# COMBIVERT **S6**

## COMPACT SERVO DRIVES

**EN**

KEB

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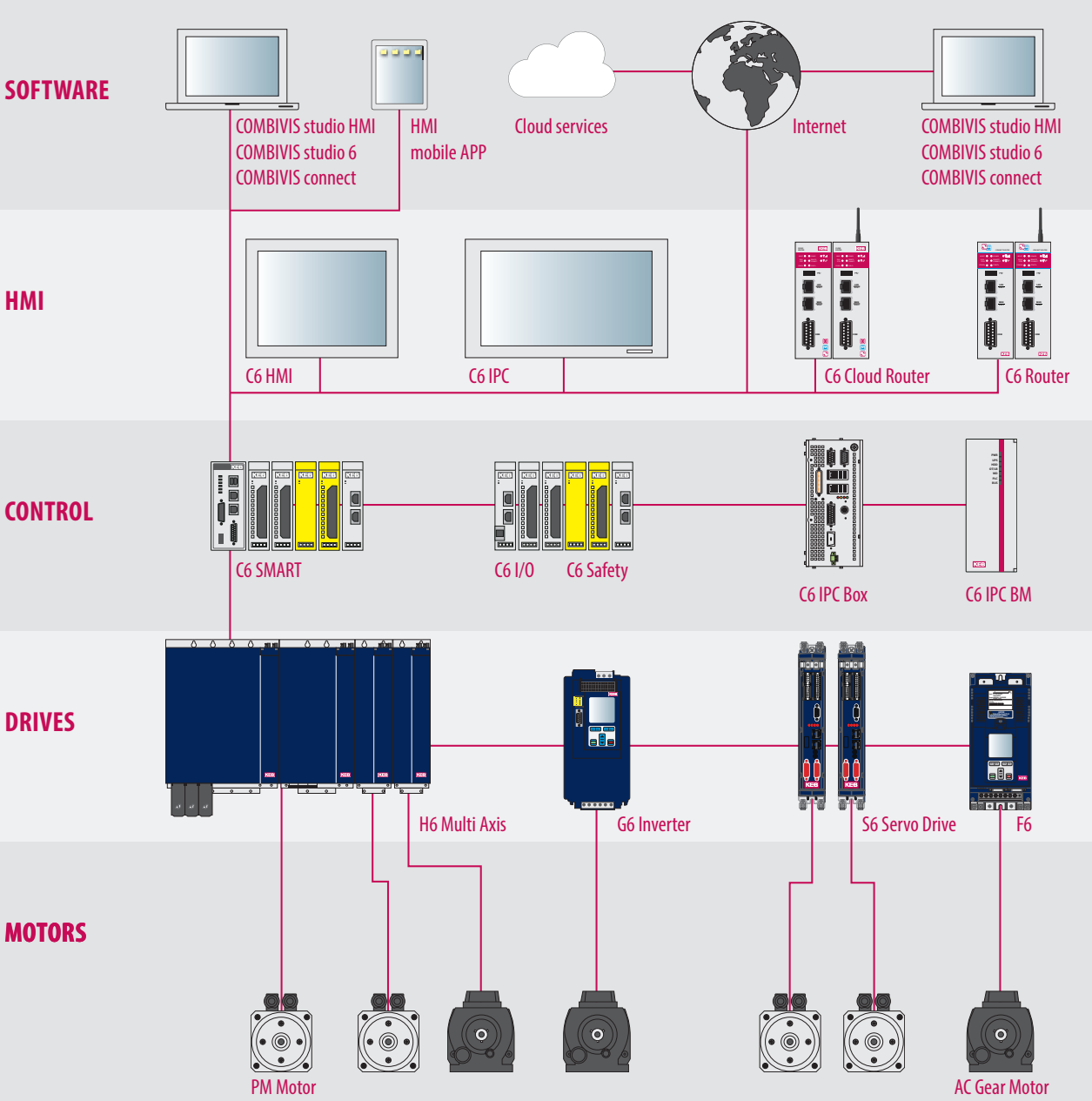
# SYSTEM OVERVIEW

Automation **with Drive**
stands as a synonym for optimally selected combinations of control and automation solution. With the drive level at the end it is the key to successful machine concepts.

Let the following pages inspire you with regards to the diversity and performance of the COMBIVERT S6 servo system, and help you to find a solution that reliably meets your requirements.



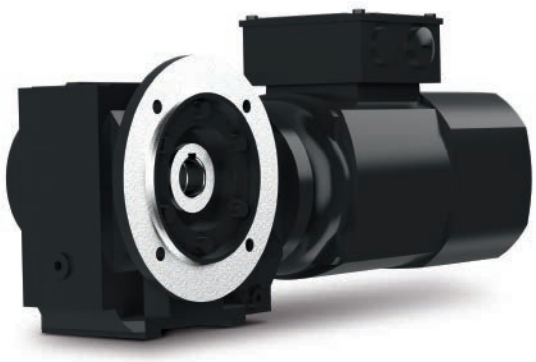
## OPTIMALLY SELECTED COMPONENTS

The COMBIVERT S6 servo system adds a compact, flexible and powerful drive module to the KEB product portfolio for highly dynamic servo applications. The optimally selected KEB components are the key to this successful drive concept.

At the heart, the innovative S6 servo drive is offered in an attractive book-style format and offers real-time performance. The S6 drives can be matched with the robust DL3 servo motors which are available in five sizes. Additionally, the DL3 servo motors may be paired with planetary gearheads with low rotational backlash.

The TA series combines in direct connection the servo motor and industrial gears in the designs helical, helical bevel, helical worm and flat. You can now design the complete servo drive system that is best suited to your application.

The package is made complete with pre-fabricated motor and encoder cables, which create the ideal conditions for easy installation, quick start-up and problem-free operation. For the upper power range the new COMBIVERT F6 drive controller completes the drive line with 1:1 features up to 400 kW.



## POSSIBLE SELECTION: S6 SERVODRIVE AVAILABLE WITH OR WITHOUT INTEGRATED EMC FILTER

- 2.6 ... 16.5 A in two enclosures with six electrical sizes
- Book format for space-saving control cabinet configuration
- Direct connection to the mains for 230 V and 400-480 V grids, DC-input is also available, 260 ... 375/750 V
- Low leakage current mains filter (<5 mA) integrated, optional without filter
- High overload for excellent dynamics (250% / 3 s, 200% / 60 s)

### HIGHLIGHTS

- Uncompromising integration, highest perfomance
- Modern realtime communication standards
- Integrated functional safety
- Particular compact size
- Modular design, flexible cooling systems

## DRIVE BASED SAFETY

- Integrated Safety functionality
- Basic function STO in Compact version
- Additional modular High level Safety in Application version

## REAL-TIME COMMUNICATION

- Real-time Ethernet-based interfaces
- CAN

or simply serial:

- RS232/485 for diagnostics or display

## ANALOG & DIGITAL I/O

supports actual machine concepts with:

- 8 digital and 2 analog inputs
- 2 digital and 1 relay output
- 1 analog output 0 ... 10 V

## ALL IN ONE - UNIVERSAL MOTOR OPERATIONS

- Control for asynchronous, synchronous, IPM or synchronous reluctance motors
- Motor operation with encoder feedback or encoderless ASCL/SCL for precise speed control
- Motor temperature monitoring with PTC, KTY or PT1000 sensors
- Two-channel multi-encoder interface
- Integrated brake transistor
- Integrated brake control and brake supply

## COMPACT

### HIGHLY INTEGRATED AND ECONOMICAL

Highest integration, best performance and a good price/power ratio. These are the benefits of the S6-compact version.

In addition the integrated Safety function STO as per ISO 13849-Perfomance Level e/IEC 62061-SIL3 is available.

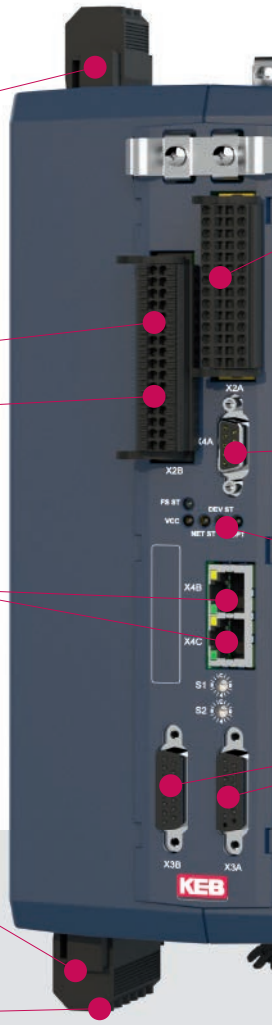
### REALTIME ETHERNET INTEGRATED

**EtherCAT or VARAN**

and as communication interface (standard feature)

**CAN**

**DIAGNOSTIC RS232/485**




**MAINS CONNECTIONS**
with pluggable terminals

**FUNCTIONAL SAFETY**

**INTERFACE**
CAN interface

**REALTIME ETHERNET**

**DC SUPPLY TERMINALS**
and braking resistor

**MOTOR TERMINALS**

EtherCAT® CANopen® VARAN

### HIGHLIGHTS

- Uncompromising integration, maximum performance
- Optimum price/performance relationship
- Safety function STO according to ISO 13849 Performance Level e / IEC 62061- SIL 3
- Integrated Real-time EtherCAT and as communication interface CAN
- Diagnosis interface

## APPLICATION

### MODULAR AND FLEXIBLE

Modular and flexibility are the summerized characteristics of the S6-Application version.

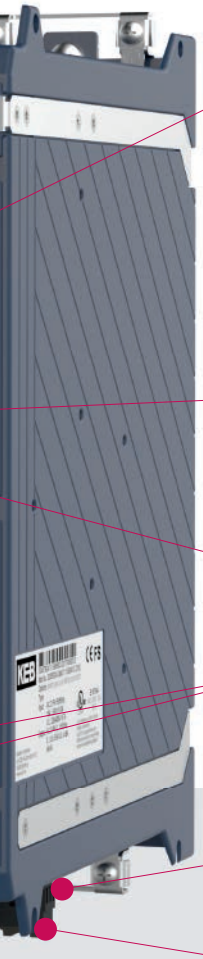
STO and speed/position related safety functions as per ISO 13849.

### REALTIME ETHERNET INTEGRATED

**EtherCAT**
**PROFINET**
**POWERLINK**
**EtherNet /IP**

and communication interfaces as standard
**CAN**

**DIAGNOSTIC RS 232/485**



**I/O**
8 digital inputs
2 digital outputs
1 relay
2 analog inputs
1 analog output
24V DC supply

**DIAGNOSTIC INTERFACE**

**STATUS LEDS**

**MULTI ENCODER INTERFACES**
Resolver, EnDAT, Hiperface, BISS, SSI,
Incremental HTL/TTL,
Incremental output

**KTY/PTC/PT1000 EVALUATION**

**BRAKE CONTROL 24 V / 2 A**

### HIGHLIGHTS

- Flexible adaption in usage
- High Level Safety Function STO and SBC „Safe Brake Control“ according to ISO 13849 Performance Level e / IEC 62061- SIL 3
- Optionally version Safety Module 3 with up to three additional functions including SS1, SS2, SEL, SLI, SLP, SOS, SLA, SDI, SLS, SSM, SMS, SAR, SSR
- Real-time safety communication FSoE (Safety over EtherCAT)

EC Type-Examination Certificate

Reg.-Nr./No.: 01/205/5517.00/16

**Prüfgegenstand / Product tested**: Sicherheitsfunktion STO auf der Steuerkarte des COMBIVERT F6-K Umrichters / Safety function STO on control board within the COMBIVERT F6-K inverter

**Zertifikatinhaber / Certificate holder**: KEB, Karl E. Brinkmann GmbH, Försterweg 36-38, 32683 Barntrup, Germany

**Typbezeichnung / Type designation**: Steuerkarte / Control board 3KF6x30-0010, 3KF6x30-0011 zur Verwendung in den Umrichtern / to be used in Inverters xxF5Kxx-xxxx

**Prüfgrundlagen / Codes and standards**: EN 61800-5-2:2007, EN 61800-5-1:2007, EN 62061:2005 + AC:2010 + A1:2013 + A2:2015, EN ISO 13849-1:2015, EN 60204-1:2006 + A1:2009 + AC:2010 (in extracts), IEC 61508 Parts 1-7:2010

**Bestimmungsgemäße Verwendung / Intended application**: Die Sicherheitsfunktion "Safe Torque Off" (STO) erfüllt die Anforderungen der Prüfgrundlagen (Kat. 4 / PL e nach EN ISO 13849-1, SIL 3 / SIL CL 3 nach EN 61800-5-2 / EN 62061 / IEC 61508) und kann in Anwendungen bis zu diesen Sicherheitsniveau eingesetzt werden. The safety function "Safe Torque Off" (STO) complies with the requirements of the relevant standards (Cat. 4 / PL e acc. to EN ISO 13849-1, SIL 3 / SIL CL 3 acc. to EN 61800-5-2 / EN 62061 / IEC 61508) and can be used in applications up to these safety levels.

**Besondere Bedingungen / Specific requirements**: Die Hinweise in der zugehörigen Installations- und Betriebsanleitung sind zu beachten. The instructions of the associated Installation and Operating Manual shall be considered.

Es wird bestätigt, dass der Prüfgegenstand mit den Anforderungen nach Anhang I der Richtlinie 2006/42/EG über Maschinen übereinstimmt.
It is confirmed that the product under test complies with the requirements for machines defined in Annex I of the EC Directive 2006/42/EC.

Gültig bis / Valid until 2021-06-01

Der Ausstellung dieses Zertifikates liegt eine Prüfung zugrunde, deren Ergebnisse im Bericht Nr. 968/M 393.01/16 vom 01.06.2016 dokumentiert sind.
Dieses Zertifikat ist nur gültig für Erzeugnisse, die mit dem Prüfgegenstand übereinstimmen. Es wird ungültig bei jeglicher Änderung der Prüfgrundlagen für den angegebenen Verwendungszweck.
The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/M 393.01/16 dated 2016-06-01.
This certificate is valid only for products which are identical with the product tested. It becomes invalid at any change of the codes and standards forming the basis of validity for the intended application.

Berlin, 2016-06-01 | Notified Body for Machinery, NB 0035 | Dipl.-Ing. Eberhard Freyno

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## HIGHLIGHTS

- Possible download of encrypted data packets through machine controllers modular safety concept
- Dual channel ripple interface for cascading functional safety over multiple KEB drives
- Dual OSSD outputs for supply of the safe digital inputs (detection of wire break, shortcut and external supply)
- Safe parameterization through COMBIVIS 6 with protected operation levels

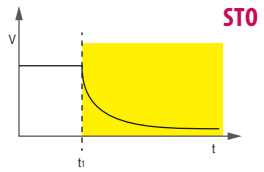
## SAFETY FUNCTIONS ACCORDING TO IEC 61508–SIL3, ISO 13849–PL e

With drive-based-safety, safety functions are shifted into the drive platform and the costs of separate safety devices are reduced. The drive controllers COMBIVERT S6 are prepared for the different requirements in their modular structure.
In the compact version S6-K, STO is an „on board“ integrated function. The application version S6-A can be equipped with different safety modules. Depending on the requirement, basic functions with the Module 1 and a wide range of functions are available with the Module 3, which are addressed via safe inputs and outputs and FSoE communication.

The full Safety System results in the interaction of the drive controllers with the KEB C6 Safety PLC and the C6 Safety I/O's.

**COMPACT**

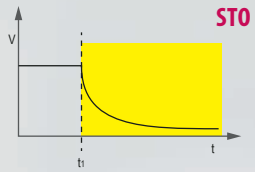
**On board**



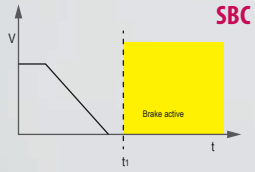

Safe Torque OFF

**APPLICATION**

**Module 1**

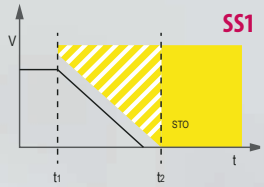



Safe Torque OFF

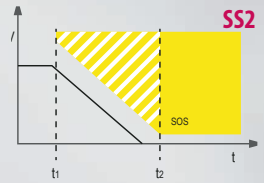



Safe Brake Control

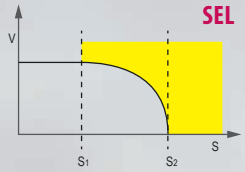
**Module 3**




Safe Stop 1

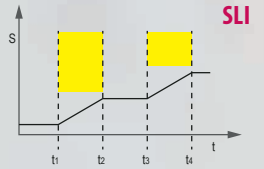



Safe Stop 2

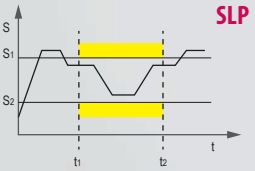



Safe Emergency Limit

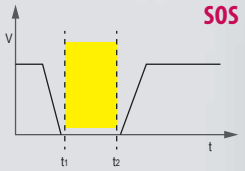
Safety over EtherCAT



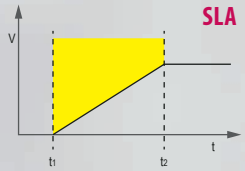

Safe Limited Increment



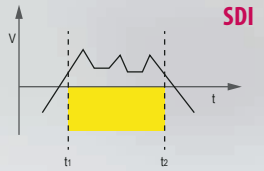

Safe Limited Position



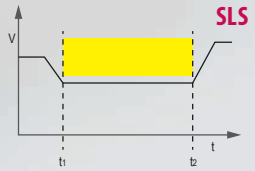

Safe Operating Stop



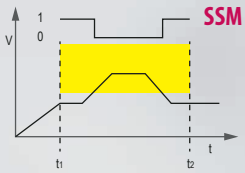

Safe Limited Acceleration




Safe Direction

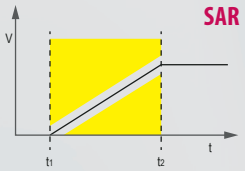



Safe Limited Speed

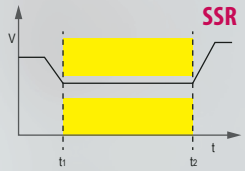



Safe Speed Monitor

Safe Maximum Speed




Safe Acceleration Range




Safe Speed Range

## ELECTRICAL PROPERTIES

| **HOUSING** | | | **2** | | | | | **4** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Device size | | | 07 | 09 | 07 | 09 | 10 | 12 | 13 | 14 |
| | | | | | | | | | | |
| Mains phases | | | 1 | | 3 | | | | | |
| **Output rated current** | $I_N$ | **[A]** | **4** | **7** | **2.6** | **4.1** | **5.8** | **9.5** | **12.0** | **16.5** |
| Short maximum current (3 s / 60 s) [1] | $J_{SMC}$ | [%] | 200/150 | | 250/200 | | | | | 180/150 |
| Output rated power * | $S_A$ | [kVA] | 1.8 | 2.8 | 1.8 | 2.8 | 4 | 6.6 | 8.3 | 11.4 |
| Typical rated motor power | $P_{mot}$ | [kW] | 0.75 | 1.5 | 0.75 | 1.5 | 2.2 | 4.0 | 5.5 | 7.5 |
| | | | | | | | | | | |
| | | | 230 V | | 400 V | | | | | |
| Max. current 0 Hz / cutoff frequency at fs = 4 kHz [1] | $I_0$ | [%] | 175/240 | 157/240 | 215/300 | 193/300 | 155/284 | 273/300 | 283/300 | 133/216 |
| Max. current 0 Hz / cutoff frequency at fs = 8 kHz [1] | $I_0$ | [%] | 150/240 | 114/228 | 162/292 | 132/234 | 103/206 | 189/294 | 183/293 | 109/212 |
| Max. current 0 Hz / cutoff frequency at fs = 16 kHz [1] | $I_0$ | [%] | 100/200 | 85/200 | 92/200 | 73/146 | 50/120 | 105/189 | 116/175 | 60/127 |
| Cutoff frequency point | $f_d$ | [Hz] | 6 | | | | | | | |
| Input rated current | $I_{IN}$ | [A] | 8 | 14 | 3.6 | 6 | 8 | 13 | 17 | 21 |
| Max. permissible mains fuses | Typ gG | [A] | 15 | 20 | 6 | 10 | 10 | 15 | 20 | 25 |
| Rated switching frequency | $f_{SN}$ | [kHz] | 8 | | | | | | | 4 |
| Max. switching frequency | $f_{Smax}$ | [kHz] | 16 | | | | | | | |
| Rated losses | $P_D$ | [W] | 60 | 95 | 50 | 57 | 80 | 155 | 185 | 250 |
| Standby losses | $P_{Dnop}$ | [W] | 8 | | | | | | | |
| Min. brake resistance | $R_{Bmin}$ | [Ω] | 56 | 33 | 160 | 110 | 82 | 33 | 25 | 25 |
| Max. braking current | $I_{Bmax}$ | [A] | 7.5 | 12.7 | 5.5 | 8 | 11 | 28 | 34 | 34 |
| Input rated voltage (AC) | $U_N$ | [V] | 1-phase 230 | | 3-phase 400 (UL: 480) | | | | | |
| Input voltage range (AC) [2] | $U_{in}$ | [V] | 184 ... 265 | | 184 ... 550 ±0 | | | | | |
| Input voltage range (DC) | $U_{indc}$ | [V] | 260 ... 375 | | 260 ... 750 ±0 | | | | | |
| Mains frequency | $f_N$ | [Hz] | 50/60 | | 50/60 ±2 | | | | | |
| Output voltage | $U_A$ | [V] | 3 x 0 ... $U_{IN}$ | | | | | | | |
| Output frequency | $f_A$ | [Hz] | 0 ... 599 optional 0 ... 2000 | | | | | | | |

* At rated voltage 400 V AC

[1] The figures relate to the output rated current $I_N$ on a percentage basis
[2] In the case of rated voltage ≥460 V, multiply rated current with a factor of 0.86

## MECHANICAL DATA, OPERATING TYPES, STANDARDS

### OPERATING MODES

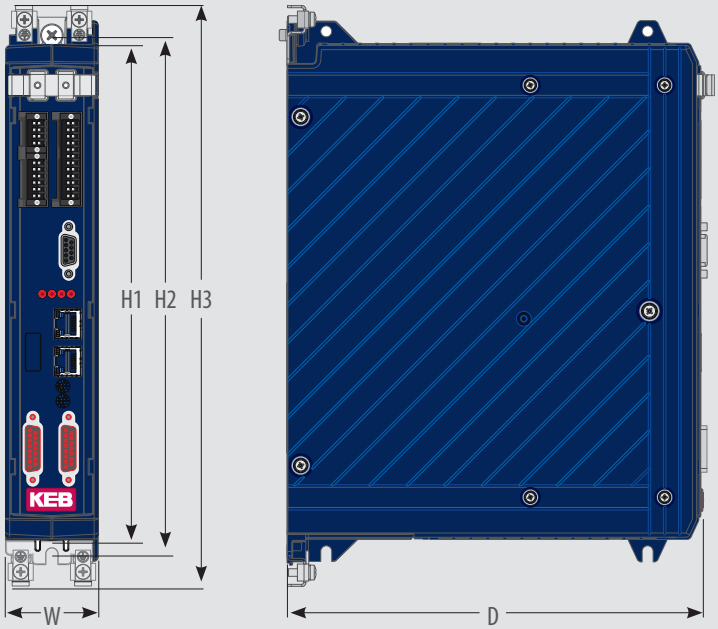
| | |
|---|---|
| Motor control mode | **PMSM**: field-oriented with encoder, S.C.L. encoderless<br>**IPMSM**: field-oriented with encoder, S.C.L. encoderless<br>**SyncRM**: field-oriented with encoder, S.C.L. encoderless<br>**ASM**: V/F, field-oriented with encoder, A.S.C.L. encoderless |
| Application profile | CiA 402 |
| Control mode | Velocity Mode<br>Cyclic Synchronous Velocity Mode<br>Cyclic Synchronous Position Velocity Mode<br>Profile Position Mode<br>Homing Mode |

### GENERAL

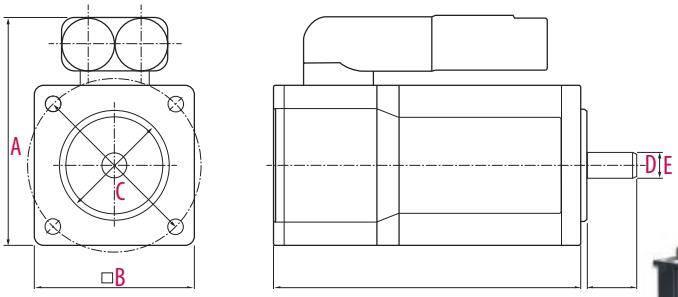
| | |
|---|---|
| Product standard | EN 61800-2, -5-1 |
| Power part with integrated EMC filter - EMC transient emissions | |
| Grid-bound disturbance | EN 61800-3, C1 - 30 m / C2 - 50 m motor cable |
| Emitted disturbances | EN 61000-6 -1...4, C2 |
| Protection class | IP 20 / VBG 4 |
| Environment | EN 60721-3-3<br>Operating temperature -10 ... 45 °C<br>Storage temperature -25 ... 55 °C<br>Humidity 3K3 - 5 ... 85% (no condensation) |
| Site altitude | Rated to 1000 m (1% derate per 100m above 1000m). max. 2000m above sea level. |

| HOUSING | 2 | 4 |
|---|---|---|
| H1 | 265 | 265 |
| H2 | 275 | 275 |
| H3 | 310 | 310 |
| D | 220 | 220 |
| W | 50 | 90 |

All dimensions in mm



## SERVOMOTORS DYNAMIC LINE 3



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0_SMH__ | 0.2 ... 0.5 | | | | | | |
| A_SMH__ | | 0.5 ... 1.2 | | | | | |
| B_SMH__ | | | 1.38 ... 3.22 | | | | |
| C_SMH__ | | | | 2.45 ... 5.65 | | | |
| D_SMH__ | | | | | 4.9 ... 11.4 | | |
| E_SMH__ | | | | | | 12.8 ... 29.0 | |
| | 0 | A | B | C | D | E | |

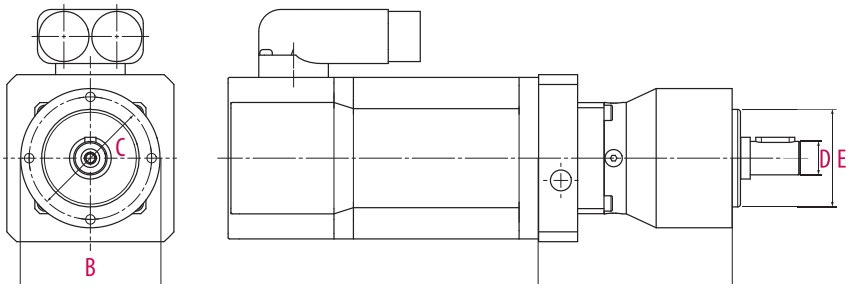
Stalltorque in Nm

| MOTOR | $T_0$ [Nm] | $T_N$ [Nm] | $U_N$ [V] | $I_{do}$ / $I_N$ [A] | $N_N$ [$min^{-1}$] | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | OPTION BRAKE $T_n$ [Nm] | INERTIA JM / $J_{MwBr}$ [$kgcm^2$] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.2 | 0.18 | | 0.76 / 0.73 | | | | | | | | 0.0294 / 0.0521 |
| 02SMHF_ | 0.38 | 0.33 | 230 | 1.3 / 1.2 | 8000 | 65.4 | 40 | 46 | 8 | 30 | 0.6 | 0.0482 / 0.0709 |
| 03 | 0.52 | 0.45 | | 1.65 / 1.3 | | | | | | | | 0.0670 / 0.0897 |
| A1 | 0.5 | 0.5 | | 0.85 | | | | | | | | 0.134 / 0.205 |
| A2SMHF_ | 0.8 | 0.7 | | 1.30 / 1.50 | 8000 | 82.4 | 58 | 63 | 9 | 40 | 0.8 | 0.253 / 0.324 |
| A3 | 1.2 | 1.0 | | 1.85 / 2.20 | | | | | | | | 0.373 / 0.444 |
| B1 | 1.4 | 1.3 | | 1.90 / 1.95 | | | | | | | | 0.462 / 0.541 |
| B2SMHF_ | 2.4 | 2.2 | | 2.75 / 2.95 | 6000 | 96.4 | 72 | 75 | 14 | 60 | 2 | 0.842 / 0.921 |
| B3 | 3.2 | 2.7 | | 3.60 / 4.10 | | | | | | | 3.5 | 1.22 / 1.46 |
| C1 | 2.5 | 2.3 | | 2.90 / 3.00 | 6000 | | | | | | | 1.08 / 1.74 |
| C2SMHF_ | 4.1 | 3.7 | 400 | 3.80 / 4.10 | 5000 | 128.5 | 87 | 100 | 19 | 80 | 9 | 1.98 / 2.63 |
| C3 | 5.7 | 4.9 | | 4.75 / 5.40 | 5000 | | | | | | | 2.87 / 3.52 |
| D1 | 4.9 | 4.4 | | 4.20 / 4.75 | 5000 | | | | | | 9 | 2.23 / 2.89 |
| D2SMHF_ | 8.2 | 6.9 | | 5.20 / 6.30 | 4000 | 145.5 | 104 | 115 | 24 | 95 | 9 | 4.06 / 4.72 |
| D3 | 11.4 | 8.4 | | 6.30 / 8.80 | 4000 | | | | | | 13 | 5.88 / 7 |
| E1 | 12.8 | 11.0 | | 6.80 / 7.80 | | | | | | | 20 | 11.1 / 1.34 |
| E2SMHF_ | 21.1 | 15.2 | | 9.40 / 12.4 | 3000 | 183.5 | 142 | 165 | 32 | 130 | 20 | 20 / 22.3 |
| E3 | 29.0 | 13.2 | | 8.10 / 17.2 | | | | | | | 30 | 29 / 34.9 |

### HIGHLIGHTS

- 0.2 ... 29 Nm in six frame sizes
- Low inertia–high impulse torque
- Resolver or absolute rotary encoder, HIPERFACE single or multi-turn
- High degree of total efficiency
- Lifetime lubricated
- Universal installation positions
- Robust mechanics (optional: COMBIPERM holding brake, keyway with key, IP65 shaft sealing)

## PLANETARY GEAR SG PAIRED WITH DYNAMIC LINE 3:



| GEAR SIZE | $T_{2N}$ [Nm] | $T_{2MAX}$ [Nm] | $N_{MAX}$ [rpm] | I | BACKLASH $arc_{min}$ | B Ø [mm] | C Ø [mm] | D Ø [mm] | E Ø [mm] | DL3-MOTOR recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 ... 11 | 8 ... 17.5 | 5000 | 5 ... 40 | 15 | 50 | 44 | 12 | 35 | A | | | | |
| 2 | 15 ... 28 | 24 ... 45 | 4500 | | 10 | 70 | 62 | 16 | 52 | A | B | C | | |
| 3 | 38 ... 85 | 61 ... 136 | 4000 | | 7 | 90 | 80 | 22 | 68 | A | B | C | D | |
| 5 | 95 ... 115 | 152 ... 136 | 3000 | | 7 | 120 | 108 | 32 | 90 | | B | C | D | E |
| 7 | 210 ... 460 | 336 ... 736 | 2800 | | 8 | 155 | 140 | 40 | 120 | | | C | D | E |

## SIMPLE SELECTION AND ORDERING BY SYSTEM CONFIGURATION IN COMBIVIS 6

- Output torque and speed
- Gear ratio
- Motor size

## HIGHLIGHTS

- Low backlash
- High output torque
- High efficiency (97 %)
- Gear ratios i = 5 to 40
- Low audible noise
- Lifetime lubricated

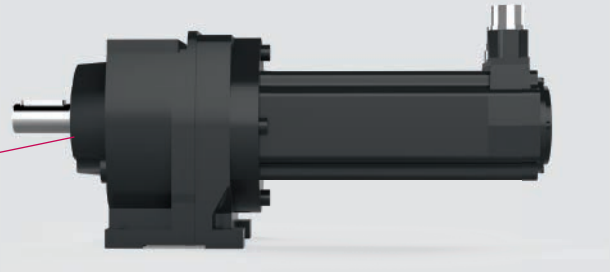
# **SERVO GEAR** MOTORS

## INTEGRAL SERVO DESIGN

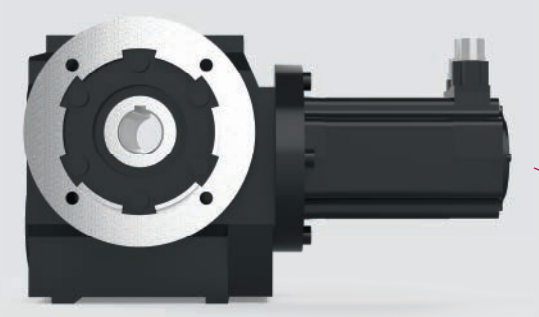
Based on the industrial standard with AC motors the portfolio of COMBIGEAR series offers a full basket of servo gear solutions. The dynamic and efficient TA servo motors are direct connected in the first gear stage–best choice for minimum lenghts, nearly zero wear and small inertia of the gear motor system.

Flexible designs for flange-, foot-, or combined flange/foot– mounting and a wide range of options secure individual needs in the machine. Ultra-fine speed ratio range, adjustable down to speed 0, enables optimum adaptation of torque and speed on output. Life-time lubrication, high overload and low torsional backlash ensure a long service life.

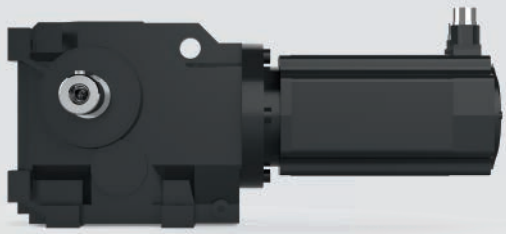
| TYPE | SIZE | DESIGN | $T_N$ [Nm] | I | TA1 | TA2 | TA3 | TA4 | TA5 |
|---|---|---|---|---|---|---|---|---|---|
| G | 0 ... 7 | Helical gear | 60 ... 4880 | 3.37 ... 250.97 | ■ | ■ | ■ | ■ | ■ |
| F | 2 ... 7 | Shaft mounted helical gear | 245 ... 4880 | 3.20 ... 274.23 | | ■ | ■ | ■ | ■ |
| K | 0 ... 7 | Helical bevel gear | 58 ... 4880 | 3.38 ... 183.21 | ■ | ■ | ■ | ■ | ■ |
| S | 0 ... 4 | Helical worm gear | 55 ... 1160 | 5.09 ... 247.58 | ■ | ■ | ■ | ■ | ■ |



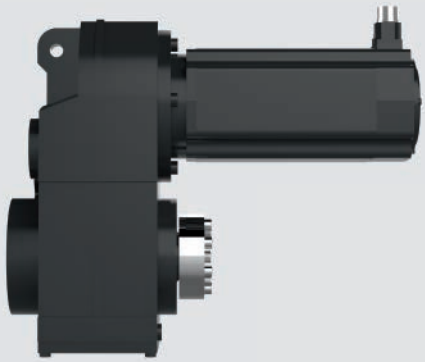
HELICAL GEAR



HELICAL WORM GEAR

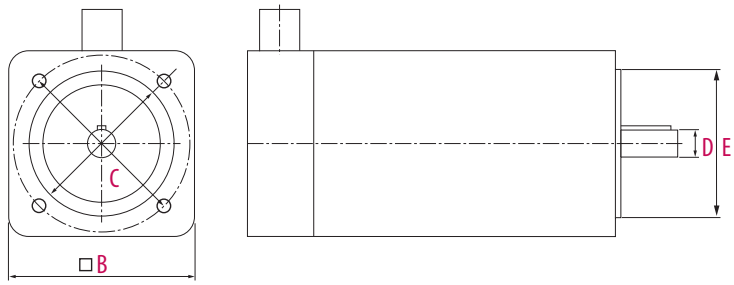


HELICAL BEVEL GEAR



SHAFT MOUNTED HELICAL GEAR

## TA SERIES



| | |
|---|---|
| TA 1 | 0.5 ... 0.9 |
| TA 2 | 1.3 ... 3.1 |
| TA 3 | 2.9 ... 6.4 |
| TA 4 | 6.9 ... 11,7 |
| TA 5 | 11.5 ... 20.0 |

StalltorqueinNm

| MOTOR | $T_0$ [Nm] | $U_N$ [V] | $I_{do}$ [A] | $N_N$ [min$^{-1}$] | B [mm] | C [mm] | D [mm] | E [mm] | OPTION BRAKE $T_n$ [Nm] | INERTIA $J_M$ / $J_{MwBr}$ [kgcm$^2$] |
|---|---|---|---|---|---|---|---|---|---|---|
| TA1S | 0.5 | 400 | 0.95 / 0.72 | 6000 / 4500 | 58 | 63 | 9 | 40 | 2 | 0.14 / 0.2 |
| TA1M | 0.9 | | 1.11 / 0.84 | | | | | | | 0.2 / 0.27 |
| TA2S | 1.3 | | 1.6 / 1.1 | 6000 / 4500 | 75 | 75 | 11 | 60 | 2 | 0.39 / 0.46 |
| TA2M | 2.4 | | 2.75 / 2 | | | | | | | 0.66 / 0.73 |
| TA2L | 3.1 | | 3.9 / 2.8 | | | | | | | 0.93 / 0.99 |
| TA3S | 2.9 | | 3.4 / 2.5 / 1.82 | 6000 / 4500/ 3000 | 90 | 100 | 14 | 80 | 4,5 | 1.13 / 1.32 |
| TA3M | 4.8 | | 6.2 / 4.1 / 2.55 | | | | | | | 1.95 / 2.13 |
| TA3L | 6.4 | | 7.3 / 5.6 / 3.8 | | | | | | | 2.76 / 2.94 |
| TA41 | 6.9 | | 6.5 / 4.45 / 3.15 | 4500 / 3000/ 2000 | 116 | 115 | 19 | 95 | 9 | 5.65 / 5.83 |
| TA42 | 9.2 | | 8.5 / 5.9 / 4 | | | | | | | 8.15 / 8.69 |
| TA43 | 11.7 | | 11.2 / 7.3 / 5 | | | | | | | 10.65 / 11.19 |
| TA51 | 11.5 | | 11 / 7.4 / 5 | 4500 / 3000/ 2000 | 145 | 165 | 24 | 130 | 18 | 14.97 / 16.63 |
| TA52 | 16.1 | | 15.8 / 10.3 / 6.9 | | | | | | | 21.53 / 23.19 |
| TA53 | 20 | | 19.2 / 12.8 / 8.7 | | | | | | | 28.15 / 29.81 |

furthertechnicaldataandmotorsizesseeKEB-Driveproductconfiguration

### HIGHLIGHTS

- 0.5 ... 20 Nm in five frame sizes
- Low inertia–high impulse torque
- Easy plug connection, straight or angled (360° rotatable)
- Compact size - directly integrated in the gear modules
- High total efficiency, lifetime lubricated, universal installation positions and robust mechanics
- Resolver or absolute rotary encoder, BiSS single and multi-turn
- Optionally with COMBIPERM holding brake

## DL3 CABLES FEEDBACK AND POWER CABLES

Pre-fabricated motor and encoder cables ensure the easy commision and simplify the final installation General performance is the high-quality and flexible design for all cables, made for drag chains Quick and tool-less installation with Speedtec plug connectors guarantees a optimally connection and EMC shielding.

### RESOLVER FEEDBACK CABLES

- motor side connector - series 615
- drive side connector D-sub 26 pin

**00S6L50-00__**

| | | |
|---|---|---|
| cable length | 1…30 m | in 1m steps |
| | 35…50 m | in 5 m steps |

### HIPERFACE FEEDBACK CABLES

for single and multi turn encoders

- motor side connector - series 615
- drive side connector D-sub 26 pin

**00S6L55-00__**

| | | |
|---|---|---|
| cable length | 1…30 m | in 1m steps |
| | 35…50 m | in 5 m steps |

### POWER CABLES

- motor side connector - series 615 motor size A…B
- drive side open end with 0.3m open shielding

**00H6L10-00__**

| | | |
|---|---|---|
| cable length | 1…30 m | in 1m steps |
| | 35…50 m | in 5 m steps |

- motor side conncetor - M23 speedtec motor size C - E

**00S4519-00__**

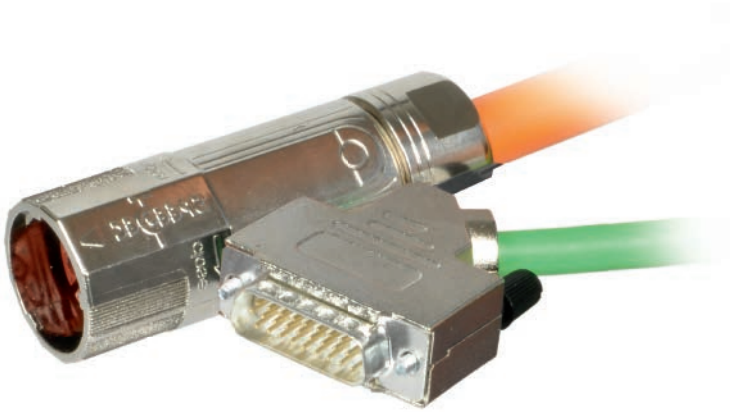
| | | |
|---|---|---|
| cable length | 1…30 m | in 1m steps |
| | 35…50 m | in 5 m steps |

### HIGHLIGHTS

- Pre-fabricated motor and encoder cables for easy installation
- High-quality and flexible design for cable drag chains
- Quick and tool-less installation with Speedtec plug connectors
- Optimally integrated shield connection
- Available in lengths up to 50 metres

## TA CABLES FEEDBACK AND POWER CABLES

Prepaired for the direct connection:



### RESOLVER FEEDBACK CABLES

- motor side connector - 16 pin M23 - Speedtec
- drive side connector D-sub 26 pin

**00S6L50-10__**

| | | |
|---|---|---|
| cable length | 1...30 m | in 1m steps |
| | 35 .. 50 m | in 5 m steps |

### BISS FEEDBACK CABLES

for multi turn encoders

- motor side connector - 16 pin M23 - Speedtec
- drive side connector D-sub 26 pin

**00S6L51-20__**

| | | |
|---|---|---|
| cable length | 1...30 m | in 1m steps |
| | 35 .. 50 m | in 5 m steps |

### HIPERFACE GEBERKABEL

for single and multi turn encoders

- motor side connector - series 615
- drive side connector D-sub 26 pin

**00S6L55-10__**

| | | |
|---|---|---|
| cable length | 1. . .30 m | in 1m steps |
| | 35. . .50 m | in 5 m steps |

### POWER CABLES

- motor side conncetor - M23 - speedtec for motor size TA2. . .TA5
- drive side open end with 0.3 m open shielding

**00S4519-00__**

| | | |
|---|---|---|
| cable length | 1. . .30 m | in 1m steps |
| | 35. . .50 m | in 5 m steps |

# ACCESSORIES

## MAINS CHOKE

Reduce the input peak current draw and the mains distortion. By smoothing the input current draw, the lifetime of the drive is enhanced, in particular at constantly high utilization.

**Mains choke 3-phases 400 V AC ($U_{max}$ = 550 V), 50/60 Hz**

| Part-No. | $I_N$ [A] | $P_V$ [W] | $f_{Main}$ [Hz] | B [mm] | H [mm] | T [mm] | Weight m [kg] |
|---|---|---|---|---|---|---|---|
| 07Z1B04-1000 | 2.7 | 19 | 45-65 | 100 | 55 | 121 | 0.9 |
| 09Z1B04-1000 | 4.3 | 23 | 45-65 | 100 | 55 | 121 | 1.1 |
| 10Z1B04-1000 | 6.1 | 24 | 45-65 | 100 | 64 | 121 | 1.5 |
| 12Z1B04-1000 | 10 | 37 | 45-65 | 148 | 68 | 145 | 2.1 |
| 13Z1B04-1000 | 12.6 | 48 | 45-65 | 148 | 78 | 145 | 2.6 |

## BRAKING RESISTOR

Braking resistors can be connected to the series terminals of the brake transistor, and ensure that energy peaks are absorbed and discharged. The compact design require only small space and they are intrinsically safe; without additional temperature sensors.

To protect against overheating and fire hazards, the brake resistors feature thermal monitoring which can be integrated into the external circuit.

**BRAKING RESISTORS - „INTRINSICALLY SAFE“**

| | | |
|---|---|---|
| 10G6A90-4300 | wire 0.2 m | 200 W; 160 Ohm; IP40 |
| 13G6B90-4300 | wire 0.2 m | 250 W; 110 Ohm; IP40 |
| 15G6C90-4300 | wire 0.2 m | 300 W; 56 Ohm; IP40 |

In addition to the defined base versions compact and application the COMBIVERT S6 unit offers specific application adjustments and customization.

## HIGH SPEED SPINDLE DRIVES

- Maximum output frequency 2000 Hz

## SPECIFIC FIRMWARE

- Fixed software versions according tested application specification

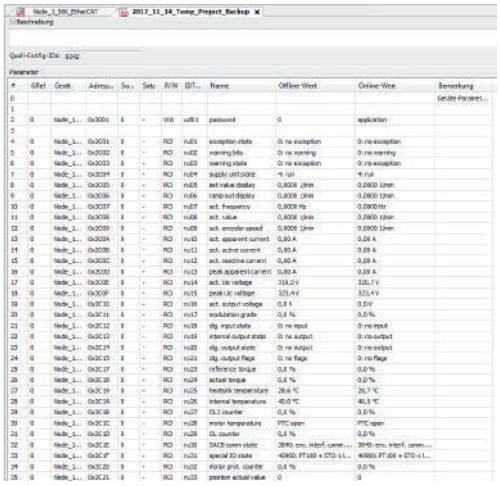
**Software version**

SW S6-K EtherCAT Version 2.2.0.0

S6K_MAIN_ETC_0202000F_20170705_1751
S6K_FPGA_ETC_02020034_20170509
0SS6K30_02000001_70_2014_09_03
DWS6KD0000_2014_10_09

## APPLICATION READY TO START

- Customer specific parameter lists stored on the drives internal file server ex works



## CUSTOMER LABELLING

- Specific name plate for series OEM with first line service concept

## EXTENDED WARRANTY

- 24 months warranty
- 36 months warranty

## CONNECTOR SHIELDING SET

- Drive controller with connector and shielding set

# COMBIVIS 6 - THE TOOL FOR ALL TASKS

## COMBIVIS 6

- Free and easy-to-use software for startup, administration and analysis
- Integrated start-up assistants (Wizards) for quick and easy configuration
- Direct access to device documentation
- 16 channel oscilloscope for extensive analysis
- Online parameter list comparison
- Parameterisation of key safety indicators and functions

## COMBIVIS studio 6

The intelligent automation suite from KEB combines an assistant-guided component selection, fieldbus configuration, drive parameterisation, IEC 61131-3 project generation and motion control. Throughout the planning and layout phase, implementation of control sequences and multi-axis movement profiles, to start-up and fine tuning, the user is supported by a tool developed by experienced application engineers.

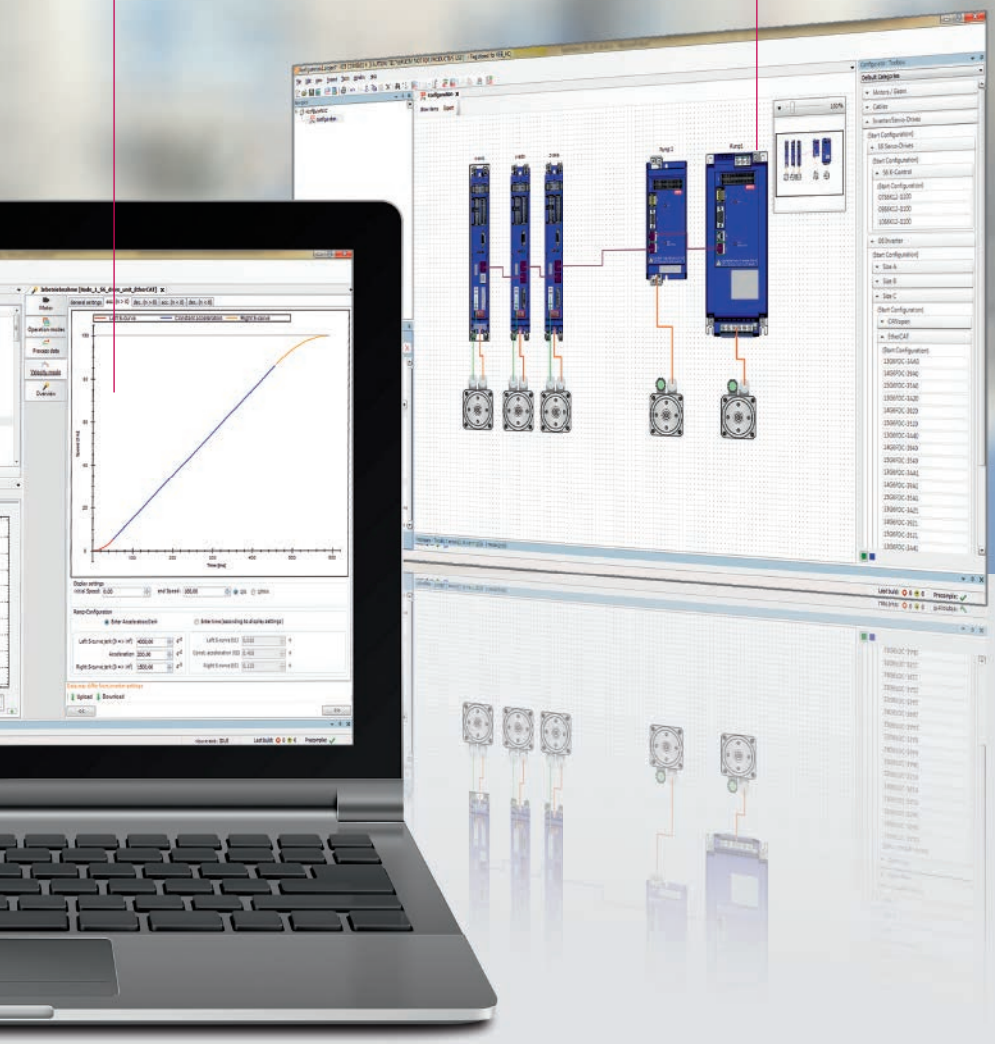
With a foundation built on libraries, devices and template databases, rapid and simple solutions can be generated for a wide range of applications.

## COMMISSIONING ASSISTANT

- Complete user guidance through the commissioning process
- KEB Motor database, free for extensions
- Anti cogging
- Fieldbus diagnostic and optimisation

## SYSTEM CONFIGURATION AS A NEW COMPONENT OF COMBIVIS

- Access to complete KEB product database
- Intuitive gear component selection and system configuration using drag and drop
- Selection assistant with display of compatible components
- Display of all interfaces and connection components
- Material number generator
- Extensive export function for quote list, Combivis Project, Excel ...



## HIGHLIGHTS

- IEC 61131-3 Applications development
- Device and library database
- Product configuration
- Start-up and diagnosis assistant
- COMBIVIS studio HMI integration
- Document database

# KEB SERVICE

## PERFORMANCE AND COMPETENCE

### AFTER-SALES CUSTOMER SUPPORT

- Start-up support
- EMC service
- Mains analysis
- Insulation, heat or vibration measurements
- Conversion of old product series

### MAINTENANCE AND REPAIRS

- Rush or standard service

### COMPONENT AND SPACE PART SUPPLY

- Used and new parts for the exchange

### PREVENTIVE MAINTENANCE

- Forming and cleaning, inspection, functional analysis

### CUSTOMER SPECIFIC SERVICE

- Individual service support
- System optimisation

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