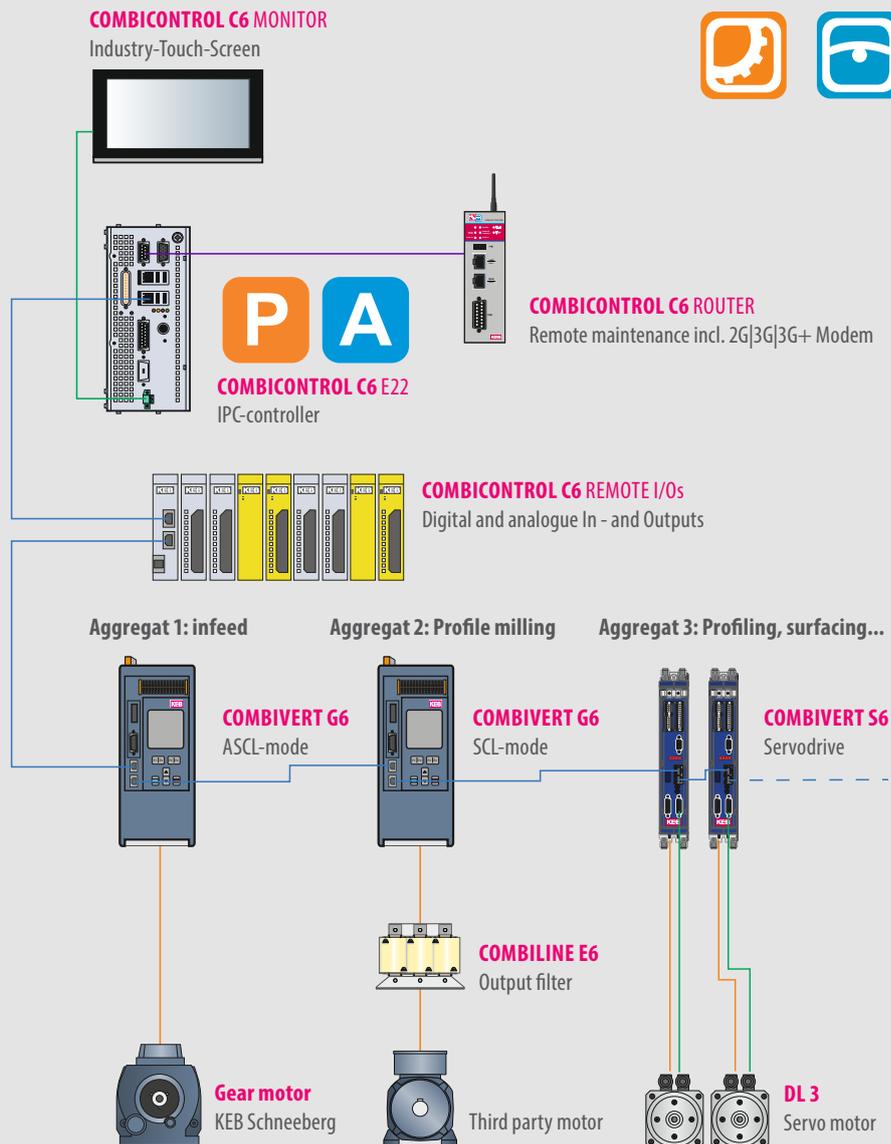
Dynamic edge processing units require intelligent programming structures. Integrate ready-made function blocks seamlessly into your project like a „flying saw“ with Drag & Drop using CAM and positioning blocks in your COMBICONTROL C6 IPC.

Visualize on the highest level and animate interface points for your machine operators with a COMBICONTROL C6 HMI. Or simply combine control and visualization components in one device - it is up to you.

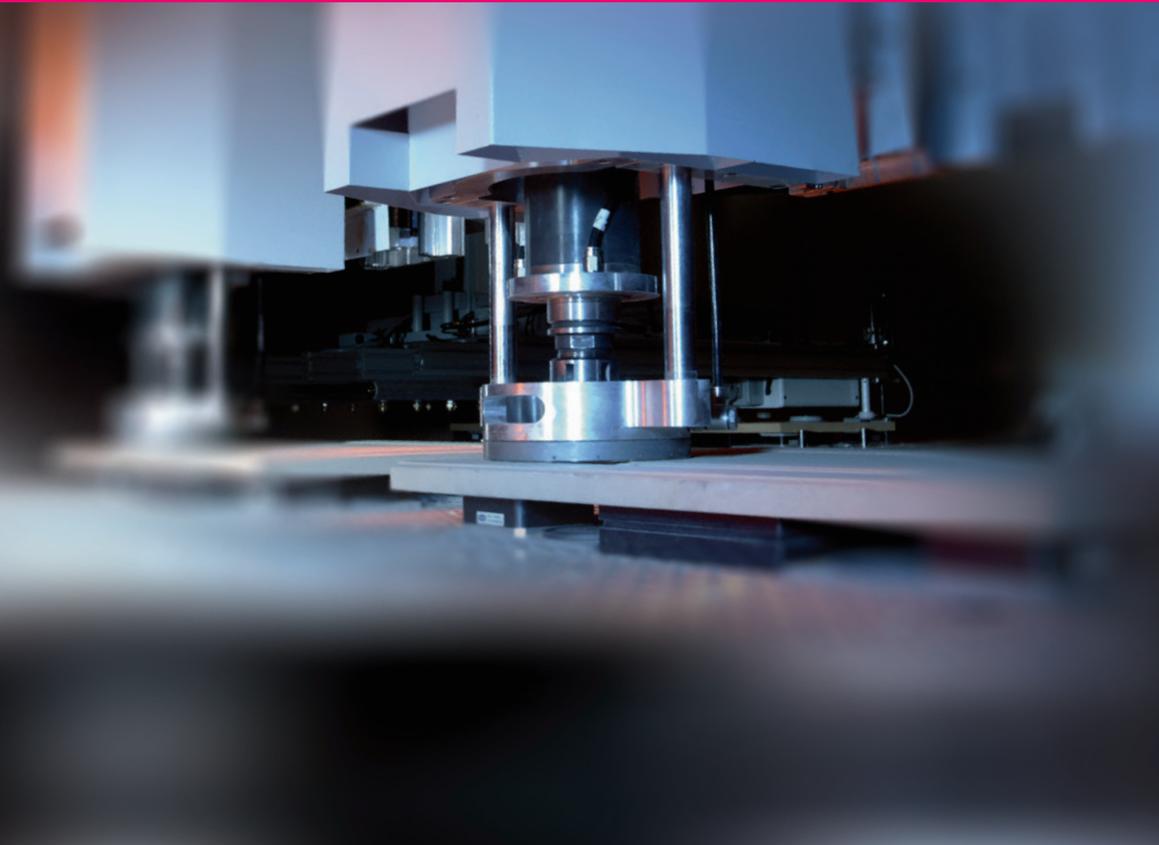


**HIGHLIGHTS:**

- Complete integrated functional SAFETY portfolio from the control-level down to the motor-level
- Intelligent programming structures for powerful application scenarios
- Innovative visualization, control and remote maintenance concepts in one device



## SURFACE TECHNOLOGY



## SCALABILITY AND FLEXIBILITY IN SURFACE TECHNOLOGY ...

### ... FOR COST-EFFECTIVE AND PERFORMANCE MACHINES WITH KEB

With highly scalable Automation & Drive solutions, you can experience the highest performance range for surface technology.

First, select the control component according to the required degree of automation. Select your required PLC features in the RTE module variants BASIC, PRO or ADVANCED.

Visualization features are also divided into the HMI module variants BASIC, PRO and ADVANCED, depending on the requirements.

Select the remote maintenance option with the CONNECT module. Optionally combine RTE, HMI and CONNECT modules in one device. In this way, develop your own PLC concept, which suits your automation requirements perfectly.

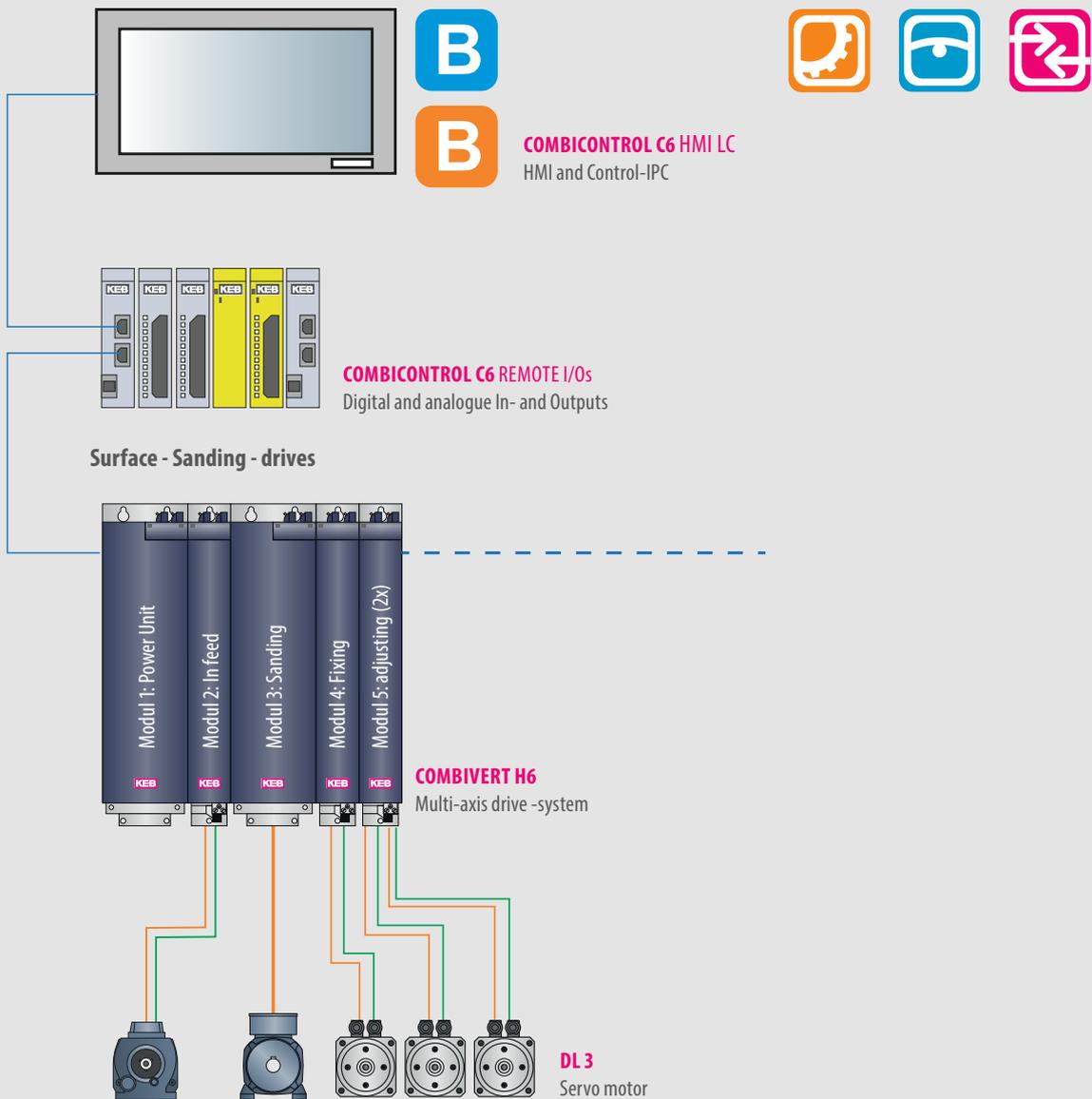
On the drive side, both - frequency inverters and servo drives - are available from 0.37 kW to 900 kW nominal power or 2.3 A to 1450 A rated current. Experience your grinding machine with asynchronous or synchronous machines in ASCL or SCL without encoder and get the same speed stiffness and torque accuracy as with encoders - available over the entire performance spectrum and modularly available.

In combination with the KEB geared motors - Made in Germany - you achieve the next quality level with the KEB complete solution.



**HIGHLIGHTS:**

- Scalable power-spectrum up to 900 kW
- Combination of different components in one device
- Implement innovative concept ideas tailor-made to your requirements



## SOLID WOODWORKING

## INDUSTRY 4.0 IN SOLID WOODWORKING ...

### ALWAYS BEING A STEP AHEAD WITH KEB

The sawmill industry places the highest demands on reliability, individuality, resource and energy efficiency as well as cost optimization. Even the discerning tradesman does not accept any problems with plate production at this point.

For over 25 years, KEB has met the requirements of the solid wood industry and offers reliable solutions for a networked and intelligent production plant with the highest degree of automation.

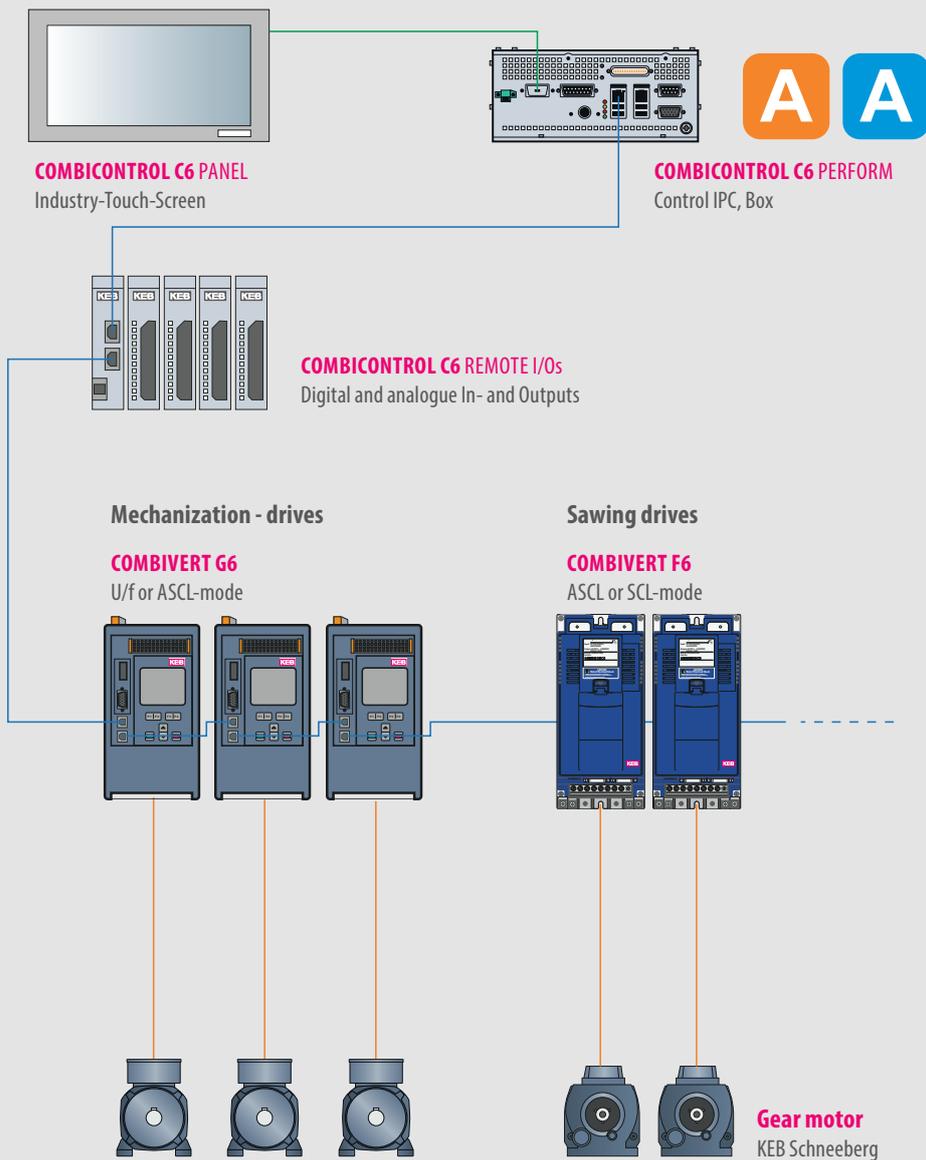
Realize yourself with a control concept, which ensures a continuous communication from the control room to the circular saw unit. Visualize in this way e.g. motor conditions or the assignment of COMBICONTROL Remote I/Os on your smartphone via the KEB HMI Mobile-App.

Increase your flexibility, efficiency and optimize your production processes together with KEB and the approach of Industry 4.0.



**HIGHLIGHTS:**

- Quality and reliability made in Germany for the world
- Know-How in solid woodworking for more than 25 years
- Process optimization by industry 4.0



## TRANSPORT



## MATERIALHANDLING – FEEDING – ADJUSTMENTS

### INNOVATIVE, OPEN AUTOMATION WITH SCALABLE SOLUTIONS FROM KEB

KEB is known for highly innovative solutions in the transport, handling and assembly areas. For example we drive tool changers in the sensorless mode SCL in the positioning with an unattained positioning accuracy. In addition hardware and software components are highly scalable and continuously support BUS communication for almost all manufacturers.

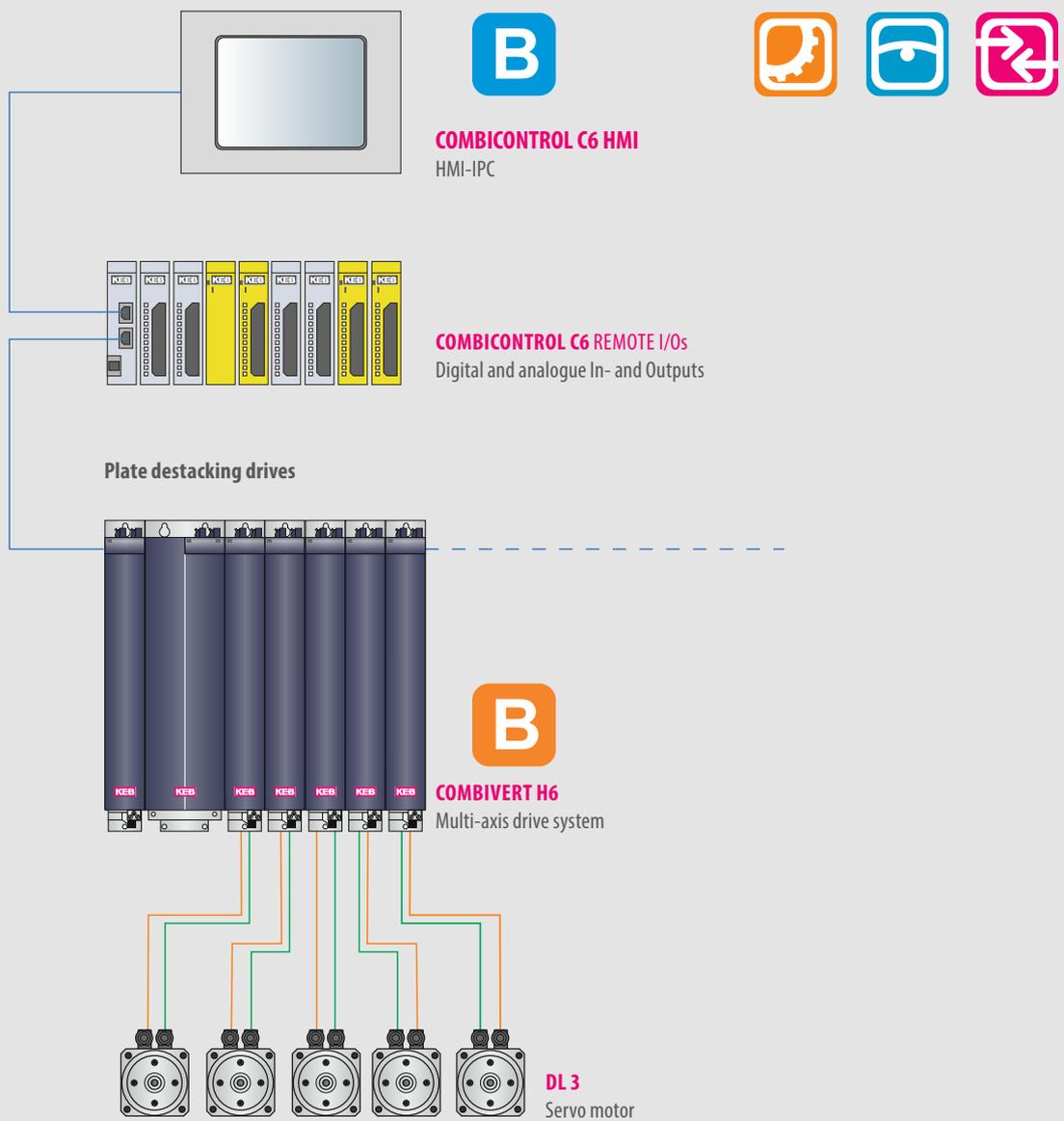
Control COMBIVERT frequency converters and servo-amplifiers are with your favorite real-time fieldbus: EtherCAT, PROFINET, POWERLINK, CAN, VARAN and many more are supported by KEB.

Experience the advantages of drive standards like operating modes according to CIA 402, programming languages in IEC 61131-3 or G-CODE according to DIN 66025 and use your programming independent of the manufacturer.



**HIGHLIGHTS:**

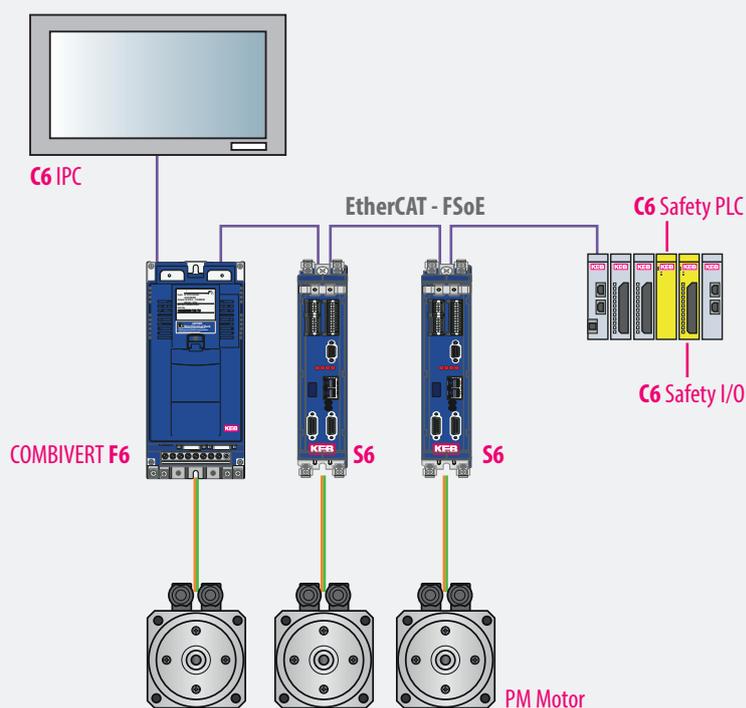
- Integrated fieldbus-interfaces in standard for the whole drivetrain
- Manufacturer-independent integration of all components
- Innovatively scalable modular system



# SAFETY IN WOODWORKING MACHINERY

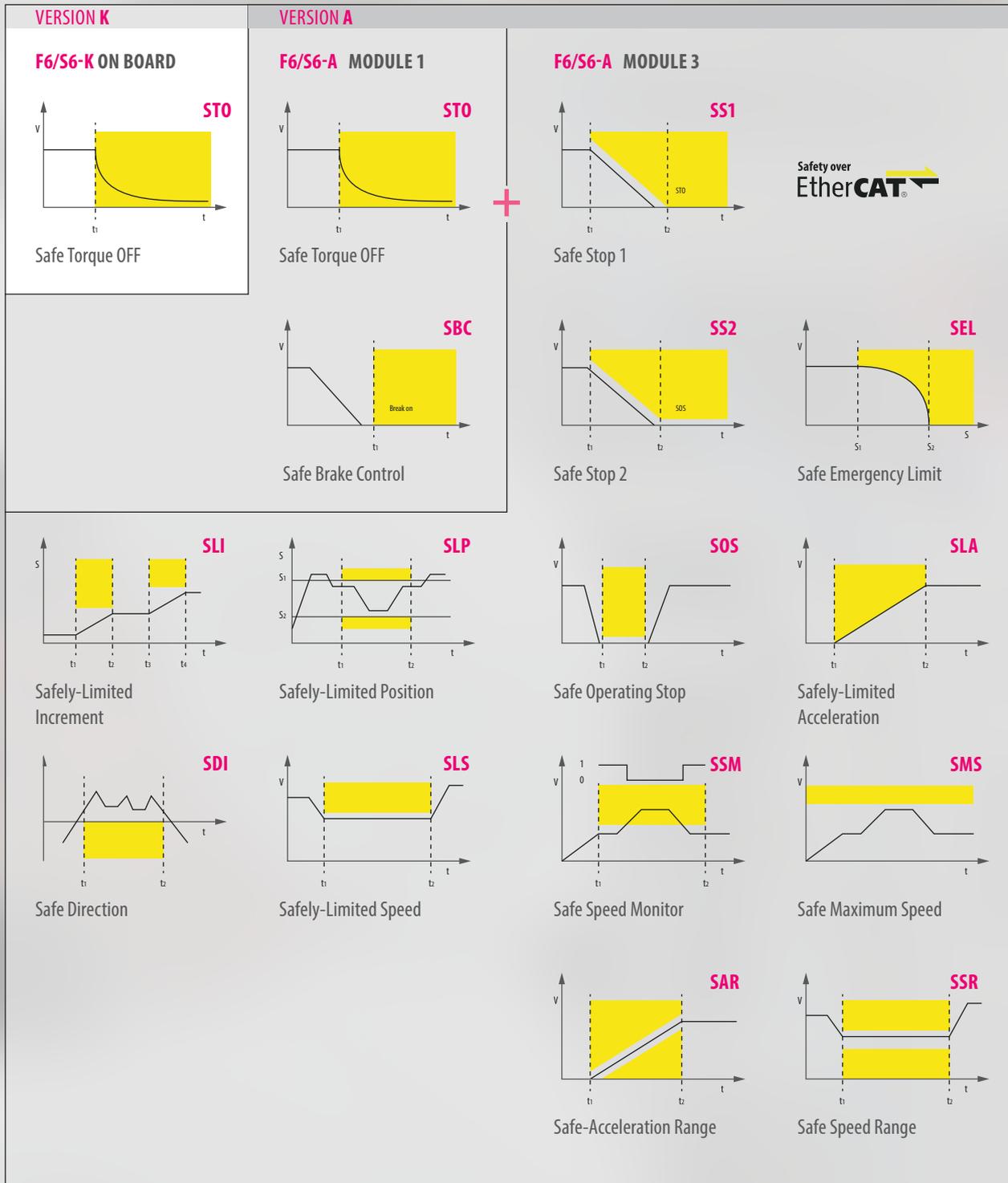
In order to round off our automation concept, KEB offers the full range of integrated SAFETY solutions based on the development environment CODESYS SAFETY in the automation platform COMBIVIS studio 6. With this total solution the freely programmable development is suitable for all applications according to the SAFETY standards IEC 61508 SIL 3 and DIN EN ISO 13849-1 PL<sub>e</sub>.

For maximum flexibility KEB offers the SAFETY protocol Fail Safe over EtherCAT (FSoE) based on existing EtherCAT topology, without additional wiring.



The COMBIVERT drive controller version K are designed as standard with the onboard safety function STO.

The version A is designed modularly and provides STO and SBC as standard with the module1. The extensive additional safety functions are shown in the second variant with module 3.



Safety over  
**EtherCAT**

## CONTACTS



## OUR TEAM FOR WOODWORKING AND HIGHSPEED SPINDLES

### IS AVAILABLE FOR YOU:

... **WE ADVISE YOU** in the conception

... **ACCOMPANY YOU** in the machine running time

... **SUPPORT** in interpretation

... **ENSURE** the after-sales strategy

... **HELP** in initial commissioning

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